



Università
Ca' Foscari
Venezia

Master's Degree
in
Marketing e Comunicazione
Innovation & Marketing

Final Thesis

**From traditional system toward agile methods:
Digital transformation challenges in Vodafone.**

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Matriculation number

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Academic Year

2018 / 2019

This dissertation is dedicated first of all to my family, who gave me the possibility to undertake this experience, encouraging me every day. My mother for being present in any moment of difficulty, my father for giving me fine advices and my brother together with his family. To Michele, my companion, who sustains me in any decision, staying by my side. To my three special friends sharing with me the best and worst adventures.

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INTRODUCTION

Dynamism and complexity are universally recognized as distinctive features of the current social and economic context.

In the last 10 years, the agile methods are receiving always more attention in the world of business due to the increased turbulence and unpredictability of what surrounds us, leading organization to transform their structure towards agility in order to be able to respond to rapid changes.

“The Agile philosophy simply asks you to work collaboratively as much as possible with your teams and client to build products with quality, shipping early and often, while learning and relearning along the way.” - Peter Saddington (Morris L. et al., 2014)

I used this statement because it appeared to me as the best resume to introduce agile concept. Therefore, as stated by Peter Saddington, organizations may take advantage if they embody in their operations the Agile essence: being quick, responsive, dynamic and innovative, by recognizing today's and tomorrow's unique opportunities and acting on them faster than competitors do. Many organizations aspire to adopt agile processes moreover if we are talking about big companies. One of them is Vodafone Group company, which will be my case study in the paper. They decided to introduce the agile in their organization in 2017 by transforming the overall traditional organization toward a more innovative one.

The paper will be a research and a journey on how the process of transformation has been implemented in Vodafone: starting from a brief introduction of the company I will continue with a general overview of its structure from before to after the change, making a comparison with literature. In order to contextualize the digitalization change, I will go deeply into the research to understand why and how an organization should apply agile methods by presenting the theory of agile.

The focus of the thesis will be on IT department and how Vodafone applied the digital transformation in the agile context, describing the IT organization structure before and after in order to catch which are and will be the risks, the problematics and failures connected with the change.

A crucial point to give the case study a complete vision about the transformation process is examining how IT governance is being affected with respect to the previous traditional

organization. Again, I will first present the topic from a theoretical point of view as an introduction to how the change is governed in Vodafone.

Results, difficulties and benefits encountered will be the conclusion, starting from a more technical analysis with measurement indicators, to end with diversified personal opinions and viewpoints from employees who experienced the change directly.

This dissertation project derives from a collaboration between Ca' Foscari University and Agile Business Day entity regarding "Agile team management methods and projects".

The findings and material of the research has been obtained through interviews made in Vodafone headquarter and through videocalls with employees working inside the organization in different departments.

The collection of information was facilitated thanks to the support of Enrica Lipari and Francesco Pratolongo, both Vodafone agile chapter leaders and digital transformation managers, who acted as intermediaries between me and the company.

CHAPTER 1: VODAFONE CASE STUDY TOWARD AGILE TRANSFORMATION

Development teams often tend to favour the more easily achieved technical and personal successes rather than organizational success. Even if some project's value comes directly from sales, the organizational value is higher compared to the revenues.

The value that projects produce is not always measurable in cash and, in addition, they provide it in different ways. Apart from revenues and cost savings, other possible value sources are competitive differentiation, brand projection, enhanced customer loyalty, satisfying regulatory requirements, original research, strategic information. (Shore J. & Warden S., 2008)

The question now is: can agility help companies to be more successful? Agile development concentrates on the achievement of personal, technical and organizational successes becoming, in this way, essential for all organizations, with the focus on delivering value and decreasing costs.

The fundamental feature of agile methods is setting expectations early in the project so that the company have the time to find out whether the plan would be an organizational success or not, in order to cancel it at the early stage without spending too much money. Thus, after releasing the most valuable features, the agile projects make new versions available frequently in order to change direction more easily and match new business needs and new information discovered, by grabbing unexpected opportunities to improve the plans.

In a world where ongoing change is always more seen as a norm, a way of life rather than an exception, organizations have to think about change in a different way and perceive today's context as a "dynamic stability". (Holbeche L., 2015)

In this chapter I will present Vodafone Italia case study, a practical example of a company which felt the necessity of applying a transformation toward a more digitalized organization in order to cope with the fast-changing environment in which they operate. Starting from an overview of the company history I will focus on the organization structure before and after the implementation of the agile transformation process. From the traditional structure to the new and more agile one. I will make use of literature theory in order to give a deeper explanation and support while describing the case.

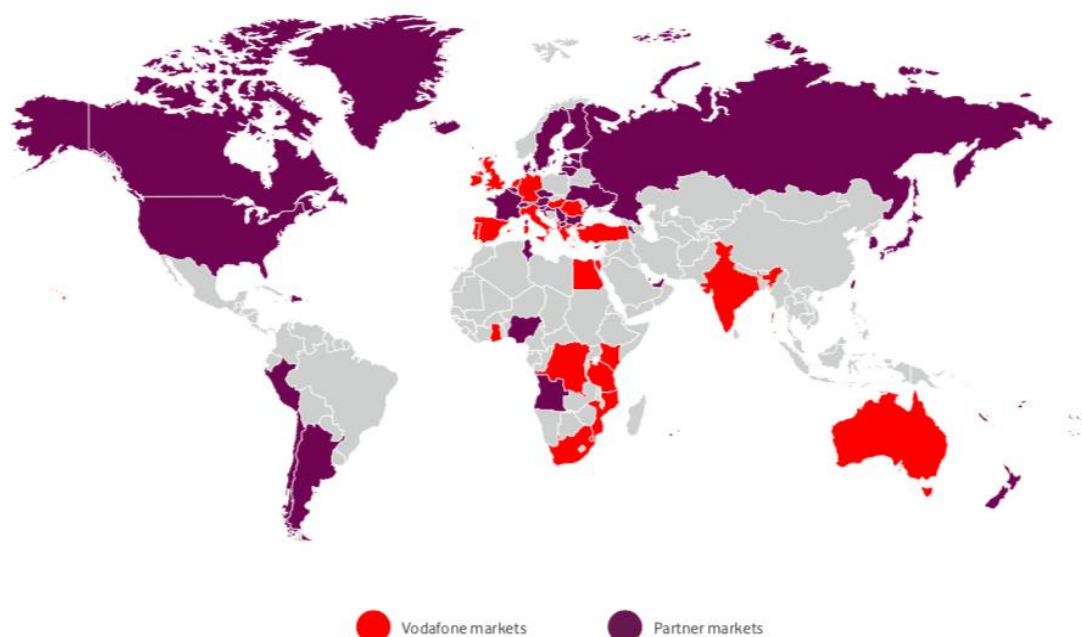
1.1 VODAFONE INTRODUCTION

Vodafone was founded in 1984 as a subsidiary of Racal Electronics Plc, at that moment known as Racal Telecom Limited; about 20% of the Company's capital was offered to the public in October 1988. In September 1991 it decided to break away completely from Racal Electronics Plc and to become an independent company, with the new name Vodafone Group Plc. After that there was a new merger with AirTouch Communications, Inc. ("AirTouch") and the company changed its name again, which switched to Vodafone AirTouch Plc, on June 29, 1999. But one year later, on 28 July 2000, thanks to the approval of the shareholders at the general meeting, it resumed its old name Vodafone Group Plc. Nowadays, Vodafone Group Plc is one of the world's leading telecommunications companies, with around 531.9 million mobile customers and 20.4 million landline customers.

In 30 years, it evolved from being a small telephone operator to one of the main players in the global telecommunications industry, being present in 74 countries with a turnover of almost 44 billion euros, as represented in the figure below. On the mobile, the group is a leader or co-leader in many markets in which it operates, supported by huge investments and the quality of its network. While, on the landline, Vodafone Group has the largest today NGN network in Europe that reaches over 122 million families.¹

¹ Vodafone Website: <http://www.vodafone.it/portal/Vodafone-Italia/chi-siamo>

Figure 1.1 Vodafone Group presence at global level



Source: Bilancio di Sostenibilità 2018-2019, Vodafone Italia

Innovation is certainly one of the fundamental strategic incentive in determining the success of a company on the market, and it is starting from this that Omnitel, in 1995, became the alternative mobile operator to the monopoly in force in Italy at the time.

The revolution arrived a bit later with the introduction of the first subscription in the market without fixed fee and the first rechargeable tariff.

In 2001, Omnitel joined Vodafone Group, becoming its integral part and reference market, which turned into Vodafone Italia in 2003.

Today Vodafone, in Italy, has about 7,000 employees, of which 2,500 work in the world of customer support in eight Competence Centers throughout the country.

Vodafone Italia represents a dynamic reality operating in the telecommunications sector, in which the strong Italian context rooting and the international vision of Vodafone Group are integrated. It represents one of the main subsidiaries of Vodafone Group PLC which is present on five continents with a global business amount of more than 43 billion euros. Internationally, Vodafone Italia stipulated roaming agreements in 219 countries, coming into contact with around 700 operators.

In an increasingly competitive environment characterized by constantly evolving market dynamics, Vodafone Italia, on the one hand, is active in the consumer market with mobile and landline offers, and on the other on the business market, dedicated to small, medium and large - sized businesses, in addition to the world of freelancers and the Public Administration (PA).

The strategic goals defined by the organization are six:

- 1) *Be the preferred brand*: the firm wants to be the operator who drives the evolution of the Italian telecommunications market towards the world of data, being a brand made up of people that are able to transmit passion, reliability and innovation, by surprising and involving their customers.
- 2) *Driving innovation*: Vodafone Italia intends to be a leader in satisfying the growing demand for services related to data traffic. Starting from supporting the investments necessary to guarantee the best network in terms of coverage, speed and safety throughout the national territory, trying to ensure the best relationship with its customers.
- 3) *Companies' satisfaction*: Vodafone Italia always looks for continuous growth in the business segment, introducing offers which are able to meet the needs of small and medium-sized businesses, and of the more complex needs generating from large Italian and multinational companies.
- 4) *Build the best team*: attract the best professional resources and build the most suitable work team to guide the Company in a constantly evolving and transforming market represents a must for the organization. Vodafone is constantly committed to ensuring high quality training, in order to spread the right skills and knowledge among its people and develop a culture and a work environment where employees can become the first promoters of the Vodafone brand in Italy.
- 5) *Strengthen efficiency*: Operational efficiency represents a fundamental basis for an organization to act with always more effectiveness on the market and guarantee value creation for its shareholders, and capacity investment for the country, through the simplification of processes and rapid decision-making.
- 6) *Be responsible*: Vodafone Italia operates in the belief that the long-term success of a company also depends on the ability to meet or anticipate the cultural, social and economic needs of the country. The Company has been undertaking sustainable and corporate responsibility policies for several years.

An example of this commitment are the initiatives aimed at overcoming the geographical and cultural digital gap.²

Taking a look about results, Vodafone Italia closed the fiscal year on March 31st, 2018 with revenues, EBITDA, 4G and fibre customers in growth.

In the year, service revenues reached 5,302 million euros (+ 1.2% organic growth compared to the previous year), thanks in particular to the fixed segment driven by a strong increase in the customer base.

EBITDA grew by 4.6% which corresponds to 2.329 billion euros (37.5% of total revenues), thanks to the commercial performance and the optimization of cost structure, resulting in an increase of 1% compared to the previous fiscal year.

Moreover, Vodafone mobile network was recently recognized as the Italian best mobile network for service quality on voice and data, according to the latest survey carried out in Italy by P3 Communications, a leading company in the market for comparative tests on mobile networks.³

1.1.1 DIGITALIZATION CHANGE

Vodafone Italia's willing to lead the country towards digital is summarized in Digital Vodafone, a new corporate vision which is based on the creation of shared value along three macro guidelines:

- the realization of always faster and more efficient mobile and fixed network infrastructures;
- the launch of innovation towards the development of innovative digital products and services;
- constant attention to the customers and community's needs and requirements together with the personal and professional enhancement of Vodafone people.

Fundamental for coping with the strategic objectives mentioned in the previous paragraph is the use of digital innovations, and Vodafone Italia always tries to contribute in a concrete manner to the progress of society, taking the role of "accelerator" of digital

² Bilancio di Sostenibilità 2018-2019, Vodafone Italia:
http://www.vodafone.it/portal/resources/media/Documents/sostenibilita_vodafone_2019_11.pdf#page=41

³ Vodafone Website: <http://www.vodafone.it/portal/Vodafone-Italia/chi-siamo>

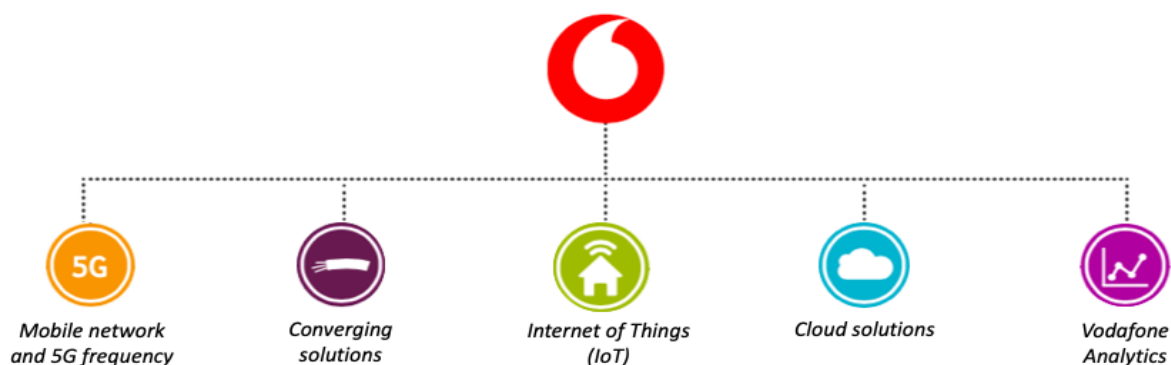
change, in order to create new opportunities for inclusion, thanks also to recent technologies.

The ultimate goal is:

- improving the personalization and usability of products and services, changing people's expectations and consumption habits;
- supporting the business world to deal with the need of redesigning their traditional business models;
- helping PAs and customers to better face a rapidly and constantly evolving market environment.

As a support for digital transformation they individualize their main assets:

Figure 1.2: Assets of digital transformation



Source: Bilancio di Sostenibilità 2018-2019, Vodafone Italia

- Mobile network and 5G frequency*: The fast, efficient and widespread 4G and 4.5G network of Vodafone Italia is the backbone for a digital market open to the future. Giga NetworkTM 4.5G is the new network generation that anticipates 5G and exceeds the 1 Gigabit per second threshold. 5G technology will support the trend of exponential growth in the use of data traffic.
- Converging solutions*: Vodafone Italia offers optic fibre infrastructure integrated with the Mobile Network in order to guarantee its customers to fully grasp the benefits of convergent solutions.
- Internet of Things (IoT)*: The platform which allows you to manage connected objects in every part of the world and enables the development of solutions with the aim of increasing operational efficiency and revenue growth.

- d. *Cloud solutions*: Vodafone Italia makes a complete offer of cloud services available to companies for the secure management of data and applications with the guarantee of an IT service supported by the performance of the Vodafone Network. Companies can count on a hyper convergent Cloud & Hosting platform based on a global network of 78,000 square meters of datacentres in the world and 2,000 in Italy connected to the Vodafone fibre network.
- e. *Vodafone Analytics*: allows you to analyse the information generated by Vodafone's 4G and 4.5G Network, from which it is possible to derive (after anonymizing and aggregating irreversibly information) analysis and insights on presence, mobility and population flows, with the aim of restoring value to the territory and improving services, businesses and lifestyles.

Moreover, being the "promoter" of digital change means for Vodafone Italia that they should develop also new infrastructures of ultrafast communications, in addition to the digital technologies enabled by them.

This is the reason why in August 2017 Vodafone obtained the authorization for the 5G trial in Milan and the metropolitan area, with an investment plan of 90 million euros. Vodafone covers 80% of Milan and the metropolitan area with 5G and will complete coverage shortly.

They have carried out the first 5G data connection in Italy in Milan, experimenting with the first technology in the world to extend 5G coverage through the decoupling uplink & downlink technique.

Vodafone 5G will be a big change from different points of view, in fact it may allow an agri-food company in Bologna to digitalize its production and assembly lines from an Industry 4.0 perspective; it may enable a tourist in Rome to use augmented and virtual reality applications streaming during a visit to the Colosseum; it can also serve a gamer from Turin who wants to play in cloud streaming wherever he is. These are just some examples of the many wishes such technology can satisfy.

Again, in order to make digital interactions with its customers always simpler and more intuitive, Vodafone has introduced the TOBi digital assistant, based on neural networks that has exceeded 800 thousand monthly interactions. There are over 140 million points of contact with customers through the various assistance channels (call centres, shops, Vodafone site, My Vodafone App, TOBi, and social networks). 94% of the interactions take

place today through digital channels, with My Vodafone App which has become the main assistance channel with over 100 million visits per month.

In this scenario, Vodafone Italia aims at turning into the leading company of the telecommunications market in Italy regarding country's digital revolution, thanks to its fibre connections, 4.5G mobile connections, mobile networks with Narrowband IoT technology, the development of 5G and the continuous search for innovative solutions in the field of IoT, artificial intelligence and data analytics systems.

The 2018-2019 report⁴ shows some results obtained up to now:

- 6 million interactions per month with TOBi, the new digital assistant
- IoT: 10 million interconnected objects in Italy
- 38 Italian municipalities covered by the 4.5G network
- Investment plan by 240 million incremental in 5 years for new technologies.

As a sum up I want to present Vodafone Italia's technological roadmap for digital transformation:

- **April 2018:** Confirmation of the collaboration with Open Fibre for the development of ultra-broadband connectivity services in Fibre to The Home (FTTH) mode. The agreement, already active in 13 wired cities with fibre optic infrastructure, has been extended to a further 258 Italian cities, reaching 9.5 million families and businesses by 2022.

In the same month, Vodafone bets on customer care 4.0 by launching TOBi, the digital assistant available on all digital assistance channels, from the My Vodafone App, to social media, up to the website.

- **May 2018:** Vodafone mobile network turned out to be the first in Italy for quality of voice services and data, based on the latest survey carried out in Italy by P3 communications.
- **June 2018:** Launch of the second brand ho. in order to meet customer needs who want an essential offering that aims to be "simple, competitive and transparent". In January 2019 ho. has exceeded one million customers.
- **July 2018:** Through the first 5G data connection in Italy as part of the experimentation of which Vodafone is the leader in Milan, it was possible to reach

⁴ Bilancio di Sostenibilità 2018-2019, Vodafone Italia:

http://www.vodafone.it/portal/resources/media/Documents/sostenibilita_vodafone_2019_11.pdf#page=41

download speeds of over 2.7 Gigabit per second, with latencies lightly over a millisecond.

- **October 2019:** in the auction for 5G frequencies, with an extraordinary investment of 2.4 billion euros, Vodafone won the most valuable frequency blocks, consolidating its leadership in the quality of the network and in the creation of the new 5G services. After that there was the launch of the Giga NetworkTM 4.5G, the new generation of network that anticipates 5G and exceeds the threshold of 1 Gigabit per second, as a distinctive element of the quality of the Vodafone network. 100% coverage of 4G sites with Narrowband-IoT technology has been completed, allowing companies and PAs to access some of the 5G functions in advance, and making possible specific use for energy, health, environmental and structural monitoring, as well as opening new opportunities in fields such as precision agriculture, smart cities and smart utilities.

In addition, Unlimited Red + was launched, the first “Fully Unlimited” consumer offer, which includes Giga, unlimited minutes and messages, 1000 minutes of international calls and 5 Giga of non-EU Roaming.

- **December 2019:** Switching on in Milan of the first 5G network in Italy, with coverage of over 80% of the city and 120 active sites. As part of this experimentation, over 30 projects have been initiated in the areas of health and wellness, security and surveillance, smart energy and smart cities, mobility and transport, manufacturing and industry 4.0, education and entertainment, digital divide.⁵

At this point in time, Vodafone considers itself to be at the intermediate step of the digitalization change, having introduced various digital products which, if implemented correctly, will allow to reach increasingly digital goals.

As forthcoming objectives, they aim to offer the customer the possibility of concluding transactions or offers on his own tariff plan completely from home in a digital way.

Another one is establishing a hiring plan for software developers to be able to become a more autonomous organization by internalizing IT skills. Being autonomous corresponds to one of the principles stated in the Agile Manifesto.

⁵ Bilancio di Sostenibilità 2018-2019, Vodafone Italia:
http://www.vodafone.it/portal/resources/media/Documents/sostenibilita_vodafone_2019_11.pdf#page=41

In addition, Vodafone is thinking about entering the online/streaming gaming market, an increasingly global trend that requires parallel improvement of technologies. The popularity of online gaming continues to grow, with players around the world playing more than seven hours a week, an increase of nearly 20% in the past year. Young adults represent the majority of the gamers, between the ages of 26 and 35 playing eight hours and 13 minutes a week, an increase of 25% over last year. This is what emerges from the research "State of online gaming - 2019" led by Limelight networks company. The most interesting point for Vodafone is that players are not patient with regards to downloading issues. Globally, 85% of gamers find the video game download process frustrating, in fact slow downloads are the main sore point for 34% of gamers worldwide.⁶

Last but not least, they are pointing at a decisive shift from traditional management to leadership and coaching: "working in Vodafone must be cool for anyone". Together with this, there is the focus on the customer's need, rather than on the available budget and the subsequent earnings. A clear example is what did Google when it launched the free g-mail package: they were expecting results in the future thanks to customer satisfaction on which they concentrated.⁷

1.1.2 THE AGILE TRANSFORMATION

Vodafone Italia's aim of becoming a digital company led to the need of realizing a transformation also at an organizational level. This is the reason why in 2017 they decided to embrace and implement the agile methodology.

The trigger reason which drove the company toward a more agile organization, apart from the one above cited, is the fact that the Italian and European markets are always more saturated market, so the customers are looking for and requiring something different and new. How this requirement can be satisfied? By offering digital experiences on top to the customer, facing an increasingly competitive market. Omnitel had created the market for the first mobile phone, thus facing a virgin market, while companies nowadays must focus always more on the need of the customer who asks for an increasingly complete service.

⁶ <https://www.limelight.com/resources/white-paper/state-of-online-gaming-2019/>

⁷ Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

A clear example is the arrival on the market of Iliad which caused confusion for communication companies already on the market. They broke into it with a really low-price offer compared to all the other telecommunication companies, and although it turned out to be a fail because of the low-quality service, it was a shake for the market which had to rush for finding competitive answers.

Moreover, Vodafone perceived the need to concentrate and adapt to new customers: the digital natives, people who was born in the digital era.

Nowadays an entity, as Vodafone Group is, which competes all over the world, must take into consideration that the new competitors to face are no longer only those related to the world of telecommunications but also Google, Spotify, Amazon, Facebook that already entered the market as digital companies.⁸

Until the moment in which Vodafone felt the necessity of a change, they were working through a pure traditional system, which I will describe in detail in the following paragraph.

Today, the company has undergone a big transformation, which has led to a change of mindset together with a structure reorganization.

The communication within the company played and plays a crucial role in order to follow the right direction in the process of transformation. Firstly, the transformation project was presented by the CEO, so it was a decision from above without much explanation. Subsequently, agile coaches were hired with the goal of going "door to door" of the various department offices to understand first of all which were and are the problems that each of them encounters, and secondly to provide the necessary tools to solve these problems and avoid that they will come again in the future. This is the approach they are taking to spread the agile methodology. What agile coaches try to clarify is that they are not consultants who provide solutions to problems, but they are supportive to help teams find their own solutions. The goal is to communicate the change step by step in such a way as to make the need for change felt by involving all employees without imposing it as a radical change to avoid finding numerous opponents. One difficulty that is still not resolved, is that there are 10 agile coaches and they must provide support to 500 people.

⁸ Video Talk ABD18: <https://vimeo.com/agilebusinessday/abd18-donatellaisaia>

In the following paragraphs I will show the shift of the organization structure, before and after the introduction of the agile transformation.⁹

1.2 TRADITIONAL SYSTEM ORGANIZATION STRUCTURE IN THEORY

The working organization requires the constant ability to respond to technological, institutional, competitive transformations which determine a continuous search for appropriate solutions; this is the reason why the organization can be considered as the combination of a continuous changing flow of decisions and actions, and a steady structure composed of organizational charts, rules and procedures.

Therefore, the structural dimension is a fundamental aspect of the organizational problem which must be analysed and fully understood.

The design of the organizational structure considers a series of key dimensions in order to construct stable arrangements of labour division and of interaction between different parts of the organization.

At the macro-structure level, the object of central analysis is the organizational unit, which is a group of actors, resources, activities that collaborating toward a common performance, contributing to the achievement of a partial goal of the organization, consistent with its general one. (Costa G. et al., 2014)

Thus, building it means putting in the same container actors and activities that:

- have more intense relationships within the unit with respect to what happens between actors and activities in the other units;
- share resources of various kinds, as for example spaces, knowledge, material resources etc.;
- contribute to a common result;
- are subject to responsibility on common result indicators;
- share the same coordination mechanisms to regulate the relationships that take place within the unit. (Costa G. et al., 2014)

The next step in the organizational planning is the definition of specialization criteria of the units, which following Daft (2012) can be guided by the technical-economic characteristics of the production and transformation process carried out by the

⁹ Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

organization, or by the characteristics of environment variety and variability with which the organization interacts.

The first case corresponds to a specialization based on *input* in which each unit has the objective to monitor and carry out a phase of the transformation process. These types of units are called “functions” and are mainly used to respond to the need for efficiency in the execution of transformation processes.

The specialization based on *output* leads the unit to focus on a specific result which generates value for the organization through the interaction with the transactional environment, implying a grouping of different activities from a technical point of view but related to the same final result. One of the most relevant unit of this type is the specialization by product or process. (Costa G. et al., 2014)

In this last case the organization units are defined as “divisions” and correspond to self-sufficient units in which all the activities required to achieve a given result are subject to a single responsibility. The consequence is an increase in efficiency and the ability of reaction of the organization to the demands of the transactional environment.

A further choice, concerning the organizational units, consists in deciding which activities to assign to each of them, and therefore how to draw the boundaries between the specialized units according to a series of key variables, assessed in light of the economic parameters constituted by the economies of transformation and the costs of coordination. The third process that makes up the design activity corresponds to the design of coordination mechanisms in order to manage the residual interdependencies that exist between the units. The main coordination mechanisms are represented by the hierarchy, characterized by various degrees of vertical / horizontal centralization or decentralization, by the lateral mechanisms of mutual adaptation and by operating systems that standardize orientations, objectives and behaviours. (Costa G. et al., 2014)

Ultimately, the most important decision that managers have to take about structural design is finding the right balance between vertical control and horizontal coordination, depending on the needs of the organization.

They can prefer a traditional organization designed for efficiency, which emphasizes vertical linkages such as hierarchy, rules and plans, and formal information systems, or a contemporary organization designed for learning and adaptation, which is focused on horizontal communication and coordination. There exist various forms of structure and each one is applied to make an organization more effective, depending on the demands of

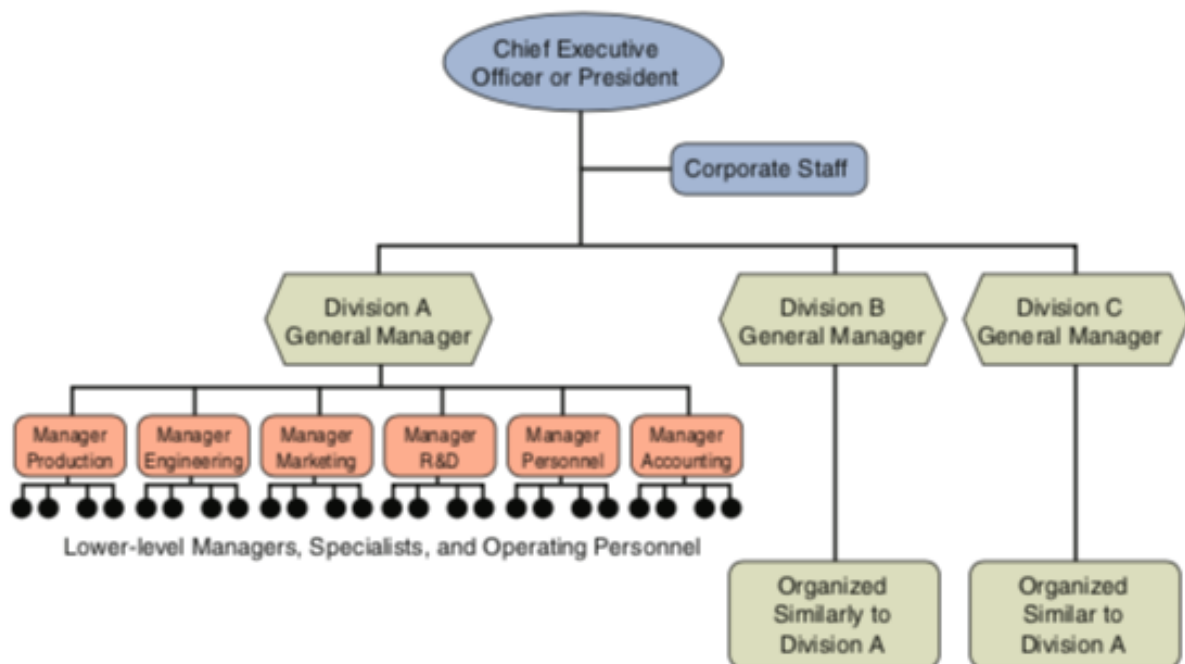
its situation. The two most common approaches to structural design are *functional grouping* and *divisional grouping*, showed in the figure below.

Figure 1.3: Functional structure representation



Source: Hesselberg J., 2019

Figure1.4: Divisional structure representation



Source: Hesselberg J., 2019

In the first type of unit, activities are grouped according to a common function, from the base to the top of the organization, as for example in the engineering department where all engineers get together and the vice president is like a supervisor of all the engineering activities. (Daft R. L., 2012)

It is clearly a centralized structure where decisions are taken from the top, causing long-term solutions for problems which affects several departments.

Here employees who have similar knowledge and skills, who perform similar functions and work processes are placed together, providing a valuable depth of knowledge for the organization. On the other hand, this structure causes large diversity among the various functions, in fact it is quite uncommon that people working in marketing department move to information technology, because each function is characterized by its own culture. There are extreme cases in which the functional structure may be seen as organizations inside an organization. (Hesselberg, 2019)

Daft (2012) states this form is effective when the organization needs in-depth expertise to meet its goals, or when control and coordination by vertical hierarchy become necessary, so when there is little requirement for horizontal coordination.

The resulting strengths are the fact that it allows economies of scale within functional departments; it promotes the development of in-depth knowledge and skills; finally, it enables organization to reach functional goals. The advantage is therefore resource optimization and per-unit cost reduction.

While, the disadvantages that can emerge when organizations apply this form of structure are: it can clash with the need for flexibility induced by environmental turbulence and it won't be able to give quick responses to changes because of too many decisions piled-up and a vertical hierarchy overloaded; it generates coordination costs since the overall performance of the organization is not given by the sum of the performances of the functions; the meaning that work has for people cannot be ignored to not let them become demotivated and reduce performance. The result is slow innovation because of poor coordination and employees restricted view of overall goals. (Daft R. L., 2012)

The management of specializations by functions set above certain dimensional and complexity limits escapes the coordination of the intermediate managerial line, thus it becomes favourable to create first-level organizational units specialized for production, giving birth to divisional organizational form.

In the divisional structure people are grouped according to what the enterprise produces. For this reason, all people, including personnel in manufacturing, marketing, sales, R&D, etc., producing the same output are grouped together under one executive. It becomes more suitable and more useful for larger companies, which operate in a wide geographic area or control several lines of business and products under a common corporate head. (Hesselberg, 2019)

The distinctive characteristics of this structure is that it promotes flexibility and change, in which the small units can adapt easily to the needs of an unstable environment. Here, each product has its own separate division, resulting in the advantage of reaching the requirements of individual customers or regions and leading to customer satisfaction with clear product responsibility and contact points.

So, it is optimal for achieving coordination across functional departments and it becomes necessary when organizations are no longer controllable through the traditional vertical hierarchy also due to the orientation goal toward adaptation and change. (Daft R. L., 2012) Therefore, the decisions concerning coordination within the divisional structure must be analysed at two levels:

- vertical relationships between division direction and central direction
- horizontal relationships between divisions.

There exist different forms of divisional structure based on the degree of dependence of the individual units with the top and the rest of the company:

- *centralized division* (bureaucratic divisional form): the decisional decentralization in favour of the divisions is reduced and the staff of central management is very important. They plan the strategy and development of the individual divisions and coordinate behaviour in a direct way.
- *decentralized division*: the divisions have few relations between them and the decisional decentralization by the central management is high in favour of the divisions themselves. In the presence of generic interdependencies, the relationships involving the various divisions are mainly attributable to transformation activities and transactional interaction. The relations between the divisions are therefore very limited and their management takes place through standardization.
- If the divisions are recognized as legal entities, they become real independent companies controlled by a central entity which is a solely responsible holding

company for governing investments and the financial aspect, while industrial objectives are totally entrusted to the responsible for the divisions. (Costa G. et al., 2014)

This form of structure is more suitable to large organizations which sell several products or services. The result is a decentralized decision making, pushed down to the divisions which are small enough to be quick in responding to rapid changes in the market.

One weakness of the divisional grouping is that the organization loses economies of scale, arising the necessity of duplicating the resources, because for example the firm needs to have warehouse for each division. Another disadvantage is that the coordination across product lines and the exchange of knowledge will decrease since people working in the same profession are in different divisions. Larger the company, higher the probability of encountering cross-unit coordination problems.

A manager of Johnson & Johnson explained this organization issue by stating “We have to keep reminding ourselves that we work for the same corporation”. (Daft R. L., 2012)

If the company doesn't apply efficient horizontal mechanisms, the consequence can be an overall destruction of performance, because it may happen that one division generates products or programs which are incompatible with the ones sold by other divisions. This may also cause customer frustration since a sales representative from one division is unaware of developments in other divisions.

The solution to these malfunctions might be the introduction of committees, task forces and working groups that act as coordination mechanisms.

In addition, a divisional structure may face a lack of technical specialization since employees tend to identify with product lines instead of functional specialty. An example is the R&D worker who concentrates the research on product line rather than on the entire organization benefit.

With functional and divisional structures, managers make use of horizontal linkage mechanisms to match the vertical dimension and achieve integration of departments and levels into an organizational whole.

The functional structure uses the specialization of tasks, a hierarchical rigidity to obtain an efficient use of scarce resources but does not allow the organization to be flexible or innovative. At the other extreme, the horizontal structure is suitable when the organization needs coordination between functions to create innovation and promote

learning. It allows firms to differentiate and react quickly to changes, but at the expense of efficient use of resources.

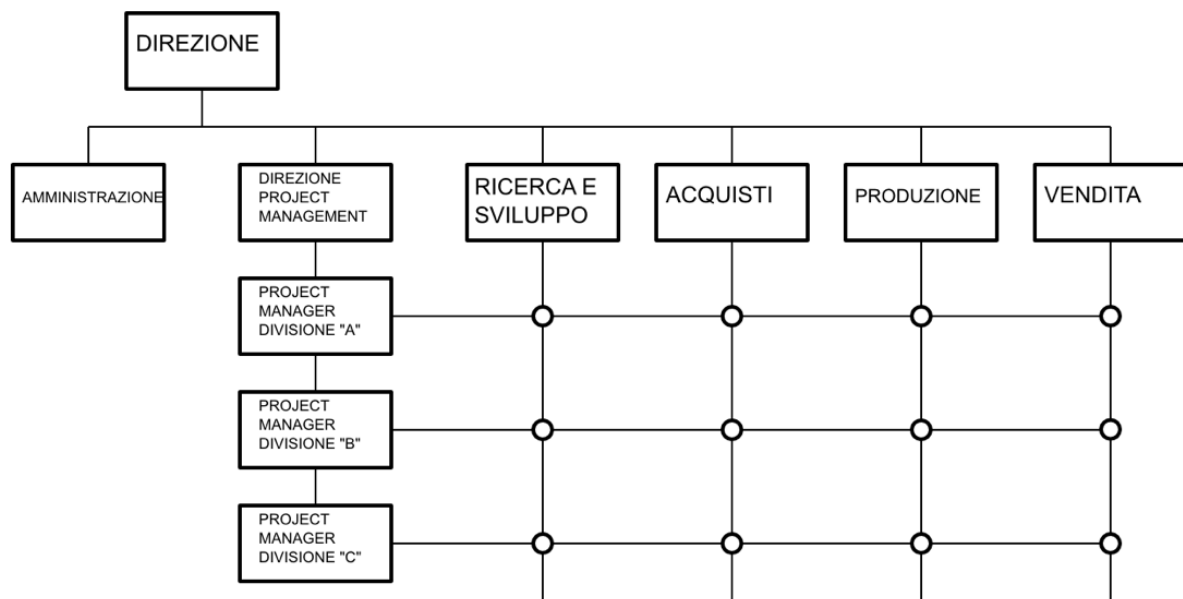
The type of structure that attempts to achieve an equal balance between the vertical and horizontal structure dimensions correspond to the matrix structure, as shown in the figure below. Most organizations do not exist in these pure forms, using instead hybrid structures that incorporate characteristics of two or more types of structure. (Daft R. L., 2012)

With respect to the other two kind of structure, this one aims at aligning both company's resources and assets toward a common goal. Which is the benefit of adopting this type of organization? Here people do not work for functions and divisions but collaborate and communicate with each other to achieve common corporate objectives, no matter what their department position is. The environment is characterized by a higher level of autonomy where employees feel engaged and managers do not give orders on how things should be done.

The negative side of matrix structure is that it can cause confusion and uncomfortably feelings among employees who are managed by both a people manager and a product manager, the first one in charge of their careers and growth and the second one responsible for defining the targets, leading to conflicting priorities to follow. Thus, this structure implies considerable complexity and costs together with excessive coordination requirements.

In small companies with less than about 150 people, it may be more efficient in terms of execution and adaptation to rapid changing environments. While in larger organizations, the advantages this structure brings with it could be neutralized by complexity and contrasting goals between managers. (Hesselberg, 2019)

Figure 1.5: Matrix structure representation



Source: <https://sites.google.com/site/oppquinta/home/funzioni-e-ruoli-all-interno-dei-differenti-modelli-organizzativi-aziendali>

1.2.1 VODAFONE PRIOR ORGANIZATION

After an overview on the fundamentals of organization structure stated in the literature, I'm going to analyse Vodafone organizational structure and how it evolved.

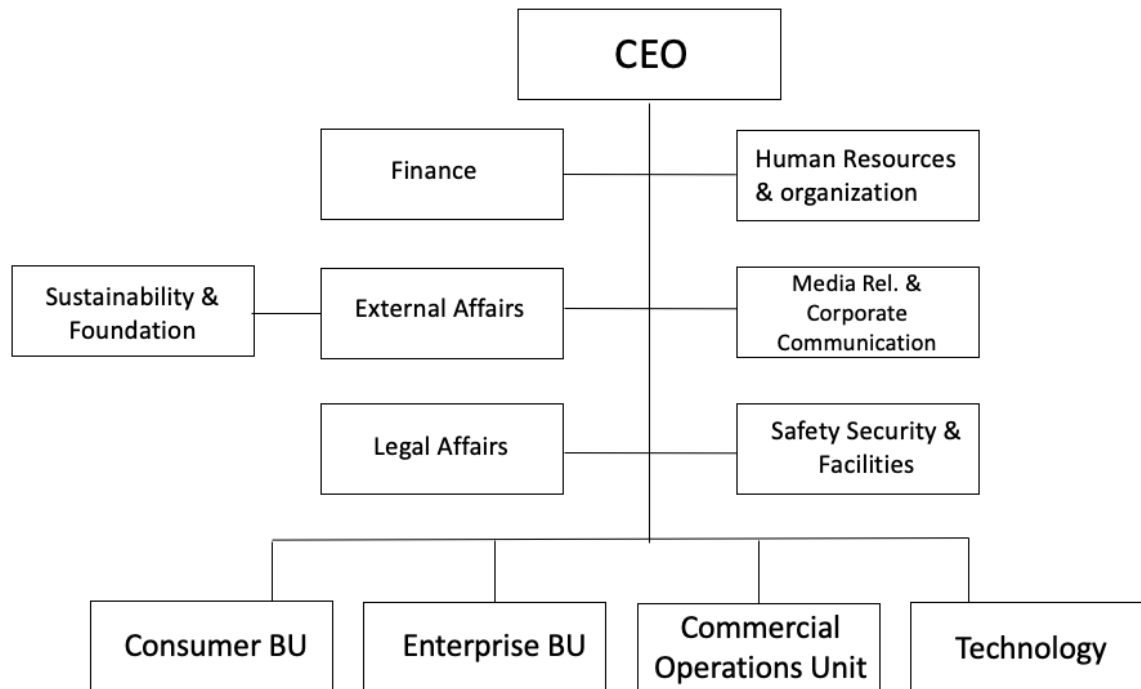
Before the change was applied, Vodafone was a traditional organization with a classic functional structure in which there are all the staff functions, also known as first-level functions, where people were aggregated by competence on the processes they govern.

Underlying this first hierarchical level there are the most substantial functions which are Business and Consumer, organized through a divisional structure, meaning that they incorporate marketing and sales functions within them. At the same level, there are also Commercial Operations and Technology which are again functionally structured.

As illustrated in the figure below, this correspond to Vodafone organization structure before initiating the process of transformation.¹⁰

¹⁰ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

Figure 1.6: Vodafone traditional organization structure



Source: Bilancio di Sostenibilità 2016-2017

1.2.1 THE NEW ORGANIZATION STUCTURE TOWARD THE AGILE IN VODAFONE

The above discussed organization structures refer to traditional and planned ways of guiding companies, being more focused on the resource control optimization and compliance instead of rapidity and agility. But does it exist an appropriate organizational design to advocate business agility? In reality, there is not a precise and correct structure suitable for that type of organization. What organizations can do is trying to align their operational strategies with their structures, so that the design becomes a support for the business they are running. In fact, it is ineffective to apply a model used by a successful firm, such as Spotify, directly to your organization, because it is much more helpful to understand why a certain kind of structure works in a specific context and adapt it with a continuous-evolution-and-improvement mentality. (Hesselberg, 2019)

Such an approach favours faster delivery with a higher level of workers' engagement, producing better outcomes.

Hesselberg (2019), therefore, identified four heuristics which give an idea of how a company works with agile:

- Minimization of internal handoffs and the distance between the developers and the customers, in an end-to-end perspective
- Autonomous workers and teams toward a shared goal
- Attention for technical excellence and commitment to continuous improvement
- Enabling people in making and meet their own commitments within the entity, where executives outline the “what” and the team members the “how”.

Now, is the time of looking at how Vodafone optimizes for agile structure. A fundamental condition for Vodafone Italia is relying on talented people, capable of experimenting, innovating and having a strong tension towards the future in order to implement the digital transformation.

Therefore, they worked intensely for the definition of a new organizational structure which is able to respond to the needs of the digital world, to develop the digital skills of their people and to attract young talents within the company. This commitment has always been carried out paying attention to the respect for people, trying to guarantee the work-life balance also through the numerous smart working initiatives and the diffusion of agile and collaborative work tools.

In 2017-2018 Vodafone Italia launched an acceleration program for digital transformation, reorganizing part of the organizational structure, drawing inspiration from the cutting-edge Agile collaboration methodology.

In the new structure a number of tribes equal to 6 have been created, which means that, within the functions in direct contact with the customer, there are these agile organizations that currently include 49 work teams (squads), for a total of about 500 people who work in this way over a total of 5000 employees. This new structure concepts will be explained here below.

Within each department, both the traditional functional structure and a new type of structure, called matrix structure, coexist.¹¹

Matrix structure can be used when both technical experience and product innovation and change are important to achieve organizational goals. The distinctive feature of the matrix organization is that it combines two criteria of specialization simultaneously, at the first hierarchical level: a functional criterion (oriented towards efficiency) and a divisional criterion, for market, product and area objectives (effectiveness-oriented).

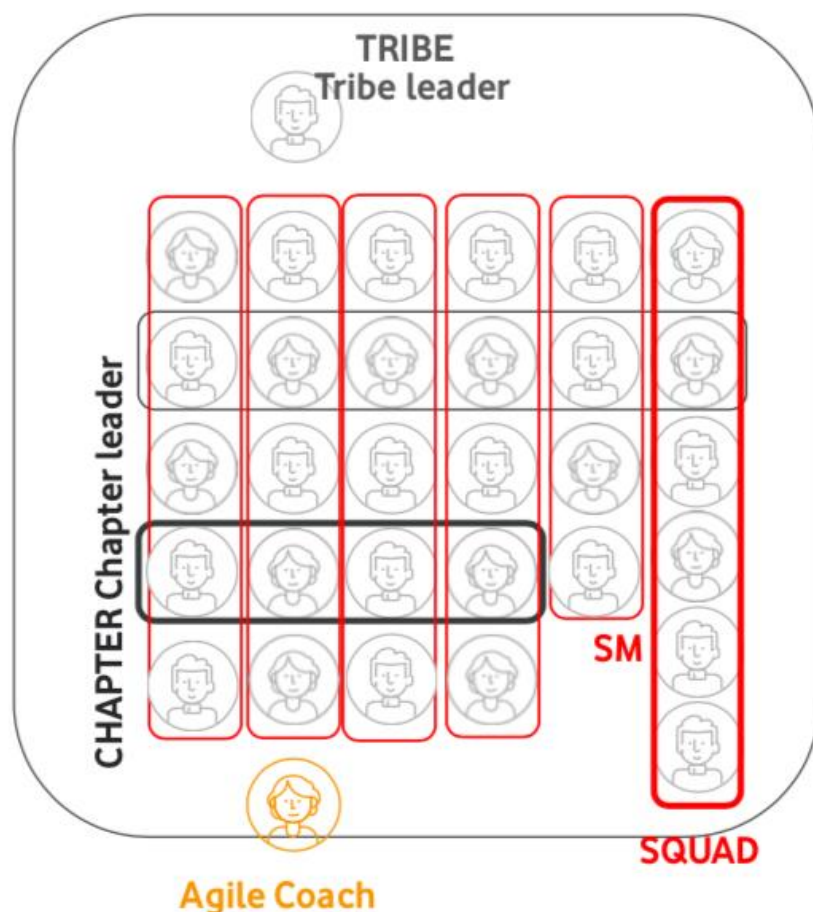
¹¹ Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

This type of structure adapts to situations in which three conditions occur simultaneously:

- the success of the organization depends on the joint defence of two or more critical areas
- the change in the external context and the high interdependencies between the organizational units generate a high need for coordination
- scarce resources must be shared between multiple products or projects simultaneously. (Costa G. et al., 2014)

For the first time this new structure has found its permanent space in Vodafone, as it is used whenever there is a project to be implemented. The substantial difference is that while matrices are usually used per project, in Vodafone it represents a stable structure.

Figure 1.7: Agile matrix structure representation



Source: Digital Transformation Program, Vodafone Italia

As depicted in the figure above, the new organization is based on the minimum productive unit: **Squad**, which is designed to feel like a small start-up with a well-defined purpose, led by a product owner. The units have all the skills and tools necessary to design, develop and test new products and services.

All the people who, while working in different squads, have similar skills are grouped into **Chapters** and meet regularly to discuss their specific area of expertise and the challenges they face. So, the chapter is a functional grouping of professionals that works in various squads/tribes, supported by a **Chapter lead**, who works on competences and supports people that are distributed in the squads, offering the organization an alignment mechanism with respect to the expertise applied. Therefore, each person has two dimensions: the vertical dimension of the squad is used to work independently and as in time as possible, but without forgetting the alignment that is guaranteed through the horizontal dimension of the chapter, governed by the chapter lead.

Considering the number of squads required for each "product", a coordination model is needed that aggregates the squads working in related areas: **Clusters**.

The cluster is a group of squads that have a similar purpose and closely interconnected goals. At an even higher level of coordination, the new structure presents the tribes.

The **Tribe** can be seen as an "incubator" for squad's small start-ups and each one has a **Tribe Leader** who is responsible for providing the best possible habitat for the teams within that tribe. The figure above clarifies how this matrix structure works and how it is organized.

Other roles that belong to this structure are the scrum master who should be present in each team in an ideal structure that decide to work through the scrum method. Instead in Vodafone one scrum master was assigned every 3/4 team, as they use not only the scrum method but also the Kanban one. The agile coach differs from the scrum master since it deals with the more systemic part, flanking the tribe leader. He supports interactions with the other tribes and focuses on the methodology and approaches to be followed. ¹²

For what concerns the organigram of the company, how was this affected?

The corporate functions, such as HR, Finance, Legal affairs, etc. where not impacted by agile, so they preserved their original shape. On the other hand, they planned to include

¹² Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

agile methodologies and approaches in the four-business unit, which are in direct contact with the customer:

Consumer business unit: focused on people, the final customers;

Enterprise business unit: manages juridical people, such as SOHO (small office home office), SME (small-medium enterprises) and corporate (big companies and multinational corporations);

COPS (customer operations) business unit: follows all the operations related to customers, as for example customer care, Tobi, etc., together with all customer demand management processes;

IT business unit: it does not only refer to software development but needs to think strategically like any other business unit, focusing on ROI and efficiency. (Vodafone Agile coach)

Within these business units they placed the six tribes which were launched during the agile implementation plan:

- *Consumer Digital and Growth Tribe* which deals with driving the growth of the customer base by exploiting data analytics, improving the APP channel and the customer journey.
- *Consumer Marketing & Digital Sales Tribe* whose mission is to improve the acquisition of new customers through digital channels.
- *Enterprise Digital Tribe* whose task is to improve the acquisition of new customers and the growth of our customer base on the SoHo and SME segments.
- *Products Services & Platforms Tribe* which concentrates on all the aspects of products and services that Vodafone offer to the enterprises.
- *Commercial Operations Digital Tribe* which focuses on the development of artificial intelligence (TOBi) and digital care channels to customers.
- *IT Enablers Tribe* which enables technology for developments on all Tribes.¹³

A first complexity emerges given by the famous dilemma of the various managers: a person who gives you a direction on what he expects and a person who supports and guides people by focusing on how the tasks are brought to terms. The first manager refers to the “product owner” while the second one is the “chapter leader”.

¹³ Bilancio di Sostenibilità 2018-2019, Vodafone Italia:
http://www.vodafone.it/portal/resources/media/Documents/sostenibilita_vodafone_2019_11.pdf#page=41

This structure cannot work without the support of other figures who put the attention to the work method, the mindset and the approach toward the objectives. They take the name of practitioners within the company and they can be agile coaches, transformation specialists, or scrum masters in the case in which a scrum framework is applied. In Vodafone all these people, who are distributed in the tribes, refer to HR department, because the transformation program was guided by them even from a cultural point of view.

Finally, Vodafone has promoted a project with the aim of rationalizing and simplifying activities, which has led to several changes in the company's structure:

- First of all, the Safety, Securities & Facilities department was eliminated, and they relocated the Health & Safety functions and Property & Facilities within the Human Resources & Organization function.
- the ICT Security, Privacy and Fraud Management and Security Operations functions were incorporated in the External Affairs department.
- Elimination of the Ultrabroadband, Wholesale & Strategy Department and relocation of the Business Transformation and Wholesale functions within the Commercial Operations Department (COPS).¹⁴

1.3 THE IMPORTANCE OF WORKSPACES DESIGN

Agile organization structure does not represent the only factor which affects how a company create value. Research studies have found out that the manner workspaces are designed has a strong impact on collaboration ability, involvement among workers and productivity efficiency. The first point is recognizing the team worth as an organizational unit and subsequently what makes it profitable.

Hesselberg (2019) reported in his book an investigation made by Alex Pentland, who observed more than 2,500 teams working in various industries through a set of sensors, whose aim was gathering more than 100 data per minute of groups working together up to 6 months.

What emerged above all is not how teams are composed, so the personalities, knowledge, skills of people and their contents, but the way they communicate with each other. In

¹⁴ Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

particular, three components were identified as influence factors on the team success degree:

- *Energy*, determined by the nature and quantity of interchanges among team participants, since a higher number of exchanges related to the task to accomplish can help in increasing efficiency, especially if we are speaking about face-to-face ones.
- *Engagement*, in form of more equally distributed interchanges instead of clustering, so that people having a certain role interact also with the ones who have a different position.
- *Exploration*, which stands for people interaction degree between members coming from other teams. When there is a high level of exchanges among workers outside their own unit, the result is an increased creativity and innovation.

In addition to what was discovered with the following research some considerations should be taken into account if a company needs to move to an agile workplace:

- Spaces have to be focused on workers necessities to be effective: there should be areas where workers can discuss, collaborate and also divert, together with concentration spaces where people can isolate themselves and have an appropriate level of privacy.
- Creating situations of collaboration should not hinder the focus but facilitate the unplanned interaction between members of different team through sharing spaces. In this way, innovation and creativity may increase.
- Workplace flexibility is helpful in being effective. Manageable spaces are necessary in order to fit the diversified nature of workers. The emergent feature of this type of design is choice: electing the most suitable area with respect to the kind of work to carry on. A one-size organization design is not apt for all. (Hesselberg, 2019)

Concluding, I want to highlight another relevant aspect in the workplace formulation which is the presence of spaces that fit virtual communication technologies, quite effective to substitute face-to-face conversations in case of virtual teams.

How did Vodafone transform its workspaces?

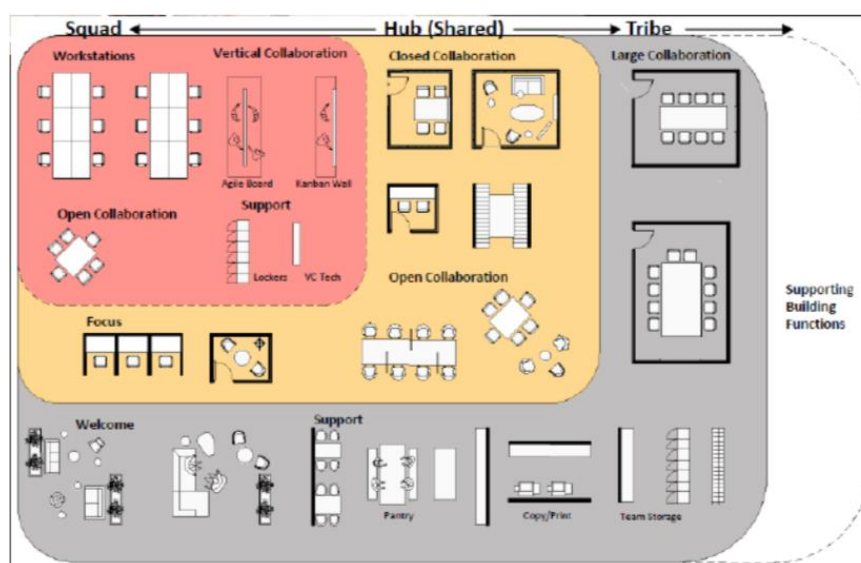
Step by step the offices gradually became more open, more functional and even more “funny”, fitting different situations, as for example when there were the Red Farms that special spaces were created. What they understood for their company is that agile spaces must distinguish in: concentration areas, where one can carry out one's work individually,

collaboration spaces, much “richer” than the previous ones, and socialization spaces, which is a very important aspect for work motivation. In reality, the spaces available to Vodafone are not so favourable to an agile structure, but taking advantage of these, they have tried to enable these three dynamics.

How did they put the project into action? They introduced new things, new tools, such as for example sound-absorbing panels, so as to guarantee the concentration of all the members involved in a meeting; the whiteboards, both glass-made and movable, etc. Therefore, there has been a profound change in the workplaces, as shown in the picture below, but more in some areas than in others. The important thing to note is that this new design should be welcomed by the whole company to be effective. In particular, informality about work must be an accessory to improve productivity and it should not be perceived as a thing that separates the company where on the one hand there are those who work in digital and exploit these spaces, and on the other hand those who prefer to work according to the old pattern because perceived more serious and diligent. Linked to this discussion there is another cliché that is working time: the widespread mentality in Vodafone, also due to the general vision of the country, is that the more hours you work the more efficient you are. Agile instead says that you have to plan your work in such a way that it is sustainable. (Vodafone Agile Chapter Leaders)

Hence, the drawn conclusion is that they are in an ongoing transformation which necessitates a higher level of support by the workers themselves.

Figure 1.8: Physical representation of Vodafone agile workspaces



Source: Documenti interni Vodafone

CHAPTER 2: LANDSCAPE OF AGILE

In the 1990s the global economy found itself acting always more in a free market, due to the decrease of control and regulation on the market economy with the final aim of encouraging the operations on it. In this environment, organizational processes were identified as an increasingly business success factor, in which a lot of manufacturing approaches were adopted, as for example quality management, continuous improvement and lean methodologies, especially in large companies. They tried to imitate and reproduce the so-called “Japanese practices”, whose major exponent was Toyota. (Holbeche, 2015)

A new logic spread out which consisted on putting the customer at the centre of the process, leading to more horizontal structures and eliminating many hierarchical firm positions.

The important consequence was a change in the original mindset about the employment contract between the worker and the company: initially, the first delivered hard work and devotion to the employer expecting job security and career progression in return; now, the new deal requires more independent and responsible workers focused on their own careers and continuous improvement of personal performance. Therefore, what the employers look for is commitment from the workers rather than loyalty, in order to obtain higher flexibility and cost-effectiveness in relation to the workforce.

The hypothesis behind this new employment relationship should be based on the alignment of the interests of both parties. But this did not reflect the reality, in fact many high-skilled workers felt disappointed about the changing agreement and they react by looking around for new opportunities, as the job market was developing. This opened the door to the so-called “War for talent”, in which the employers hurried to attract the best available employees.

The advent of Internet together with numerous advanced technologies generated a significant increase on competitiveness between all types of business, from large to small, and from flourishing countries to undeveloped ones. (Holbeche, 2015)

It was in this context that the agile concept emerged with the aim of helping companies in developing foreseeing capacity in order to be able to operate in an environment which is increasingly growing in complexity.

It can be said, therefore, that the roots of agile methodologies come in part from Japanese industrial sector practices, such as iterative project management methods, continuous improvements and lean tools, which still influence today agile lean thinking. (Moran, 2015)

What is important to state in order to introduce the topic is that agile corresponds to a generic term which includes a series of development methodologies or processes. Thus, it's wrong to use it as a proper name indicating a specific method. (Unhelkar, 2013)

2.1 THE AGILE THEORY

The most important point when talking about agile is that it should not be considered a destination but a process to facilitate the achievement of better business outcomes. Moving to agile does not mean achieving an agile milestone.

Agile is not implementing a mechanical process to you, it does not pretend certainty without continuous feedback from customers, and it is not commanded from above with no ownership from teams. That is not agile, so what exactly is Agile?

It is a set of values and principles which takes advantage of the power of employees and feedback from customers for a successful delivery of products and services in a frequent manner. (Moreira, 2017)

Contemporary Agile literature defined it as a methodological approach to software development, governed by a few fundamentals.

A method or an approach, which claims to be agile, needs to subscribe to the Agile Manifesto, be based on Agile values, it should adhere to the Agile principles, and should contain a suite of Agile practices that can be carried out by various roles within the project. These are the basics of agility which come all together when applied in practice. (Unhelkar, 2013)

2.1.1 AGILE MANIFESTO

Agile Manifesto was created in 2001 by a collaboration of some experts that decided to get together and give birth to a better and faster way to develop code. They realized a public declaration of just 73 words in order to describe agile philosophy with all of the principles, beliefs, and guidelines which characterize the agile as “a value statement and not a concrete plan or process” (Unhelkar B., 2013).

The Manifesto supplies four value statements:

1. *Individuals and interactions over processes and tools*: it means that, differently from traditional systems, people and their interactions acquire greater values than do processes and tools. The logic behind is that people are more valuable with respect to processes and tools because they are the ones who assume the project and do the work.
2. *Working software over comprehensive documentation*: the agile manifesto states that working software is more valuable since this is what the customer appreciates more. Even if comprehensive documentation has its usefulness when compared to working software it has little or no value by itself.
3. *Customer collaboration over contract negotiation*: this value implies that being flexible, with the contracting process that remains more adaptable, is preferable with respect to being rigid and unwavering based on a contract. Traditional project management marks the project scope in advance and this may turn out to be time consuming and costly to modify. For this reason, collaborating with customer, following the agile framework, is more valuable since it supports the changing nature of software requirements, technology, and even the end client. (Canty, 2015)
4. *Response to change over following a plan*: it becomes more preferable to respond to changes rather than following a plan, although planning on an agile project is minimal. On the one hand, it can take considerable time to bring the project back into alliance with the project plan; on the other hand, the agile plan is open to project changes and expects them. Therefore, what is different is that working with the agile agenda is more flexible and faster as opposed to following a plan and making changes. (Canty, 2015)

The table below resumes the Agile Manifesto concepts in a more schematic way.

Table 2.1

AGILE VALUE	RATHER THAN	TRADITIONAL VALUE
Individuals and interactions	Over	Processes and tools
Working software	Over	Comprehensive documentation
Customer collaboration	Over	Contract negotiation
Response to change	Over	Following a plan

Source: Candy, 2015

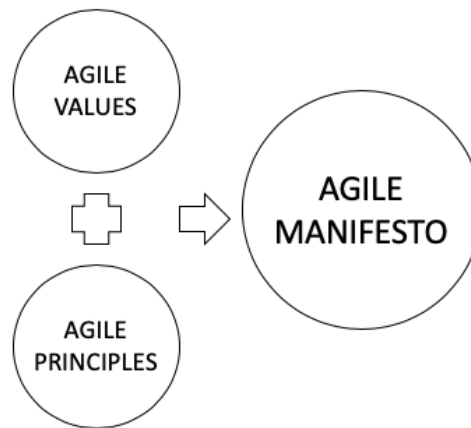
These methods don't follow the detailed and standardized templates for documentation and, moreover, they don't present step-by-step description of tasks and activities to be implemented, as happened in planned development approaches, because the Agile Manifesto aims to counterbalance the formal methodology-based overemphasis on documentation, tools, negotiation, and planning.

In conclusion, its main role is providing the basis for all agile methods, indicating the areas of a project that need greater importance and releasing development efforts from the mandates of formal phases, as for example design, code and test. (Unhelkar, 2013).

2.1.2 AGILE VALUES AND PRINCIPLES

The agile Manifesto is composed of two elements, as represented in the figure below: values and guiding principles. To "be agile," you need to put the agile values and principles into practice.

Figure 2.1: Components of Agile Manifesto



Source: Canty, 2015

What agile values look for is minimal formal policies, processes and procedures, which become necessary in order to deliver a product or service.

Embedding these values in the organization allows faster reaction to change compared to the traditional systems and lifecycles. Moreover, their adoption enables the spreading and diffusion of agility across the whole organization, resulting in an agile culture for the company, instead of agility restricted to a project. (Unhelkar, 2013)

In this way, agile values constitute the basis for human resources (HR) activities providing hints for the recruitment of new personnel, development and up-skilling of existing staff, and an overall basis for the understanding and enhancement of agility across the organization.

Moving agility toward a system of values, these end up being applied holistically to almost all areas of an organization, such as information technology (IT), accounts, payroll, marketing, sales, inventory, and so on.

Since values are closely connected one another, it can be said that changes in values lead to an overall change to the “value system” of the organization and subsequently to projects. The same can happen between individuals, in fact if one or two persons adopt these values, the results will be a “flow-on” effect on other members of the team. (Unhelkar, 2013)

In addition to the agile values above discussed, 12 guiding principles were developed and applied by the agile practitioners:

1. Satisfaction of the customer: the highest priority here is to provide customer satisfaction through early and continuous delivery of valuable software. How can this be achieved? By engaging the customer in regular, ongoing conversations. In this way, the period of time between when the requirements arise and the output is released is shorter, enabling the organization to obtain rapid customer feedback.

Having a customer and a value-based focus is, therefore, the core point of this guiding principle.

2. Accept changing requirements: the agile principle states that changes are welcomed irrespective of when such changes appear in the development process, demonstrating the agile framework's flexibility and adaptability. On the contrary, traditional planned methods tend to refuse change requirement which occurred late in development.

In addition, the principle aims to encourage the teams to take advantage of the change for customer's competitive advantage, paying particular attention in value-added changes. The focal point to not forget is that agility is all about speed.

3. Frequent delivery: the frequent delivery of working software is promoted here in order to receive early feedback instead of proceeding in a project getting the feedback at the end, in order to allow easier and faster application or modification of requirements during the development. This approach is convenient also for avoiding that a project ends up in the wrong direction, involving higher costs and a waste of time and effort. The frequency stated can range from weekly to a couple of months, electing the shorter timescale as preferable. (Unhelkar, 2013)

4. Constant collaboration between business and developer: according to this principle, developers, users and business stakeholders should work together throughout the project and have constant face-to-face interactions, because phone calls, e-mails and so on are a slower and less efficient way of communicating. This way of working on a project will end up in a common understanding between the business problem and the corresponding solution that is meant to help the business.

5. Favour self-motivation of individuals: since the agile methods are based on self-directed and self-organized teams who can be entrusted with getting the job done, individuals should be provided with the right environment and support that they need in order to deliver successful solutions. In this way, there will not be micromanagement in agile projects, eliminating the need for minute planning of tasks and their tracking by project managers, with the result of project getting completed faster and more effectively.

6. *Face-to-face conversations*: this method becomes fundamental to convey information to and within a development team in order to create a common understanding of the problem as well as the goal of the project. In particular, onsite face-to-face conversation between the developer and the user allows a faster and more efficient communication, where misunderstanding and inconsistencies can be discussed very quickly, leading to a reduction of delays and eventual errors, and a faster delivery of the product. (Canty, 2015)

7. *Working software as measure of progress*: how well the software works can be considered a measure of the progress in the agile project. At the beginning of an agile project, the focus of the team members is on the actual delivery of the working product which is also tested. So, the final delivery of that product represents just an incrementation over what was already a working piece of software. Therefore, the aim of this principle is helping in avoiding extensive planning and management of individuals and ensuring the availability of the working product throughout.

8. *Promotion of sustainable development*: this principle's goal is supporting the teams' work-life balance rather than excessive hours every week, since working at a sustainable rhythm may be more productive for the team with less project tension. Agile projects do not favourably consider long workdays but look upon sustainable pace as a win-win situation for all the people involved in the project, becoming an advantage also for the company which does not want overworked and stressed out teams.

9. *Attention to technical excellence*: the value this principle points at is having an easily sustainable design based on its technical excellence. When developing a product, changes are applied to the design in order to deliver high value to the final customer. Technical excellence together with good design help to improve the agile methods paying constant attention to its design. This will support the ability to respond to change very quickly. Also individuals may take advantage of technical excellence cause it encourages them to take up the opportunity and the challenge of excelling in technologies by "exploring and applying new technologies to the solution, ongoing improvement of code and design, regular testing, and incorporation of feedback from the customer within the solution." (Unhelkar, 2013)

10. *Simplicity in design*: the mere objective of this principle is making people understand that complex systems are always designed starting from the simple ones with basic constructs; they are not developed as a complex system from the outset. By concentrating only on the necessary components of the product, the developer is able to reduce the risk,

in fact too much complexity may increase the project risk. So, the development team should focus only on building what the customer requires, without incorporating costly and unnecessary features and refinements because this will lead also to a faster actual delivery of the product.

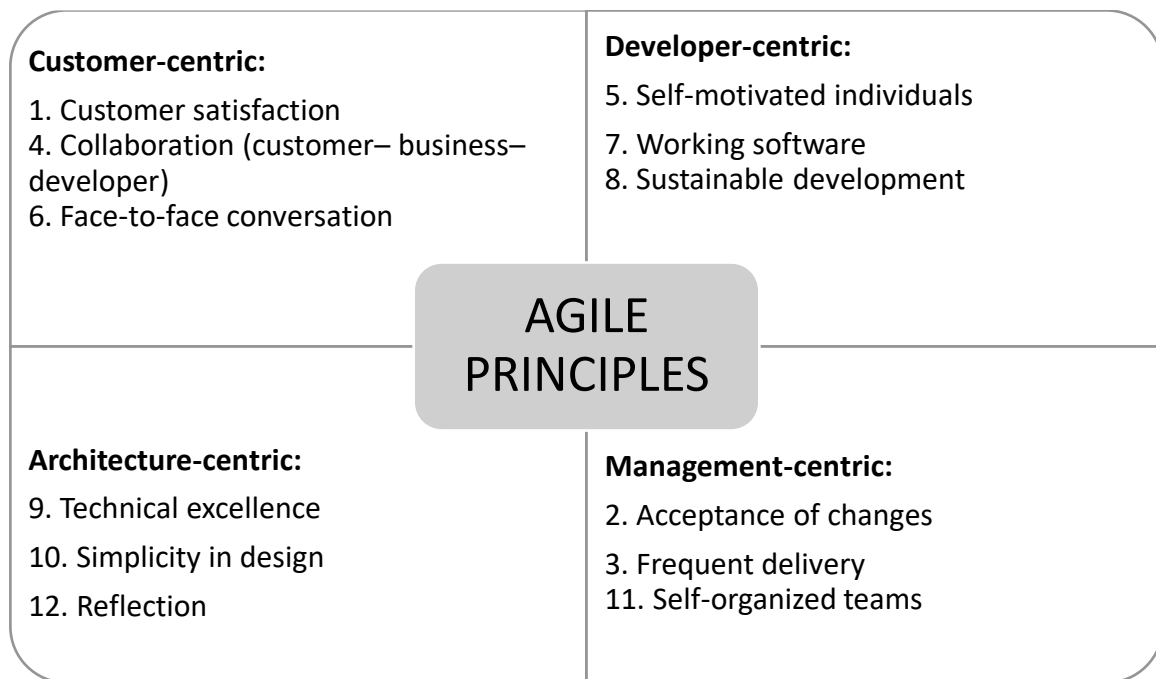
11. Self-organizing teams: this principle promotes self-organizing teams because, following agile methods, when people have the possibility to self-manage themselves, they produce better work. Moreover, they don't require supervision since team members align themselves toward a common goal, producing excellent outputs, being free to work in the manner that suits them and without interference from others. This will result in a double advantage, on one hand the effort used to manage the teams can be exploited to ease the team's function, on the other hand the reduction of supervision will lead to a higher degree of trust.

12. Regular team reflections: the last guiding principle wants to explain the importance of the regular intervals' reviews on the output. Agile methods support the idea that lessons learned must be captured and addressed during the project and not waiting until the end of it. In this way, teams are able to adjust their activities and refine the output. Reflection is also useful for team members to consider the many architectural, design, operational, and functional constructs which result from previous projects to be applied into the current project and improve the outputs' quality. (Candy, 2015)

As illustrated in the figure 2.2, an easy way to understand and remember the twelve agile principles above discussed is grouping them by context in which they operate:

- Customer-centric: those principles which concentrate on providing value to the final consumer, posing particular attention on the external aspect of the project.
- Developer-centric: those principles which help the team members to work effectively and efficiently since they focus on project from the internal point of view.
- Architecture-centric: those principles which are focused on the working style of the team, providing the basis for stability and continuous improvement of the product.
- Management-centric: those principles that are useful for the team to reduce administration costs of time and effort, improving their working style as a consequence of self-organization. (Unhelkar, 2013)

Figure 2.2: Agile principles grouped by context



Source: Unhelkar, 2013

2.1.3 AGILE PRACTICES

The above-mentioned values and principles can be considered as the ground for various practices of different type. Every organization, through the practitioners, will identify their needs, and based on them they will select the most suitable practices to apply to their process and projects. Moreover, if apparently these practices seem to be apt just for software projects, they can fit both software and non-software projects.

The first ones are **Analytical practices**, whose aim is exploring and helping understand business needs and requirements together with business directions, risks and opportunities, at the highest level. Through the analysis, it is possible to split a problem into all its components in order to obtain a better understanding of it and design the best solution. Some of these practices are for example *Questioning and listening*, *Root cause investigation*, *Mind mapping*, *PESTLE–SWOT Analysis*, *Risk balancing*. (Unhelkar, 2013)

Another type is **Requirement practices**, which are used for the achievement of formal requirements on functional, non-functional, interface aspects of the system. The requirements arouse from the organizational analysis results. Making regular meetings, debates and workshops are efficient ways to come up with the needs which may represent

the priorities of whom is involved. The final scope is adding value to the business through the formal requirement models.

Development practices refers instead to coding practices which originate from pure agile approaches and are addressed to software projects. They serve to allow fast and frequent working software releases associated with strict interaction with the customer. *Pair programming, Full time on-site customer, Continuous testing, Continuous system integration* are some of the development practices. (Unhelkar, 2013)

Linked to the just described practices there are **Design practices**, such as *Code refactoring, User interface refactoring and Database refactoring*, which point at simplicity even with complex development results.

Project management does not only deal with the management of people rather it focuses on motivating and empowering team single members in order to enable the overall team progress. *Responsible individual team members, Empowered team members, Joint team ownership and Stand-up meetings* correspond to some of the **Project management practices**.

Guaranteeing the quality in agile projects through **Quality assurance practices** will simplify the achievement of quality initiatives as for example requirements prioritization and design refactoring. Then, **Operational practices** play an important role on the general management side by supporting and simplifying daily operations. They are not useful just for the development and servicing of software but also for the entire running of the company, specifically on the business domain. They comprehend the *maintainance of "business as usual" processes, continuous learning enabling and Ongoing measures and reporting for improvement*.

Lastly, **Testing practices** which complement development ones and expand quality practices, but at the same time own some others coming from test-specific processes like Test driven development (TDD). *Test case writing, Test planning, prioritize test cases, execute tests, Facilitate and coordinate* constitute a list of some testing practices. (Unhelkar, 2013)

2.2 AGILE CULTURE

Anthropology considers culture as an unavoidable context in which communities, people and organization live. Accordingly, the organizational culture constitutes the situation in which systems' development occurs.

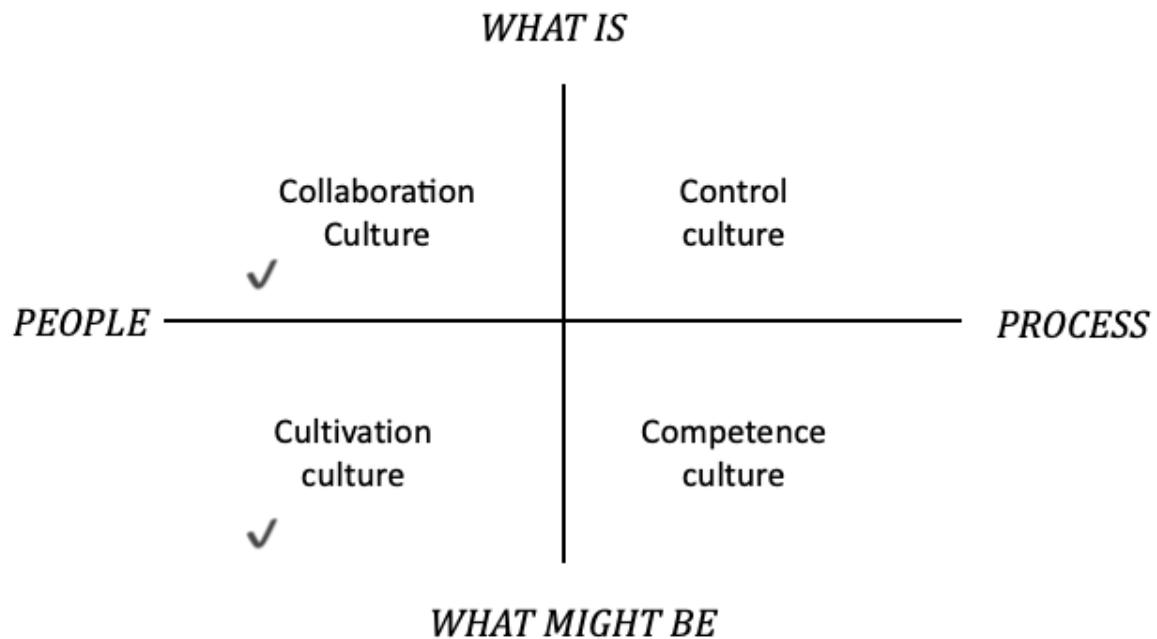
When dealing with culture discussions it is important to highlight that it is a very complex concept with a variety of definitions. "One of the widely accepted definitions of culture positions it as a symbolic system consisting of learned, shared, patterned sets of meanings guiding the actions of cultural members" (Iivari J. and N., 2010)

At the same time the notion of organizational culture has been analysed from different point of view associated to different interpretations, since it comprehends many things within a company, such as ideas, beliefs, values, attitudes, behaviours, practices, artefacts, habits, knowledge and technology. The only factor of agreement is the affiliation to organizational culture of several levels with a different culture-bearers' degree of awareness.

The first and deepest grade corresponds to basic assumption patterns taken for granted by members who are unaware of them. At the intermediate level there are values and opinions regarding what should be done. The third one comprehends artefacts as for example visible and audible culture arrangements. (Iivari J. and N., 2010)

Schneider proposes a cultural model (Narayan, 2015), as shown in the figure below, where the vertical axis stands for what organizations are focused on and the horizontal axis represents the way in which they make decisions. He considers collaboration and cultivation culture as the most suitable types of culture for an agile organization since they base on informal and participative decisions, where people and context are the foremost. While control and competence cultures are characterized more by impersonal decision processes, which are more formal, impartial and policy driven.

Figure 2.3: Agile culture for Schneider



Source: Narayan, 2015

What should be taken into account is that culture is not directly changeable, in fact changes should be made at beliefs level. (Narayan, 2015)

"Culture highlights the type of company you are. But what type of company do you really want to be?" – Moreira, 2017.

A lot of people orientate toward the mere application of agile mechanical processes and practices, some others embrace it just as a distinctive without focusing on the required alignment process. In both cases, companies are forgetting the most important part of the procedure which is putting effort into the adoption of agile mindset. The movement to agile can be compared to a culture break down, demanding and never painless, in which a set of values and principles are adopted. These ones insist on people behavioral and company's culture changes. Hence, it is a complex process which takes time, also years, in fact it could be defined as a cultural journey. (Moreira, 2017)

Moreira (2017) in his book defines this transition as "crossing the agile chasm", in which chasm stands for the jump from the old mindset, behaviors and thoughts to a specific agile cultural perspective, so that the enterprise can enjoy the benefit which arise from agile. When companies cross that chasm, it means they reached an agile mindset.

In conclusion, a cultural shift cannot be imposed from above and it will not take hold unless it is agreed and internalized by people who run it. (Holbeche, 2015)

2.3 WHY A COMPANY SHOULD APPLY A TRANSFORMATION TOWARD THE AGILE

Nowadays the number of industries which are involved in complex strategic change is growing always more. In particular agile development is spreading between companies: the big companies like Google, Yahoo, Symantec, Microsoft etc. are adopting new strategies toward the agile.

The entire ecosystem of the industries is facing a variety of factors, such as the political, cultural, economic, technological and demographic, which are trying to induce change.

The scope of these forces is to be considered globally because they do not only influence the environment in which companies operates but they also reshape their future and what they should do to compete successfully. (Shore J. & Warden S., 2008)

Which is the reason why to adopt agile methodologies? It is not just because the organization wants to increase its productivity. The real benefit comes from the way of working: agile helps a company to work differently rather than faster. Even if it was found that agile teams have high productivity, it is important to remember that in the first phases of the transformation process, they will be less productive because they have to learn how to develop agile methods and approaches. In addition, if the team focuses too much on being productive, they could end up harming it, since they won't put the right effort on their work, and they won't be rigorous enough.

Therefore, the point is that agile development might help an organization to be more successful, furthermore if it is encountering problems in the personal, technical and organizational areas. Agile methods' advantage is focusing on delivering value and decreasing costs rather than giving importance just on the profit. Moreover, if the organization decide to work using agile methodology, it will be able to set expectations early in the project, meaning that if your project turns out to be a failure, the company will have time to cancel it without spending too much money. (Shore J. & Warden S., 2008)

But now the question is: why Vodafone decided to apply the transformation toward the agile? The first reason is the willingness to offer the customer the most engaging digital experience, blending the best of technology and human interaction in a personal, instant and easy way.

What they expect is that a simpler, more convenient and more meaningful experience would boost the NPS (net promoter score), which corresponds to the the index of trust

identifying how much a customer would suggest to a relative or a friend to become part of Vodafone community.

Secondly, they aim at increasing revenues by revitalizing core revenues areas and enabling new revenue areas. Linked to this, Vodafone, through agile organization transformation, aspires to make profitability grow, increasing revenues and lowering costs through Robotic Process Automation (RPA).

2.3.1 THE CHOICE ABOUT HOW IMPLEMENTING AGILITY

As happens to living organisms, organizations, defined as complex adaptive systems, naturally adjust in relation to the context in which they operate, to not die. Therefore, they continuously experiment, discover what works, look for resources to “feed” themselves and find contests where develop and grow. Companies which fail in this sense will not survive. (Holbeche, 2015)

According to what Charles Darwin said, “It is not the strongest or the most intelligent who will survive, but those who can best manage change.” (Holbeche, 2015)

Therefore, the consequent question that comes to the mind is whether agility represents the survival prerequisite for organizations. Endemically, it may seem that some entities could be successful even without adopting the agile approach, as for example University institutions. But what pools every kind of organization is the challenges they have to face nowadays, related to the ability of differentiate themselves in an always more crowded marketplace. Thus, agility plays a crucial role, but even more relevant is changing our perception and thought about change. Today, it is like we are living in a dynamic stability where change has become an integral part of our lives and with ongoing disruption intended as a norm. (Holbeche, 2015)

Considering this as a starting point, organizations should evaluate their needs and restrictions in order to establish whether and how to be agile. They may decide to implement the strategy completely, but they can also apply agile just to some activities or to some steps of the process. Here below I will present the three cases:

1. *Tailoring* which means companies adopt agile activities and practices on precise phases of their process with a focused change since they are not interested in the overall transformation. This choice is beneficial when firms deal with customers who require a rigid and disciplined development methodology. The customization

of agile practices allows them to offer their clients more valuable solutions while meeting their requirements. (Gandomani et al., 2013)

2. *Localization* implies making use of agile methods but with some variations. In this case, unlike the previous approach, companies are in favour of a radical change, but they encounter some restrictions which do not allow them to apply agility to all the activities. The option is either personalizing or ignoring some of the agile activities. This approach becomes an advantage in the initial stages of the transformation or when the ones who undergo the change are not experienced. Therefore, it seems organizations are forced to select this alternative whenever there are necessary constraints in their projects.
3. *Adoption* is when the companies accommodate agile completely. As in the previous situation, firms accept essential changes with the addition of struggling to overcome internal and external constraints to gain the maximum agile values. (Gandomani et al., 2013)

2.3.2 POSSIBLE AGILE CHALLENGES WHEN USING AGILE APPROACHES

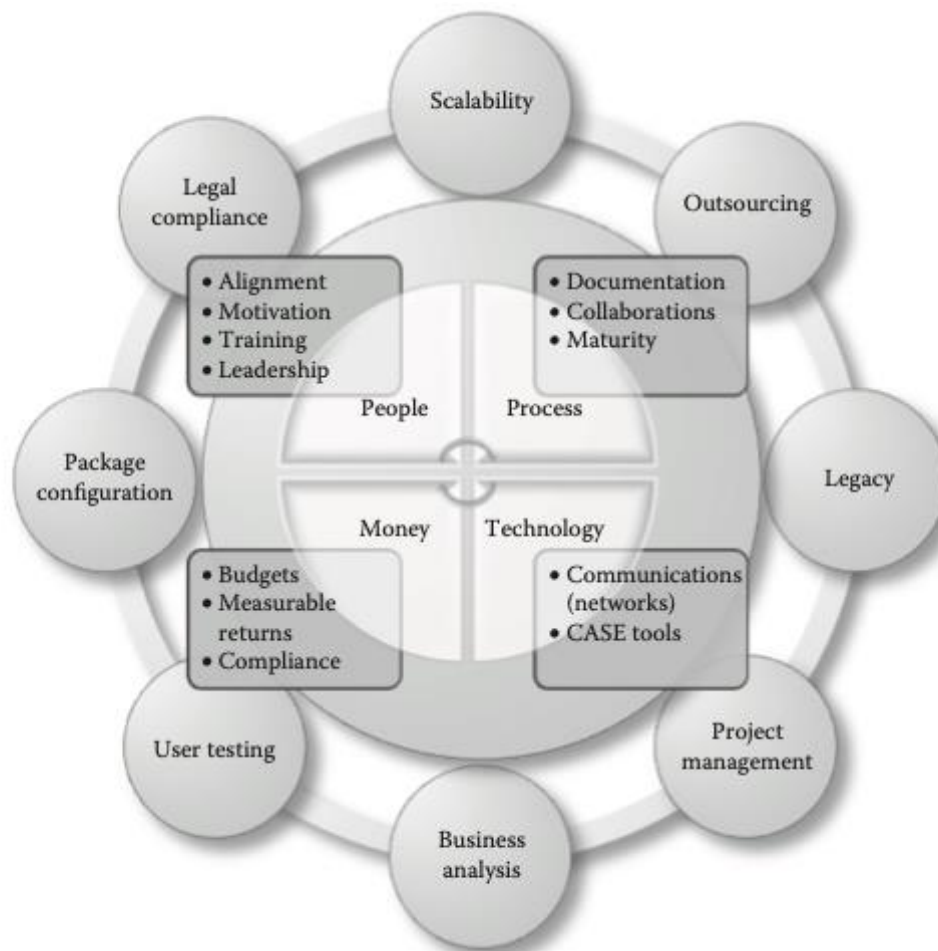
When agile transformation is brought into the organizational environment, it implies a change in all firm aspects, leading to possible problems and challenges. What is really important, therefore, is identifying which are the possible obstacles and limitations, even before the preparation of agile change management strategy. (Gandomani et al., 2013)

The figure below illustrates characteristic challenges tackled by companies which may appear when agile approaches are applied to both development project and business operations.

Starting from the ones related to development project, there is scalability to large-scale projects through for example frequent releases in short development cycles and continuous evolving project direction; the implementation of agile methodologies in outsourced plans; legacy application management together with the legal and compliance issues such as contracts, facilities access etc.; creation of formal and iterative project plans which hold ongoing changes; agile approaches do not favour a formal business analysis which should provide clarity and completeness with regard to requirements, by collaborating with the user; agile approaches demand a high level of continuous testing which may not fit many projects because they are not prepared, and in addition

integration, user acceptance, and nonfunctional testing represent a challenge when dealing with agile since it is more focused on functional development; software packages outline and customization; last but not least the production of extensive documentation required by compliance and audit against the minimalist agile approach toward it. These challenges are not new, in fact they were present even before the arrival of agile methods, but they grew with the increasing relevance of agility spread among industries. (Unhelkar, 2013)

Figure 2.4: Agile transformation challenges



Source: Unhelkar, 2013

Gandomani et al. (2013) recognized that there are different challenges with agility at organizational level with respect to the ones above described. He classified them through the use of four factors: *People, Management, Process and Technology*.

When dealing with people the difficulties may generate principally from alignment, motivation, training and leadership circumstances. First of all, developers at senior levels, who have reinforced their mindset, also through experience, may be resistors, making it difficult or even impossible to change their perspectives.

Cultural differences constitute a relevant element in the organization, as stated above, and may become an obstacle. When moving to agile methodologies, companies may encounter also communication complications. For this reason, there must be a strong leadership upstream in order to avoid confusion on agile contribution to collaborative effort that may derive from delays and doubts in Agile policy decision making. In addition, agile approach may turn out to be a double-edged sword because it encourages shared tasks but at the same time this makes it difficult to recognize the participant contribution and the subsequent performance evaluation. (Unhelkar, 2013)

Management in agile context is crucial and brings along several challenges. First of all, there could be difficulties in creating self-organizing teams, accompanied by unstable agile change management plans but also unqualified agile coaches who have to lead the process of transformation. Another important aspect connected to agile management is the difficulty in the roles to be held within agile teams: for example, project managers having traditional software development background may find uncomfortable to dismiss from previous roles and responsibilities, turning into leaders rather than commanders. Again, linked to the teams, a defective decision making may originate due to discordant priorities, to the lack of commitment inclination to decisions probably because of past dependence on the project manager as well as aversion in taking ownership and inadequate team empowerment. (Gandomani et al. 2013)

Related to the process the first challenge appears in the transition from a traditional to an iterative model, constituting a big change and a possible barrier in terms of business strategies, roles, methods and tools. The use of unconventional approaches on progress monitoring and visibility activities leads to the challenge of operating in this way rather than tracking activities with detailed documents, by for example adopting the “wall” practice in which project artefacts are shown through graphs and post-it notes, combined with stand-up meetings. (Unhelkar, 2013)

Lastly, the scarce knowledge concerning the capabilities of specific agile methods make new challenges emerge.

For what regards instead the practical application of agile methods, financial resources should not be forgotten since their absence may be an obstacle, as for example when the need to enable face to face collaboration instead of document-based interactions arise. (Gandomani et al. 2013)

2.4 NATURE OF AGILE PROJECTS

Agile projects have a repetitive nature that could be better demonstrated through agile charting, which aims at representing the functioning of dynamic agile processes. Agile charting should be read in a way that every cycle in the external cycle imply multiple rotations in the inner cycle. We can see that in the figure 2.5, which shows a general agile process. Here, every increase lead to the movement across one or more iterations which results in the passage of some days.

Figure 2.5: General agile chart



Source: Moran, 2015

It can be observed that the process is characterized by a cyclical nature since in each phase the tasks are repeated. In the figure some pre and post project phases have not been included in order to make the chart easier to understand, such as the preparation of the business case, the revision of benefits, but also all the other activities connected to the

solution development. Another point to be noticed is that the position of the different activities does not have any temporal implication with respect to the execution of the different activities. Actually, there are agile model created as template for the enterprise, but normally it is better to create an agile model for each project to take into consideration the specific requirements. In fact, documenting how the company is working at the agile project, by using the template as starting point and then developing the process, has been discovered to be always a good method to understand the baseline through which identifying the process improvements. (Moran, 2015)

Agile charting represents a powerful communication instrument that could be used from the beginning of a projects to schedule when specific activities have to take place, as for example stand-up meetings which should occur at the opening of each day or also retrospective workshops, which instead should be made at the end of each iteration. Moreover, agile graphs are important to point out when there are deviations or modifications with respect to the guideline to be undertaken. The last remarkable note on agile charts is that they can be used also for other purposes such as soliciting feedback, specifying quality gates for increments or indicating when specific tools need to be applied.

Looking again at the figure above, I will describe briefly a general team day working in agile. Starting from the inner cycle, a typical agile day starts with a stand-up meeting between the members of the project. Within the day employees can develop, integrate and test the code through sharing in order to ensure a tight feedback loop. At the end of the day it is possible to perform a complete version in order to check the stability and readiness of the code. Continuous integration makes technical practices highly automated whether daily performed. (Moran, 2015)

In the next cycle, we can see that each iteration starts with a planning session in which the priorities and estimations are defined. During the iteration the information could be updated with relevant information, and, additionally, it is possible to test user acceptance and track progress, demonstrating the transparency which often characterized agile environments. At the end of the iteration process the project team illustrate the work done to the stakeholders. To conclude the iteration, the team explains their own experiences and what they learn during the process.

In general, teams, created to be agile, are small and composed of specialists who are able to carry out different type of tasks. The representatives of customers are expected to be

highly engaged, they have to participate to the planning and be ready with short notice to contribute whenever agile team ask for it. The acronym CRACK (Collaborative, Representative, Authorized, Committed and Knowledgeable) is used to describe the required features for representatives, which are exactly the opposite if compared with non-agile approaches.

In general, a team should balance the need of adaptation, for example innovation, against the pressure of the potential standardisation. (Moran, 2015)

2.5 AGILE IMPLEMENTATION IN VODAFONE

Vodafone's path towards a more digital and agile organization did not start in 2017, in fact they had already understood that cross-functional work was better, especially in marketing offers that require the consent of various departments to be released on the market. In fact, in 2016, the so-called Red Farms had been established, in which, not steadily, all the interlocutors of a project met and worked according to a common timeline, with the final goal of obtaining a reduction in time to market.

Therefore, with the agile methodology they wanted to give stability to this type of organization which corresponds to a matrix structure, in which there are people who work on the purpose and those who offer skills.

In 2017 they started with 5 squads, which correspond to stable and structured cross-functional teams focused on: My Vodafone App, Campaign Automation, Customer Onboarding, Digital sales and Second brand. With this first step of the transformation process, Vodafone aimed at testing agile, increasing awareness and experience.

Today, more precisely in October 2019, Vodafone Italia presents 6 tribes and 49 squads which have the goal of Increasing productivity of the entire organization, flexibility and adaptability to market requests.

This transformation process took place in a reality where saying big is an understatement, leading the organization to tackle some key challenges:

1. *Coordination intra/inter-chapter/tribes*: in this context, referring to what was explained above regarding the chapters and tribes, the challenge for Vodafone is facilitating the coordination between these two work teams both within them and with the entire organization.

2. *Change of mindset (e.g. comfort with failure, risk, ambiguity)*: this represents one of the major challenge for Vodafone since it refers to a culture change, from a traditional system, in which employees' thought was that success, the only important goal, is achieved through the vertical growth, in which mistakes were not allowed, supported by consultancy schools in the background; towards a more agile system, where making mistakes is a reason for growth, you learn from mistakes, and where the real advantage is knowing how to listen together with being able to hire people who are right for the context, who are collaborative and willing to share knowledge. Netflix CEO talked about "the brilliant jerks", people who come out with unquestionably acute and inventive ideas as anyone else in the organization, but whose behavior is not collaborative and participative towards the rest of the organization, since they feel themselves to be above the other employees and free to follow their own rules, creating real issues within the company. For him, they cannot be part of his organization since the cost to effective teamwork is too high. This way of thinking corresponds to what the new Vodafone aspires to.¹⁵

Always regarding the mindset, agile works well between the complex and the complicated, working for experiments, so there are no longer the best practices in which there are those who think and those who perform, but the good practices that arise from the interactions and collaboration between them.

3. *Heavy reliance on Legacy IT Systems*: the big obstacle for Vodafone is that the IT systems are developed and controlled by an external supplier, who owns the knowledge. This is against one of the agile principles, that is, being autonomous and end to end. Therefore, their challenge is to be able to internalize these activities so that the people, who are involved in those projects, sit at the table with the colleagues of business, marketing, etc. in order to discuss and find better solutions.
4. *Right balance between agile practices and required financial activities*: Vodafone's goal is to find a balance between what was the segregation of the roles of the traditional system and self-management. So, working according to the imposed governance, but studying the process in the best possible way.

¹⁵ <https://www.inc.com/jim-schleckser/why-netflix-doesn-t-tolerate-brilliant-jerks.html>

In order to better understand the agile model used by Vodafone, I start by describing what are the principles from which the company took inspiration during the transformation process. They referred to the principles of work motivation cited by Daniel Pink, who is not mentioned in agile textbooks, but in himself says things that have a lot to do with agility. The principles they used as fundamentals in their agile organization are:

- PURPOSE: having a clear purpose and understand how your work makes the difference
- AUTONOMY: having autonomy in what you do, so having control on your work, time, decisions
- MASTERY: having the “right” challenge, using and improving your skills

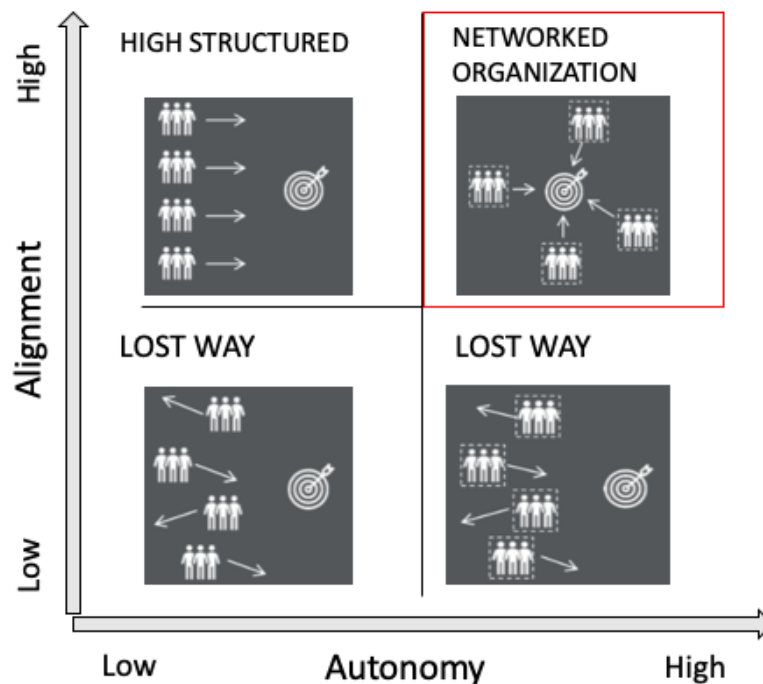
These three have been assigned to three different roles. If in a traditional organization the manager takes on all the three skills, in an agile organization these are distributed to three different figures:

- *The product owner leads with purpose*: he establishes priority, takes responsibility for product quality, creates adaptive focused long, medium and short plans, leveraging on fast feedback loops and leadership.
- *The squad works in autonomy*: team members are those who have to be autonomous in working, who decide how to do things because they have the skills and auto-organize around given priorities.
- *The chapter leader develops the mastery*: he represents the hierarchical head of the people who are in the squad, and he is the one who unites the figures who belong to the same professional family. He is highly specialized on vertical skills and supports mastery achievement in specific skillset.

In this way the power is less concentrated on a figure and is more distributed, making everyone feel more responsible.

So, what do the agile coaches actually do to support this transformation? The goal they give is to achieve high autonomy and high alignment, as shown in the matrix below.

Figure 2.6: Agile mission matrix



Source: Documenti interni Vodafone, 2019

Today they are highly aligned but less autonomous, as they are still very structural, but what to achieve is becoming a more collaborative networked organization. The situation in which they find themselves is however preferable with respect to having high autonomy and little alignment on the target because, in that case, performance would be lost. They push towards this mission by working at all levels of the organization, first because the interactions are very strong, secondly because their purpose is to become digital tech company as a whole. So, even where you don't work with an agile framework because it is not convenient to apply it, for example in finance, the mindset must permeate. It is exactly here that agile coaches intervene as agents of change for the company: through the agile practitioner they work at the squad, tribe and cluster level, while the agile coach deals more with the company at a higher level.

Since there are few of them with respect to the total number of people working in the company, they are forced to prioritize and they do it according to different methods, one of these is putting the squads on a matrix based on impact and learning: impact means how much they can be effective working closely with squads in terms of agility adoption, mindset, practices, because there are squads in which even if you work on it you are not

able to change that much, also for the context. Learning refers to what they can learn as agile practitioners working with squads that they can reuse in other part of the organization, as for example patterns, good practices, interactions, problems, issues, etc. Another measurement factor they use is analysing how much impact squads have on business value, and this is communicated directly by the tribe leader. Based on this they decide on which parts of the organization to put their full commitment.

Another way used is creating an organization network analysis, in which the matrix is removed and the squad where the agile has the most impact, learning and that creates the most business value, is put in the centre. From that point they look for the squads connected with the selected one, in order to focus on the squads where there are more connections because it means that there are critical points, therefore, working on the central one, they are able to impact also the ones which are linked to it.

They tend to use the first method for departments that have recently become agile, while the second for those who have already entered this methodology for a longer time.

Vodafone worked also on some levers, more precisely HR levers that insist on people, so that transformation takes place starting from people, for the goal of a business vision. These levers are:

- *Ways of working*: speed, autonomy, flat hierarchies and change;
- *Resourcing and Employer brand*: strong focus on skills, so starting from a survey we understood what digital skills were needed to support the transformation, so that people felt confident that they had a pool of knowledge and tools to be able to face this change. So, they tried to understand where it was necessary to do insourcing, hiring people from outside and where instead to implement re-skilling programs for the internal staff, in order to transform their role in the organization.
- *Learning and Development*: Vodafone worked on key development processes of people who are Learning and Development. They adapted certain processes that historically take place in a certain way, one of all the focus on performance, and gradually iterated to amplify what can be the power of a program of this type with the aim of dropping it in a coherent way on agile organization, making sure that consistency is maintained between what people are asked to do at work and how they are effectively evaluated and supported in growth.

- *Office space*: This process is supported by a rather important hardware component which is the workspaces. They favour both the collaborative aspect and the individual concentration.

This program was managed in a certain period of time, which saw them "on the crest of the wave", but still it is not completed, it is a continuous improvement process since along the way they realize what to change or modify.

The methodology they based on is launching the idea even if it is not completely perfect, this allows the company to get quick feedback and results that they can improve. Their logic is that it is no possible to have all the pieces of the puzzle fixed otherwise it would take too long to release the product and understand if it will be a success or a failure.

CHAPTER 3: ANALYSIS OF AGILE IMPACT ON VODAFONE IT DEPARTMENT AND DIGITAL GOVERNANCE

In the previous chapter I concentrated my attention in describing what agile consists on, both from the literature and company point of view, but also on how it was implemented within Vodafone company since it led to a firm reorganization.

The aim of this chapter instead is focusing on IT department and how agile methodology changed it after its introduction, followed by an incremental part which will be centred on IT governance, in order to give a complete overview of the transformation applied in this area jointly with its impact.

Starting from a review of the digital transformation in agile context, which is happening in nowadays organizations, I will go on by describing the IT organizational structure, dealing with how it mutates in order to cope with the transformation, moving from a traditional structure to a more innovative one. Together with the structure I will delineate the new mission and objectives they fixed to go on with the continuous improvement.

IT may be depicted as the air we breathe to survive, like the oxygen in order to not suffocate. In a world where IT works perfectly none would notice it since there will be no complications and it will be always ready-to-use. This is exactly what people expect nowadays and they will get really distressed and disappointed about non-continuously running services, whether they are apps or software. What clients require is not the explanation about the reason why something went or is going wrong, they just want a stable, reliable and performing product. (Graesser, 2019)

For this reason, when talking about a company transformation implementation, it becomes essential to analyse also the IT department. The integration of digital technology and business strategy leads to strategic alignment.

As last part of the chapter, my focus will be on the Vodafone IT governance, another central aspect, and particularly on how it mutated in accordance to the organization change.

3.1 DIGITAL TRANSFORMATION AND AGILITY

Digital transformation entails the changes associated with digital technology applications, which make indistinct the line between the real-world and online-world interactions with the customer, allowing the companies to offer a continuous and enriched experience.

In order to become a digital business, a functional revolution must be involved, accompanied by organizational agility. The starting point is the analysis of the status quo, mapping the customer journey from the past to the future, meaning all the touch points the consumer has and will have with the business. When a digital transformation is taken into consideration, the aim is increasing the consumer digital touch points and improve the functionality of the existing ones. (Narayan, 2015)

For example, the Singaporean Grab company owns an app through which people can book their services while their website is just an informational tool, where you can get info about the firm, such as how it works, the services they offer, etc. Therefore, what they can decide to do is allowing online service booking through the website, which is nothing more than ameliorating the already existing touch points. The just mentioned tactic can be called channel enhancement. But this is just an example of how a firm can implement a digital transformation. All the approaches and strategies chosen will imply a modulation of existing operational processes and IT systems. (Narayan, 2015)

Investment in digital transformation does not automatically lead to the achievement of the desired outcomes, because it does not concern any single technology. When companies point at becoming digital, they should not concentrate just on launching more mobile apps, moving to the cloud, the automatization learning or all the other things that people tend to attribute to it.

McKinsey & Company¹⁶, through a recent study, discovered that the investments many firms did to go on cloud were not helpful in terms of transformation goals.

What can be the reason? The things stated above are not wrong, they can be considered part of the digital transformation, but the focal point is achieving an ongoing state of IT agility and responsiveness that allows firms to adjust according to changes of the dynamic marketplace and of customer preferences. Achieving IT agile represents therefore a

¹⁶ <https://www.forbes.com/sites/googlecloud/2020/01/22/digital-transformation-isnt-a-project-its-a-way-of-operating/#4bd72bb77b6c>

precondition to create the leverage which will produce varying business outcomes. Organizational agility alone does not transform the final results, but it is a significant ingredient for digital transformation, leading to an evolution in the way a company interacts with customers, suppliers, partners, and find new ways to make money.

Nowadays it is quite common for enterprises to have valuable digital assets, both functionality and data, which become strategic if they can be used, shared, recombined, associated, encountering little or no resistance. Thus, what is important is not where a service is placed, which can be in the cloud, in on-premise servers, or both, but the ability of the company to move the service to the more advantageous environment when necessary and beneficial. (Zavery, 2020)

Hence, when saying that agility should start with IT architecture, it denotes again the readiness through which firms take advantage of their competences and potential for different aims.

Accordingly, it might not be fundamental that a mobile app or software comprise specific features and functionality, but what matters is its flexibility and versatility to re-adapt for future new purposes.

This may be considered a radical change for many businesses, in particular for the ones which are used to monolithic architecture styles, in which the monolithic software is characterized by autonomy with interconnected and interdependent components, in a tightly coupled architecture. In this case if just one component of the program needs to be changed or updated, the entire application has to be rewritten consequently.

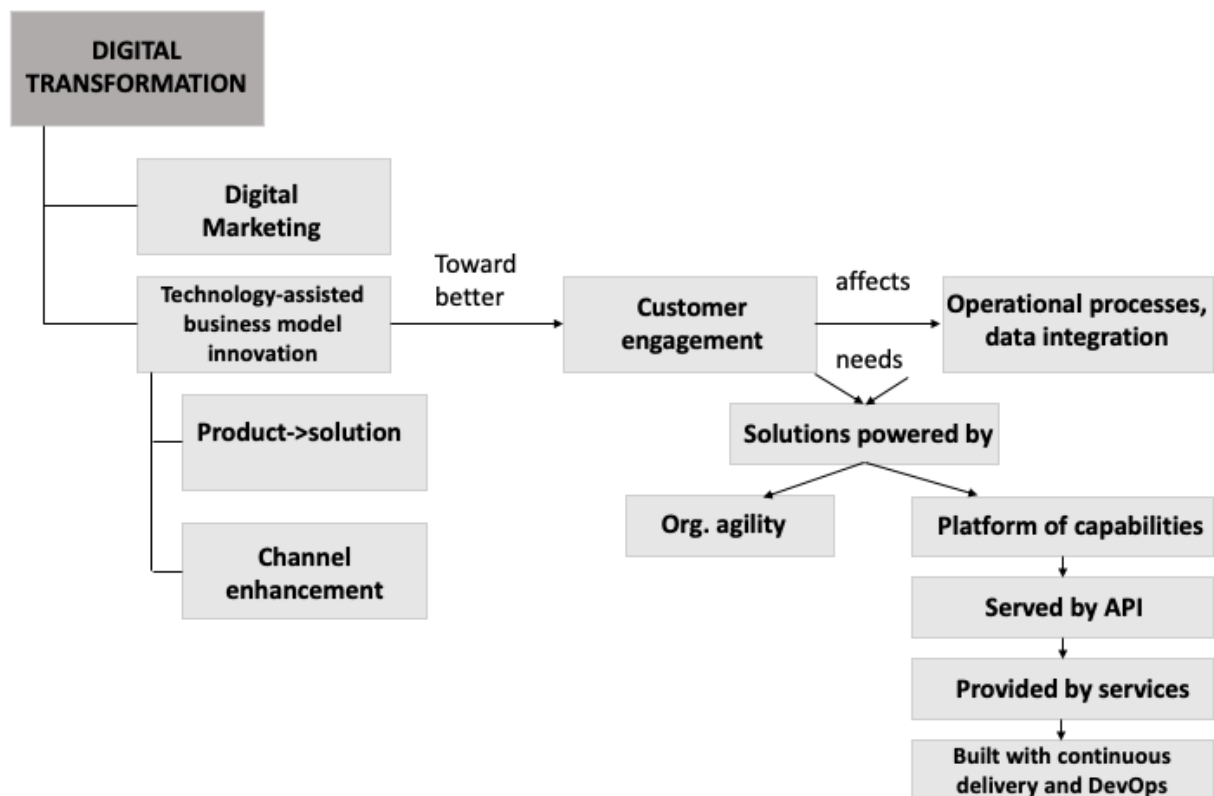
The following approach makes the process much more difficult since developers cannot work autonomously, on a single piece of functionality, without impacting the colleagues. The consequence is an overall reduction of process speed together with the possibility of introducing new digital experiences to the clients.

The solution is being able to disconnect the existing dependencies in order to unlock new opportunities and deliver new efficiencies through agility. (Zavery, 2020)

In fact, digitally skilled organizations, instead of monolithic applications, are constructing mini, single function microservices, which are then put together in order to develop applications and digital experiences. These microsystems are useful to separate functionality from the application since they can be arranged independently, enabling developers to work without hindering each other's way.

Thus, the result is a shift from laborious development teams to smaller, more rapid and more autonomous ones, which can produce and release more quickly new functionality and practices, learn from them through feedback loop and then iterate, boosting the company's overall rate of innovation.

Figure 3.1: Digital Transformation representation



Source: Narayan, 2015

Is it possible for a company to not go digital? It's unquestionable the time, patience and investment required by this process, but nowadays going digital is no more an option, it is becoming a necessity. As stated by the Co-Chairmen of the Centre for the Edge at Deloitte

John Hagel, "There is a tendency to see digital technology as an opportunity or choice. However, the mounting pressures of a rapidly shifting business landscape are turning digital from a choice into an imperative. The longer a business waits, the more marginalized it will become."¹⁷

¹⁷ <https://digitalmarketinginstitute.com/blog/the-what-why-and-how-of-digital-transformation>

3.1.1 DIGITAL VISION

Today our lives are surrounded by digital transformation in everything we do, starting from how we do business to the way we interact and communicate each other. Organizations, therefore, fight every day to adapt and stay relevant in the market, but beyond digital transformation there is much more than the carrying out of the best technology, and this represents the real difficulty. What they have to make sure of is the alignment of structure, tasks, culture, leadership, objectives and digital vision. (De Martini, 2019)

Digital transformation appears to be a necessary strategy if companies want to reach agility, which corresponds to the capability of predicting market changes through the collection and processing of big amounts and variety of information but also the ability to understand and satisfy customer preferences by monitoring and rapidly improving the products and services offered. Thus, it can be said that everything rotates around information and how it is processed, hence its collection, interpretation and synthesis in the corporate decision-making, in which digital transformation is the enabler.

The important aspect is organization mindfulness which will facilitate the management of digital technologies also limiting the possible rigidity they can cause. In addition, it benefits companies by catching possible threats and by generating ready-available responses to these. (Li H. et al., 2019)

Two possible approaches are taken into consideration when dealing with digital transformation: the first one reflects a total concentration on the internal operations' enhancement, while the second one aims at finding ways that provide future growth.

Which is the best one to cope with digital transformation within an organization? A combination of the two. Sometimes companies decide to apply it just because they look around and they become aware of its usefulness as competitive firm, but they don't realize how risky it is to not have an explicit digital vision. Therefore, the journey toward digital transformation should start with a clear and communicated digital vision and strategy, based on a real problem. In this way, all the people involved will feel part of it and will understand the exact use of technologies. (De Martini, 2019)

Despite the essential nature of the change, keeping in mind the customer and where the potential lies are key elements in order to create value and succeed. Sometime, making little improvements in what causes discontent for clients, will result in a big difference.

Certainly, companies may take advantage of the application of cutting-edge technologies in order to become more digital both internally and toward the market, but what really matters is having the right vision which permit employees to work efficiently and release the best products. (De Martini, 2019)

3.2 IT WITHIN THE ORGANIZATION

In the 1980s, the diffused belief was that the competitive advantage source derived from the industry structure. Later, during the 1990s, researchers, through numerous studies, came up with the resource-based vision of the organization in which the focus is on firm's internal factors. Today, new necessities and challenges have been emerging due to the increased diversity of international business, leading companies to revisit their internal setting with the aim of enhancing the performance, by employing a lot of resources.

Recently, new findings came out from research in which three elements are identified as enablers of additional value to established competitive advantage: business structure, strategic orientation and Information Technology (IT). (Chatzoglou P.D. et al., 2011)

In particular IT embody the organizational component which firms are increasingly implementing, in response to expected changes in the environment. Investing in IT is becoming a relevant issue within companies since it may have a strong impact on business results, in line with the strategic, structural, and environmental dynamics.

Many studies have been made in order to analyse and define the IT impact on companies' competitiveness, which led to contrasting results: some found out there are practically no effect on productivity, others, on the contrary, detected a positive influence on performance. What combines all the conflicting opinions is that the aim of investing in IT corresponds to the willing of improving organizations' competitive advantages. In order to obtain that, an alignment must take place between business and IT strategies and structures. (Williams, 2013) IT strategy stands for both environmental examination, which means grasping possible industry technological changes, and IT tactical employment; IT structure instead denotes planning, control, acquisition and implementation of IT. Therefore, IT, in order to be efficient, has to adjust to business structure, strategy and setting. (Chatzoglou P.D. et al., 2011)

But are there elements to design a perfect IT? Graesser (2019) has identified eight major ingredients. The first one is the **Platform**, which represents the focal point of IT, no matter

its architecture simplicity or complexity, the most important aspect is its technology together with its shape, which should be fantastic, its processors and components, which should be maximum 3-year-old, otherwise hardware could get outdated. When platform is internally managed, the possibility to obtain its perfect operation increases, since firm can own the complete knowledge of its functioning. Preferring platform outsourcing in fact may lead the external owner to guide business decisions through IT department, since you are not aware of how the platform works. Therefore, in order to reach a perfect IT vision, platform knowledge should be controlled within the own organization by IT leaders. The second one is the **Budget**, which corresponds to the spending for IT and its continuous monitoring, since adopting a technology platform as the one previously stated, may be expensive. The task of IT leaders is planning investments wisely, in which the budget planning and the digital vision of the firm should be aligned. They have to be proactive in understanding what might happen in order to avoid possible technology failures.

Given that IT budget does not comprehend just hardware and software, learning and upskill should be included because people working in IT should own the knowledge not only about technologies but also about their interplay and interfaces together with their impact. Therefore, the perfect IT vision is obtained by investing in precautionary measures and promoting ongoing learning and knowledge. (Graesser, 2019)

Another one is **Benchmarking** with other IT departments of companies having similar dimension and working in similar industries. In this way, through specific parameters, firms can check their IT efficiency and effectiveness. The perfect IT organization presents high maturity levels with regard to the dynamic management of operations, application and infrastructure, and offers high value in terms of company growth. The perfect IT in this case corresponds to an, as lean as possible, IT governed by a digital vision.

The fourth element is the **Team**, which should be composed by members who are both skilled and engaged, because the hiring and dismiss of workers lead to additional effort, onboarding time, and budget money.

Hotspot represent the fifth ingredient, in the sense of identifying critical points as soon as possible through permanent analysis and examination. Therefore, being able to recognize the possible hotspots and threats is a key success factor toward a perfect IT.

Communication, Integration and Customer service, are other three relevant aspect which cannot miss in order to reach the perfect IT. Within the age of digitalization, open

communication, integration of IT into the company and IT focus on customer satisfaction become fundamental.

Lastly, **Innovation** which refers to the generation of always new ideas, the design of new approaches, thinking up go-to-market channels and processes and ability to release prototypes rapidly. In this way, the result will be a stimulating, attractive and committed IT organization. (Graesser, 2019)

To sum up, business-IT alignment is considered as a relevant aspect which supports the development of cohesive IT and firm strategies, allowing companies to concentrate on IT application in order to enhance the business. (Chatzoglou P.D. et al., 2011)

3.2.1 HOW VODAFONE IT DEPARTMENT CHANGED WITH AGILE METHODOLOGY

The agile context has changed the organization of the company as well as its hierarchy. It can be said that when an agile transformation is applied, the hierarchies are killed, and the skills tend to smooth over in unique teams both on the business and IT worlds, which in our case correspond to the squads.

As said in the previous chapter, the CEO informed the department that he felt the necessity to change the firm's strategy to keep up with today's constant changes, looking at companies that are not only telco but more tech companies, such as Spotify which represents the model Vodafone decided to follow and take inspiration from. But why Spotify? Because it represents the world's largest music streaming subscription-based service provider in number of subscribers, being able to cope with the rapidly changing music industry. The company is smart in understanding where to focus on, in fact they put particular attention in enhancing the consumers' music listening experience through data-driven personalization services in order to provide unique and customized content. Industry experts stated that their success depends on their ability in managing the business with agility, which allows them to compete with big digital rivals like Apple and Amazon.

In fact, the dynamic changing times led the firm to move first to the scrum-based structure and, later on, to the current squad-based structure, where each squad represents a small autonomous and cross-functional team working at a long-term mission in line with the one of the entire company. An internal motto was created in order to manage the difficulties arising from squad autonomy: "be autonomous but don't sub optimize"

(Agnihotri A. & Bhattacharya S., 2019), like a jazz band in which each musician represents the squad member, playing his own instrument but, at the same time, cooperating with the other musicians, who in agility stand for the squad members, in order to play together the same song (company's mission). This metaphor is the demonstration of how agile methodology should work within an organization in order to be the facilitator of success. Another interesting point from which Vodafone took inspiration is Spotify creation and diffusion of agile management organization culture which encouraged the autonomous teams to innovate and find new ways for adding value to their customers. In Spotify's company employees are stimulated to work according to some principles which are perfectly in line with the firm agile management philosophy: the trust is preferred over control to manage the organization; continuous learning and improvement is the strategy used since they favour frequent releases rather than launching perfect solutions, because in this way they will receive feedbacks that will enable constant upgrades; significance is given to test-and-learn approaches which help developers to find the best solutions without considering one way of working as the unique one; continual management of performance in order to have shorter feedbacks which help to apply corrective actions; Failure is no more something negative for the organization but a way to improve, learning from mistakes, releasing better products; finally, Spotify leadership after clarifying the mission, so the "what and why", they leave the team autonomous in finding the "how". (Agnihotri A. & Bhattacharya S., 2019)

The agile represents for Vodafone IT area the enabling tool for the digital transformation that they are going through, in order to be highly responsive and swift.

They underwent a real revolution of the entire company: the first upheaval took place in the HR department, as previously explained, then, there was a change also in the arrangement of work areas: before there was a business department giving requirements, on the other side IT team was responsible for developing, and in the middle there was a department made up of people who could speak a little bit of both "languages" (business and IT).

With the agile this last described department has been spread among the various squads, because with this new organization many teams have been created, and in each of these both a corporate and an IT competence has been included.

In particular, the figure of IT has changed, who increasingly takes part in the "table discussion" about the customer's future. What happened compared to the past is that

before there was a more compartmentalized organization with silos in which the business area was appointed for deciding, and IT area for developing, without even wondering why certain choices have been made and what they entailed.

Now the two worlds work together in a unique team, meaning that IT is involved in the process of product development from the design stages. Why should such an organization work better with respect to the previous one? Because IT becomes an active participant and contribute to the discussion of a product release, improving the all process together with the business colleague. Vodafone is doing a lot of insourcing to provide itself with specialized and technical people because they might offer innovative solutions which businesspeople had not thought of.

This new structure has greatly speeded up the release of products and services as well as the achievement of objectives, as the figures representing the two areas work side by side, having the opportunity to interact very frequently.

In addition, this new way of working is helping the company in the diffusion of culture between the two worlds: IT begins to understand more and more what the business objectives are, which are increasingly challenging and requiring to be always faster with time-bounded deliveries; in the same way, business people start to understand a little more about the technique, educating themselves in the requirements and being more prompt to understand which are the timelines necessary for software development.

This methodology is useful and effective in some organizational contexts but not in others, for example the network deployment is difficult to be thought in an agile perspective. On the other hand, it is proved to be helpful in software development progress because it does not require to produce an entire software or releasing a complete app with all the required features, in which the final check is done at the end of the year to test what worked and what did not. This structure allows you to make small releases and in a logic of continuous integration/continuous delivery (CI / CD), make small unit tests on pieces of codes put on the market, in order to test and verify their functioning.

This implicates a greater scalability compared to the past when the whole code was developed, it was then tested and if it hadn't worked, it would have been necessary to start again from scratch to modify it. Therefore, it can be said that agile has had and has a strong impact on the IT world but also on the three business divisions, namely consumer, enterprise and commercial operations. The result is IT department very close to the business one.

Organizationally speaking, this has led to new roles at the level of organization charts, such as the product owner, chapter lead etc., which are figures that a couple of years ago did not exist because they worked according to the classic IT structure. Until two years ago there were only figures who cared about developing the whole legacy world.

In order to keep up with the digital transformation they are taking on and with the desire of offering the customers services that are not related only to telephony, Vodafone felt the commitment to move in this direction.

Thanks to the digital transformation, the IT department has created a new division, giving life to two souls in this area: the BAU, business as usual, and the whole digital area, in which they make use of new technologies, new architectures and platforms which are all on the cloud and no longer on-premises. This last change is an important point but before explaining why I have to explain which type of services they refer to, which are the differences between the two and also the advantages and disadvantages in adopting one or the other.

As stated by the term itself, on-premises solutions correspond to solutions installed on the corporate server or on the computers of each individual user, while cloud solutions are services offered by a provider, accessible via the internet through a virtual platform and typically hosted and managed by a third-party provider.

They differ also for the payment method of the service: in the first case, an initial investment is required in terms of infrastructure, system development and implementation; instead, in the second case an on-demand payment is generally defined. Therefore, this last difference highlights the main advantage of an on-demand system which corresponds to the saving of an initial investment that can be very expensive: often the low cost represents one of the most attractive aspects of using cloud services. Furthermore, cloud-based offers are generally independent of the systems used (hardware, software and operating systems) and work on any browser. (Belfiore E., 2015) Apparently, it may seem that on-premises services are cheaper in the long run because once purchased, the product can be used without limitations (one-off cost). But this is not what happens in reality: the programs cannot be used indistinctly for all the workstations, in fact, in many cases it is necessary to purchase a license for each employee. In addition, good software needs to be updated frequently and must be installed regularly by users, in order to extend the program's functions, improve its stability and resolve its security.

The result is solution "on premise", that is "locally", is not particularly advantageous from an economic point of view.

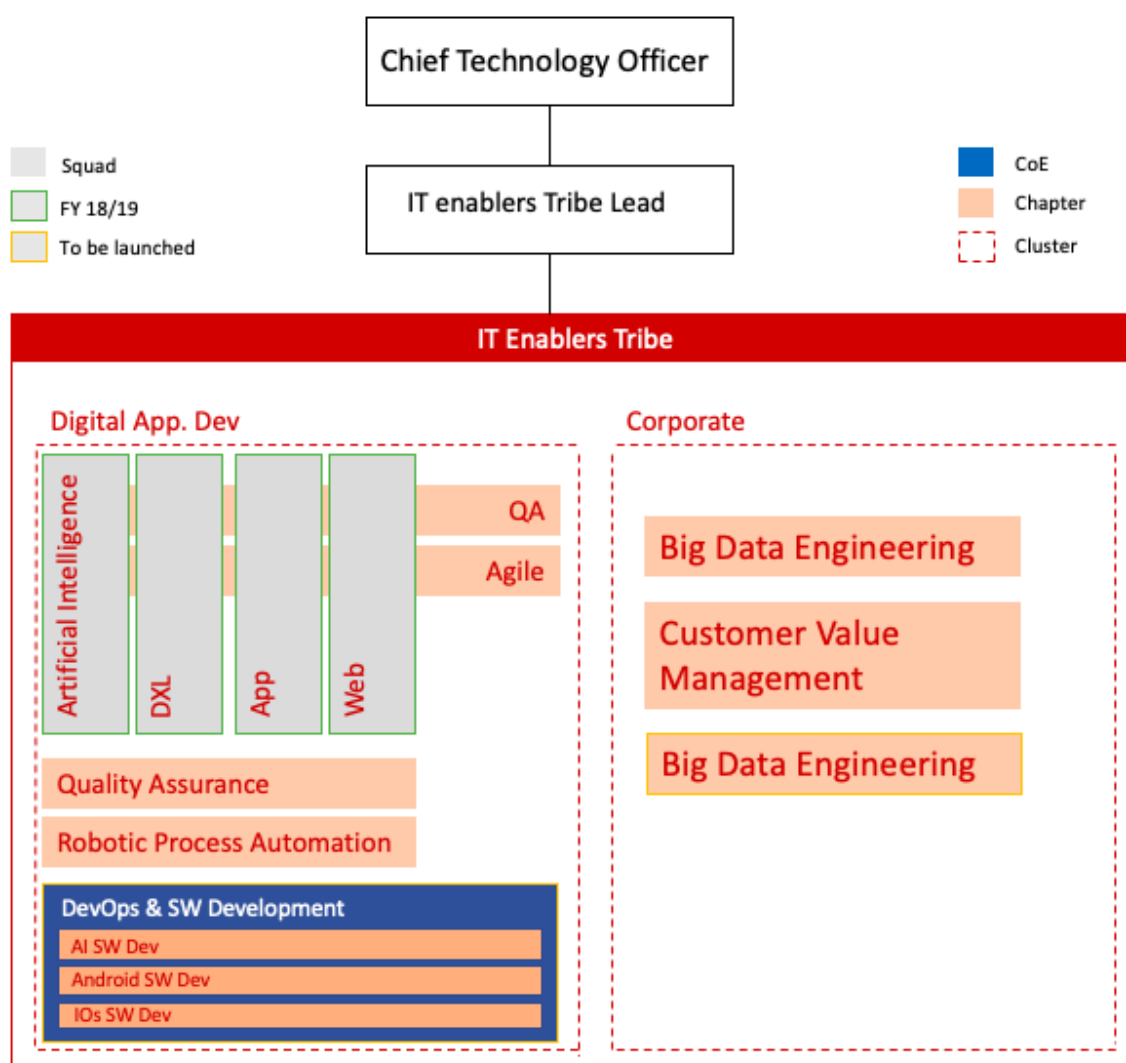
On the other hand, however, there is an advantage of on-premise solutions that should not be forgotten: all data remain in the possession of the user with the exclusive control over systems and data, and greater flexibility of integration and customization. In cloud systems, however, there is no possibility of customizing the service since they are very limited and generally managed directly by end users, unless you are willing to pay an additional price which would eliminate the economic advantage of the cloud structures. (Manzalini et al., 2018)

Discussing about the structure more in detail, how has the organization changed? By creating a new division that corresponds to the whole digital area within the IT department, which account for the company's CIO. Below this position, which is responsible for developing all digital applications, there are several squads and chapters. Several squads deal with the generation of new digital channels, such as the TOBi chatbot, which was produced by the squad that deals with artificial intelligence. Other squads are for example the Robotic Process Automation (RPA) and the one dedicated to My Vodafone app. Together with these squads, committed to the development of what are the main digital channels for them, there are the chapters: figures who lend their people within the squads for a service to be guaranteed. For example, there is a quality assurance chapter composed of people who dedicate themselves to the whole test and test automation phases before a code is released. This is already an answer: things go hand in hand where agile corresponds to the enabling tool, but simultaneously the company must go through a structural transformation of the organization chart.

The figure below is the visual representation of what I have just explained about how the IT department is structured today, after the implementation of agile methodology.

The big change is that now they are internalizing many skills and competences, such as that of the software developer who previously did not work physically in Vodafone but was part of an external consultancy company offering services to it.

Figure 3.2: Technology Business Unit structure



Source: Documenti interni Vodafone

Those who do not work with the agile methodology and who come from other work areas, such as the network one, where the release times are much longer, tend to be sceptical about this change. This is due also to the fact that agile methodology works well where the development process can be broken down into blocks.

But what the people involved in the transformation agreed upon is that the speed and practicality that is acquired through this methodology is winning, especially because being close to the business people, who design the solutions, allows IT people with technical competences to make work-in-progress changes related to critical points of the process that perhaps did not previously emerge.¹⁸

¹⁸ Interview to Vodafone Technology Product Owner

3.2.2 NEW MISSION AND NEW OBJECTIVES FOR A DIGITAL FUTURE

After having illustrated how the IT structure has been transformed in order to embrace the agile methodology, I focus on the related mindset they have to adopt in order to end up reaching the desired results. At which point of the digital transformation do they consider themselves to be? It is shared throughout the company the thought that they are no longer beginners, but they are at the intermediate phase of an initiated process. They have already implemented several innovations, but the road is still long, and they still feel they have a lot to learn. If they benchmark Vodafone company against other firms, they can say to be ahead with respect to some organization but far from the successful digital ones. A tool that they take into account as comparison is the chatbot: the innovative result which made them grow in terms of digitalization. The focal point now is how they plan to continue, which goals they fix, and how they agree upon the right path to follow.

Starting from the overall mission they have to become a tech company and no longer be just a telco, they realized that the giants of the world market, such as Amazon, Facebook, Google, Cliris etc., offer services to customers using their networks also retaining them.

“The CEO told us that in order not to be just a beautiful dinosaur they must aim to develop increasingly innovative services that are based on new technologies and on new technological solutions proposed by the IT department, taking advantage of the digital area creation.” – Vodafone Technology Product Owner

In fact, they are already exploring new technologies which are still unknown, with the goal of being the first to reach the market making these new services available. So, the priority is to retain their customers, but how can they succeed? Today's customer is no longer the customer of 5 years ago, he does not expect just the landline or the SIM card network but looks for complete services to build on Vodafone networks. Starting from the fact that their networks are increasingly performing, they have obtained fibre everywhere, 5G is coming, they must exploit its potential to offer high value-added services, perfectly in line with their competitors above cited.

It may sound a bit strange saying that the competitors of a telecommunications company are no more Fastweb, Telecom etc., but Amazon, Microsoft, etc. The fact is that, nowadays, customer needs are centred on services and these big companies are smart and fast in catching this necessity. Amazon for example entered the house of people through Alexa,

the intelligent assistant who allows the user to control by voice a variety of objects, services, content and more.

The customer doesn't want to have n-providers to pay the bill, but he prefers to have everything in one invoice. Still, the concept of physical sim card maybe in a couple of years will no longer exist and the customer may just own a single sim card to which he can attach the services he wants. Therefore, the winning mindset is the one oriented to the future.

Together with the mission Vodafone IT department has settled on very important objectives at the digital level:

- primarily, they yearn for the digital channels to be the first interface to customers. For example, if a customer calls the call centre, they pretend he speaks with TOBi in the first instance, because probably it can answer correctly to the need and it can efficiently guide you to the right answer you are looking for. This appliance knows consumer data and knows what kind of information they are seeking.
- similarly, they want My Vodafone app to be the first sales channel, integrating it with various information.

There are people within the company who study the customer's user experience through digital channels, looking at the single click they make. If the result they obtain is a reduction of the process by one or two clicks, this means improving the overall consumer experience. There are also people who deal with the design of this user experience in order to reach the challenging goals the company established.

As a consequence of the above stated mission and objectives, a revolutionized department with a more digital-oriented structure becomes fundamental for the company and is also strategic because it represents the first point of contact with the outside world, with customers, so it needs to be excellent.¹⁹

3.3 NEXT PROGRAMME

IT within Vodafone has three major “souls”:

- digital area already explained above
- legacy world that deals with the call centre applications, those used by the back office, which are still existing and used without having borne the transformation

¹⁹ Interview to Vodafone Technology Product Owner

- NEXT program which I will describe more in detail in this paragraph.

The question is: what is NEXT? And how is it related to agile method implementation?

NEXT is a very substantial digital transformation program started in the company a few years ago, which aims to improve the experience of customers and call centre operators who must then manage consumers.

A clear example to help understand how this program works is: a customer calls the call centre because he needs to cut the sim card or other services. Until today the call centre operator uses n-different applications in order to do a single end-to-end process, NEXT program instead should intervene by automating the process, enclosing everything within this platform to facilitate customer management.

So, although it is at the initial state with release forecast within the next year, NEXT must be thought of as a new convergent tool that the operator will have available for all markets and sectors to manage clients: if first information were got from different n-tools, now the device should work through convergent and automation logics within it. It represented the first digital transformation point that Vodafone went through.

The basic concept is redoing a digital convergent platform from scratch and the goal is therefore not to readjust the already owned legacy making it easier to use for initiatives through various automatisms, but to develop a digital appliance from the beginning that helps manage the customer more efficiently, faster and making fewer mistakes. Next is nothing more than a program which revolutionize the legacy world.

I will make a step backward in order to go deeply in the program evolution. A few years ago, in Vodafone a non-indifferent proliferation of stratified IT systems have developed over time. Since the start-up of Omnitel, about ten years ago, the systems have gradually been stratified and fragmentated by adding more and more functions, evolving and not favouring the more architectural themes that made the structure simple and manageable. With this in mind, NEXT was born. ²⁰

There were hundreds of IT systems to be considered every time an extremely small functionality had to be released, such as a new offer which represents the basis of our work, and it was necessary to operate with dozens of systems controlled by different vendors, coming together with the related costs and fairly complicated governance. Given this context, analyses and case studies were made, which led to the agreement of

²⁰ Interview to Vodafone Technology Product Owner

proceeding with a single vendor, who had out of the box modules and that was able to respond to their needs as a telco. Some examples are the CRM, building modules and a series of other modules which are useful for a telco, obviously lightly customized for them. However, the idea was to take the out of the box of this vendor and then build on it in order to be much faster to make developments, even directly within Vodafone without having to request it from external vendors. In this way they would have moved to a more modern architecture, which would have helped them in each release eliminating some process phases.

Therefore, a huge project started, which was divided into consumer and business part, with the aim of being completed in three years: year one devoted to level design, year two committed in the delivery of consumer part and year three in the delivery of business part. They are now in year four, but they have only fulfilled a small piece of the consumer part, about 20%. This data clarifies how many delays this program has had.

In fact, during the implementation of this program, pushed by the right motivation, all the problems linked to traditional waterfall project management emerged, such as scope creeping, the fact that the market did not stop and therefore there were continuously added things, the fact of testing only at the end, the fact of writing a large number of documents to be able to write just one line of software code. All these things led to delays over delays.

In the meantime, the business obviously has not stopped, the competitive environment has changed, new players have been introduced, both within the Italian market but also worldwide. What consumers and even companies expect is no longer a very substantial release once every three years, but disposing of increasingly newer and faster features, as it happens in Facebook, Amazon, Google, etc.

It was at that point in time that the agile digital transformation was initiated, which focused on the change of culture and the diversified way of working, so that they could better meet the needs of the market.

The idea is therefore to bring knowledge inside, through internal technical figures to increase knowledge and to be able to develop products without losing control of what can happen.

By the way, NEXT development is managed by an external vendor, but when this development will reach a certain maturity, the agreement consists on internalizing the know-how which will allow them to continue to carry on these systems through Vodafone

developers. Unfortunately, that's something requiring a lot of effort and for this reason it can't be obtained in the short term.

At a certain point, this program joined with the agile transformation program, when some groups have started to work at systems released by NEXT using the agile methodology. The difficulty consists on coping with and incorporating all those changes.

The conclusion is that the two programs have encountered in some cases because what has been released was then given to those already transformed groups which worked on it and then made releases every two weeks, relating to the same code of NEXT. There is therefore a meeting point but there is also a point where further governance is needed for this moment because NEXT program has a very broad time horizon related to that code, while the squads work with faster code releases. In this case, in order to synchronize the two, to be sure that the program is not going to release something that has perhaps already been validated by a squad release and to be sure that things are not trivially paid twice, there is a need of different teams that coordinate this, as well as greater support from vendors.²¹

3.4 DIFFICULTIES AND RESISTANCE

The still present today difficulties are linked to the mentality: agile in Vodafone does not mean that the people who worked with the previous method have been excluded and substituted by the inclusion of figures like the agile coach, scrum master etc., who knows this methodology very well. So, the critical issues that can emerge are due to the change of mindset, and since there is an ongoing transformation, they are physiological. The moment in which you put together a group of 10 people, 5 of which were doing business cases and the other 5 were developing until yesterday, they must find a way to talk and have the same language. This clearly causes difficulties that are related precisely to the fact of being able to enter into a logic of attitude change.

On the positive side, there is the desire coming directly from top management to change towards this new methodology, believing in its functionality. Therefore, the team's goal is to make it work and think of it as the new way of working that they will use from here to many years.

²¹ Interview to Vodafone Agile Practitioner

Obviously, the transformation has also led to the creation of completely new teams, such as digital marketing, who are going through a period of adaptation.

Hence, they need to still have agile coaches and scrum masters alongside to mediate the functioning of the methodology.

Autonomy will be achieved, but for now there are still those figures who guide them and act as mediators between the two worlds.

3.5 LITERATURE REVIEW ON IT GOVERNANCE

As first thing to remember when talking about governance is that without this one IT is not able to fulfil its potential. Governance constitutes the instrument through which business and IT decide upon present and future IT objectives in order to make IT the strategic factor bringing business value through investments on it.

Looking at the broader sense, IT governance consists on the evaluation, direction and monitoring of IT usage, which involves also the IT planning, design, growth, arrangement, operation, management, and application in order to encounter business needs.

The choice of outsource and Cloud Computing, as happened in Vodafone, hinders the governance by making the process much more complex thus resulting in longer time for monitoring, corrections and release. (Worstell, 2013)

In the past, organizations may be successful even if IT management practices were weak. Today, IT is increasingly becoming a crucial element for organizational products and services as well as the basis of companies' processes. Therefore, the previous traditional view may no longer be suitable in the firms' digital era we are undergoing. (Weill and Ross, 2004)

The research made by Weill and Ross (2004) shows that the enterprises which look for value from IT obtain great returns on its investments, reaching the 40% extra with respect to competitors.

The increasing need for monitoring and compliance by companies has led the emergence of IT governance criterion. The two most common standards in terms of agile are the Control Objectives for Information and Related Technology (CoBIT) and Information Technology Infrastructure Library (ITIL). The former is used to give corporate governance the opportunity to understand IT operations and vice versa, and usually this is customized based on the own IT infrastructures, business values, and risk profile. In

this way it is possible to associate what are the controls and documentation of CoBIT and agility, encouraging a greater alignment of IT development with business objectives.

The second one consists of a set of operational guidelines focused on mapping IT strategies with business strategies and is characterized by five disciplines comprising “delivery and support; planning and implementing service management; security management; managing IT infrastructure and applications; and managing overall software assets of the organization”. (Unhelkar, 2013)

The important aspect of this criterion is the help it offers to IT departments in order to enhance their quality of service.

The influence of agile in the governance process can be notable due to the fact that, as affirmed in Agile Manifesto, this approach gives priority to individuals and its interactions rather than documentation. But regardless of whether agility is used in development or not, verifiable and formal documentation needs to be implemented in practice to improve understanding between the business, developers and even reviewers. In fact, the formally documented requirements provide the basis for secure contracts, furthermore the specifications and documentation can also provide the traceability of the requirements, their tests and their acceptance by the user.

Therefore, for the process to be effective, agile principles must be combined with the use of governance frameworks. (Unhelkar, 2013)

3.6 VODAFONE DIGITAL GOVERNANCE

Which is the impact on governance? Starting from the fact that this is a company constituted of many meetings in order to take decisions, Governance is developed at three different levels:

1) Strategic governance organized through three types of meetings:

- *Capabilities roadmap*, in which they decide how to allocate capitalizable expenses (Capex) that are limited for the company. They take place in the company twice a year. Even if, within the squads, that “purse” is used in a more iterative way.
- *QBR*, the quarterly business review, which is done every three months, and replaces the functional review that was done once a year. So, in the past the review of the company year performance was done every three months, now it is done every 3 months at least, to shorten the feedback cycle.

- *Pricing committees*, where price points on offers are established to maintain consistency and alignment. This is done twice every two weeks with the rest of the company.

2) Alignment meetings:

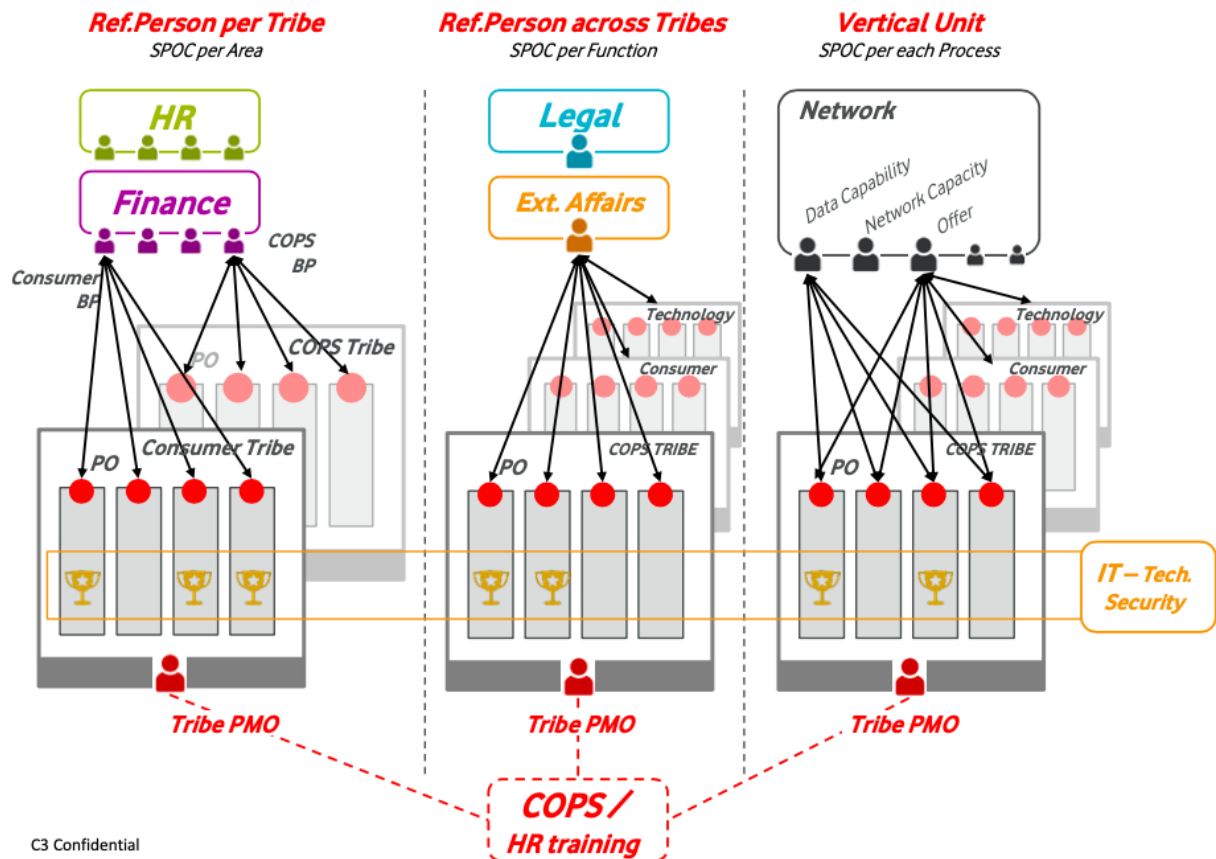
- *Tribe Sync*: within the same tribe between the squads, to allow the tribe leader to prioritize;
- *Digital Sync and Demo*: in the ecosystem of the cross-departmental tribes, which did not exist before. Before, for example, it was enough that consumer was aligned within consumer, now this must necessarily be aligned with Cops because Tobi who speaks with customers cannot speak another language than the one the consumer wants. Thus, another alignment is needed.
- *Contextual alignments* that are those that occur between squads. The rhythms of the different squads have been mapped, even between those who work in scrum and those who work in Kanban, making sure that they align. An example: Vodafone has in the app, and when we say app this is already a squad, both Happy, another squad, and TOBi, yet another squad. Therefore, by force of what there must be alignment, because it can happen that to be too autonomous one cannot be aligned, and this is avoided by organizing the meetings already from planning.

3) the last one deals with interactions, so how these squads interact with the rest of the organization and, furthermore, how Agile and Traditional organizations communicate, as represented in figure 3.3:

- *Interaction with support functions*: which corresponds to the standard model in which interactions are not so frequent and they happen between Tribes and support functions (Legal, Security, External Affairs, HR, Finance)
- *Interaction with Network*: the intermediate level, in which interactions start to be more frequent and more about documentation, with Legal and External Affairs. Therefore, the aim is giving SPOC (single point of contact) per function no more per area, as in the previous model. What is interesting is that Legal department becomes aware of the benefits that agile would bring in its flow of actions making it more fluid. This is the reason why the department itself asks for agile methodologies to implement and they end up working with Kanban.

- *Interaction with IT*: the most integrated model, organized through SPOC per each process. It comprehends interaction between Tribes and IT. 22

Figure 3.3: Interaction model representation



Source: Documenti interni Vodafone Italia

3.6.1 PAST AND PRESENT IT GOVERNANCE

The transformation of work, the way of working and agile methodologies did not start from IT, but they started earlier in other groups and departments because IT was heavily involved in the great system transformation project NEXT.

So, at that point in time there was the business part working with the new method and the IT part that was still continuing to use the old way, resulting in an increasingly complicated governance with monolithic systems. In parallel there was the large transformation project NEXT which was secret at the time.

22 Interview to Vodafone Agile Chapter leaders Enrica Lipari, Francesco Pratolongo

This is therefore the context in which the diffusion of the agile methodology started. How was the governance organized before?

First of all, a business case was made on the business side for some kind of functionality. In order to complete this business case, cost estimates had to be requested from IT. The problem was that these estimates were provided but with very long timescales, and this implied really long time to conclude a business case. But once this was approved, both from the IT side and from the high-level business side, the projects could start, guided by a business sponsor and technology managers. These project sponsors, who were high-level managers, then went on by identifying project managers, always coming from both sides, designated to follow the various projects. The IT side project managers were coordinators of other project managers responsible for the individual IT systems that were underneath. The hierarchy was therefore constituted by project managers of other project managers, as if the first were project manager lead; the latter instead dealt with projects on their systems. Then, all these elements had to be integrated with long time testing and systems, together with all the approvals they need: security, group, legal, privacy and obligations to shareholders, hence finance approvals. This explanation shows how complicated the process was: many consents, even more bureaucracy, little portion of written code and projects that last a long time with the consequent request for a flood of project managers, both on the business and IT side, in order to be able to manage such a complexity.

It could be defined the factory of work but including several issues as for example little code developed gradually, people focused vertically just on their own piece of code to be implemented, business project managers as the only ones who actually had the overall vision of what the result would have been and IT considered totally as a “slave”, except for some individual technological projects they were in charge of to improve parts of the infrastructure, which have been very few over the years. For example, there have been some on the website, some at various points in contact with the customer, but not in points that were internal.

What can be observed is how much the governance was elaborate and how many people were involved, who were highly specialized in their sector. The project managers were very qualified and knew how to manage a lot of complexities but what they lacked was a wider view over the company, also due to the verticality of the following departments:

- Department of design also known as project management
- Department of architecture
- Security Department
- Department of global security
- Operations group which dealt with correcting bugs, management and releases of BAU (business as usual) in general
- Test group
- IT group centred on the offer, since it had become so complicated to create an offer on the systems that it became necessary to have a group that managed coordinated it. The project managers of this group were therefore in charge of doing that in a very specific way.

Furthermore, besides the business that defined the use cases and the requirements, an intermediate department was needed, which acted as a translator of the business requirements towards IT. This was CP&P (Customer product and processes) department. The people working inside it represented the link between the world of business and the world of IT which didn't communicate.

One thing that was done a bit after the start of NEXT project, was eliminating the above-mentioned department and the respective people, who were part of it, have been moved either in the business area, or in next or have been sent to other companies.

In next, however, the governance has been and is still a bit different in the sense that people from business area, IT project managers and suppliers work together, without the support of CP&P department. This represents already a small improvement.

The overall governance, if all IT systems are taken into consideration, can turn out to be more complicated because of the parallelization of NEXT program and the agile methodology implementation. But, at the same time, the part of IT has started to work on the systems with the scope of managing some of these problems, giving the department a direction toward a lighter governance.

The difference with the previous governance is that the latter was not simpler, but better known, representing therefore terrain explored, terrain known for people within Vodafone, even if there was a lot of bureaucracy and it took a lot of time for an item to be launched.

Now, there are some parts that work on the basis of the old form because not yet transformed, some parts that make use of the new mode, and other parts that take part in this mega project / program which work somewhere between the two.

In conclusion, if you look at it as an overall, the fact of having three parallel streams complicates the situation; if instead the various streams individually are analysed, the final considerations are:

- NEXT is encountering a lot of problems because of the scope that continues to change, lengthening times and worsening even more its problems;
- for the legacy part, which still works with the old way, the process is clear, the only thing is that more requests arrive because they are perhaps the result of requests from business groups that instead work in a different manner. What they are looking for is new ways to handle this issue.
- the part that works new, however, which is also the most dynamic, is experimenting with new things that in the long run should simplify everyone's work.²³

²³ Interview to Vodafone Agile Practitioner

CHAPTER 4: MEASUREMENTS, RESULTS AND OBSERVATIONS

As last chapter, I thought to conclude by giving a general overview of the outcomes and observations from the moment in which the transformation was initiated in Vodafone company to where they are now.

Starting from the description of which are the tools they selected to measure step by step how they are performing, I will proceed by talking about results.

What people tend to look for are numeric outcomes, but what I understood from the analysis of Vodafone case study and through discussion with agile coaches is that this methodology cannot be measured in terms of number. It would be preferable to show everyone in the company that after the agile implementation the performance has increase by tot percent and that customer satisfaction has considerably increased accordingly. This would be also the easier way to spread, transmit and convince the workers of its functioning benefits to not have many resistors. Instead, the biggest difficulty seems exactly to be the extension of agile culture and vision throughout the company, from a traditional and more bureaucratic mode of operation to a new and lean way of working, which is more in line with today's times.

I close the chapter with the presentation of two different opinions, one coming from a product owner of Consumer Digital and Growth Tribe and the other from a product owner of Drive & Buy Tribe, which experienced the transformation from two diverse perspectives: the former saw the shift from the old to the new method while the second was hired and inserted in a new team. I chose to investigate two opposing situations in order to see how the change perception differs.

Being at the end of my analysis I can say that what Vodafone is facing is an evolution rather than a transformation because it began three years ago but it turned into a continuous process, in which many unknowns still remain, and new challenges and perspectives are continuously emerging.

4.1 KPIs

When a process or a program is applied within an organization, it is important to measure its effectiveness so that the company is able to continuously modify and improve it, by carrying out the necessary changes.

Key Performance Indicators (KPIs) are, in this sense, the tools used to understand if the firm is moving in the right direction with respect to the strategic goals to achieve.

Bernard Marr (2015), who is a strategic advisor to companies and governments as well as an international author and keynote speaker, states that “KPIs should be a vital navigation instruments for your business”²⁴. He also discovered that in a company the 90% of them are wasted and just the 10% results to be useful for information decision-making.

Their functioning may be compared to the sailor in the sea, who makes use of navigation data in order to control where he is going and if he is following the planned route. The same happens for companies that have to identify the most suitable KPIs for each one of them which will guide their business toward a successful performance.

Nowadays, organizations need continuous assessment about their current status and about where they are going, since they have to be rapid in responding to a highly changing and competitive market. In this way, firms, when starting a new project, don't have to wait until its release to receive feedbacks because they can rely on performance progress indicators and apply adaptive corrections. (Bernard, 2015)

Vodafone developed various types of KPIs according to their necessities. The first I talk about are the ones which are based on quantitative numbers, as shown in the tables below. The metrics used are the number of squads they mobilized and if they incremented month by month, gender diversity, etc. The question Agile coaches ask themselves is whether it's efficient to measure the final outcomes through numbers and whether these KPIs give an idea about how much successful the company is and how the transformation is going on.

The answer they come up with is that this kind of indicators may be the base, but they should be integrated with more agile measurements.

²⁴ <https://www.bernardmarr.com/default.asp?contentID=762>

Table 4.1: Key performance indicators of tribes until August 2019

Metric	April	May	June	July	Aug
Squads mobilized	40	40	40	43	46
(increment from last month)	(0)	(0)	(0)	(3)	(3)
Total FTEs	384	390	390	415	434
Insourced (%)	72%	69%	69%	73%	70%
Gender diversity (%)	44%	44%	44%	43%	43%
FTEs agile-trained (%)	100%	100%	100%	89%	89%
FTEs co-located with their squad (%)	100%	100%	100%	100%	100%

KPIs	Definitions
Total FTEs	Number of employees working within accelerator squads
Squads mobilized	Number of squads working within the Digital Accelerator.
Insourced (%)	Number of insourced employees within accelerator/total number of employees working in accelerator squads
Gender diversity (%)	Number of women working in squads/total number of employees working in accelerator squads
FTEs co-located with their squad (%)	Number of employees working physically with their tribe/total number of employees working in accelerator squads
FTEs agile-trained (%)	Number of employees working in squads that have completed the agile training / total number of employees working in accelerator squads

Source: Documenti interni Vodafone

Therefore, they individualized specific leading indicators, which may help in anticipating the general program trend. These “health-check” are:

- *Stability*: how much the teams are characterized by turnover. What agile coaches aims to is low turnover which means more stable teams and roles;
- *Autonomy*: the observation of workers autonomy level when making decisions, which often depends on the context where they are working; Initially, instead of autonomy, they measured compliance, but later they realized that it is not so relevant since it is not sufficient that workers do their daily without being autonomous in taking decisions and in reaching the planned objectives;
- *Attitude*: how much workers are willing to collaborate, improve and concentrate on learning and cooperation through agile methodologies;
- *Releasing according to mission*: verify whether employees are working according to the launch purpose;
- *Releasing work*: the measure of delivery capability, even without relating to scope.

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The results they observe from these first indicators will determine the subsequent actions to take: if the outcomes are negative they have to make a step backward and decide on corrective operations to apply otherwise there could be consequences and risks; if instead they obtain good results, it means that they are going in the right direction, thus they can satisfy other four indicators, the "lagging indicators", which should clarify and confirm the performance of the project occurring over time:

- *Product ownership*: observation of the vision, the involvement, the adoption of supportive leadership and the focused goals from top managers;
- *Continuous improvement*: Focus on inspect and adapt, with freedom on selecting work amount
- *Team (dynamics)*: analysis of how much the teams are cross functional, the degree of collaboration, and management dependencies and constraints;
- *Practices*: operative observation on Scrum & Kanban method application, the events, boards, etc.

Therefore, they represent for them the true indicators through which making a systematic analysis on squads and tribes.

The difference between leading and lagging indicators is that the formers can be influenced, so they can somehow work on them in order to improve the final production; while the latter are a mere consequence of the leading ones.

Hence, it is convenient to operate on the leading because if for example the agile coach goes to the tribe leader and say that his team has product ownership problems without contextualizing and without looking at what has been done, this will lead to nothing.

Moreover, they are operational, they do not just carry out audits, so these measurements serve as a guide to work and not as an evaluation. (Vodafone Agile coach)

The availability of thousands of KPIs from which to choose may be harmful for organizations, which find it difficult to select the right ones for their own business. The consequence is that they will tend to analyse and report only the easy-measurable information. Another trap in which companies may fall is selecting the KPIs that everyone else use, without considering if they are suitable or not for the own organization. These are just two of several KPI troubles that firms may encounter. Therefore, it is really important to spend time and effort in finding and choosing the most appropriate indicators, since they may turn into powerful tools to make more informed decisions and improve performance to become always more competitive.

Going back to the above cited metaphor, a company without its own KPIs is like a sailor navigating without a destination, blind. (Bernard, 2015)

4.2 RESULTS

After having discussed about the measurements adopted by Vodafone, I'm going to figure out which are the outcomes spotted in these two years of transformation process.

First of all, what was observed is that teams have objectively become more cross-functional and have acquired a higher level of autonomy and versatility compared to the previous organization, with an increased rate of iteration on work.

This allows them to be more flexible and adaptable on the market. But more interesting is the start of a new way of thinking regarding failure, which is no more perceived just as a negative brand but as an aspect that can help by generating learning activities and training that will be useful for obtaining future successes.

The fact that Vodafone worked on this program following this strategy, which is a rather holistic strategy, and that the teams have started to move in this direction, would have been better if associated with impressive business results, as for example an increased level of people happiness by 200%, and a customer NPS (net promoter score) of 500%. But this is not reality because while starting to work with this strategy, several critical

issues emerged and they had to embrace them, especially in relation to the fact that they acted with a very strong focus on the organization transformation particularly in the affected side. Instead, in the last year they concentrated more in the analysis of the systemic impacts on the entire Vodafone company, which are those that affect their people rather than the customers.

Therefore, this was the first year, after the launch of the squad and tribes, what happened after? “From being on the crest of the wave we fell inside the wave”²⁶.

When making certain transformations it's important to be careful on how the organization as a whole is transformed.

In order to explain this concept, they used three metaphors, taken from concepts related to the principles of physics, to make you see how they are applied to the organization and to make you understand what happened and what can happen to a company like Vodafone when implementing transformations of this kind.

1) Principle of mass conservation: “Matter is neither created nor destroyed”

How is this principle applied in Vodafone? Going back to three years ago, when the company presented a traditional functional structure, a process of fragmentation has been started: some functions, such as Marketing, those that deal with customer experience etc., have been fragmented since people's skills have been reorganized in squads and tribes. This led to the creation of many more functions, the cross-functional ones, made up of people with different skills, more precisely 49 squads, as previously mentioned. So, it can be observed that the transformation took place in Vodafone using the same number of people.

If we imagine the organization as a closed system, people have been reorganized, through a fragmentation principle, into mini teams taken from different functions. As well staff functions, such as finance, strategy etc., have to interact in this new organization, but they have not increased in number. Therefore, it can be said that the company was taken as a closed box and was transformed using this principle of mass conservation applied to the principle of organization fragmentation.²⁷

²⁶ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

²⁷ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

2) Principle of thermodynamics and entropy concept, the measure of system's disorder

How do we manage to apply this measure to the organization? Playing with complexity. In any type of business, the functions interact with each other according to the processes they govern. Therefore, interaction exists, is frequent and is done in a certain way, through for example alignment meetings, structured processes or a more or less strong governance. The three fundamental dimensions, thus, are: interaction link between functions, frequency and modality of interaction.

Vodafone was exactly organized like that, all company functions interacted with each other according to the processes of the organization. Later organizational fragmentation was adopted, creating much more interfaces as more functions were introduced, and greatly increasing the number of interactions, not only between business functions but also with staff functions. Imagine, for example, the correlations that the marketing or sale function has with that of finance, for all the issues related to the processes managed by this last department.

As above stated, the interactions, their frequency and their modality, remind us of the concept of organizational complexity. For this reason, the concept of organizational entropy is introduced: considering the company as a closed system, even if it is not so because people are hired and resign, entropy can be applied.

Hence Vodafone represented the correlation between these quantities in this way:

$$E_0 = \sum_{x=1}^N l_x^{m_x} \times f_x$$

showing the existence of a link between functions, which is exponentially amplified or reduced by the interaction mode, a fundamental factor, even more than the frequency itself is.

Let's now turn the attention to the promises that agile makes regarding the way of working together in which teams are organized using different skills taken from different function.

What has been affirmed is that in comparison with a traditional system that has its own value chain of services or products, with the agile the system does not follow slavishly a process, such as the waterfall one where the functions are interrogated and inserted into the process development, since the skills are put together. So, the agile should lower the entropy of the system, because the previous numerous interactions are no longer needed

since the skills are all within the team. But what happens when a complex company with 25 years of history is transformed? Such a transformation, focused the people and functions which have to be transformed, increases entropy with the consequent costs. This does not mean that there have been no improvements, new developments together with the benefits that the agile can bring, but it is important to keep in mind that entropy and complexity must be managed.²⁸

3) General relativity, the curvature of spacetime is directly related to the energy and gravity

How can this principle be applied to the organization? Within a development process the speed of the system is given by the slowest element. So, what Vodafone did was taking a portion of the organization and tried to speed up the process, but the remaining part of the company, which did not undergo the transformation, continued to work at its own speed and with its own processes.

The point is that in this way entities that work with a different timing must coexist. This can be compared to the principle which states that within the universe there are spaces in which space-time are curved by gravity and therefore a consequence is that time in these areas flows in a different way.

A process of digital transformation brought into a so large organization which does not only make software, can therefore find itself facing issues like the ones above mentioned. The awareness the company acquired through the experience, which showed that certain constraints exist and that there is the risk of creating greater entropy while working in a better and more customer-centred way, gave them the possibility of creating new experiments, inserting corrections that allowed to integrate this program with the company.

This was done to make the transformation happen on the whole organization in order to become an organic transformation, not just a feat destined to end at a certain moment.

At this point in time Vodafone had the possibility to “get on new waves”.²⁹

As a sum-up I would say that the organization is made up of activities and processes carried out by people. When such transformations are brought into companies, they have a heavy impact on people's work, and making the error of concentrating only on a part of

²⁸ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

²⁹ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

the organization may lead to several critical situations, as seen above. Therefore, it is important to start the transformation organically, creating harmony and coherence rather than using big bang approaches.

In addition, the agile can be used and can work very well in several contexts, however, it is more effective referring to the mindset rather than simply implementing the tools.

The most relevant thing is that people always work for a goal and a purpose not because it is necessary to impose a dogma. For this reason, it is necessary to make people understand why they have to work according to a new method and the related benefits by pushing towards the goal, rather than forcing employees to unconditionally agree with the impositions coming from the top of the company.

When there is an organization change, no matter which is its nature, a certain amount of resistance will be encountered. In particular, what Vodafone agile coaches observed is that the widespread tendency is blaming agile methodology whether something goes wrong and outcomes are not as good as expected.

Thus, most of the attention should be paid to how the transformation process is implemented and communicated, proceeding in a more organic and harmonious way within the company.³⁰

4.3 OPINIONS AND PERSPECTIVES OF TWO VODAFONE EMPLOYEES ABOUT AGILE IMPLEMENTATION METHODOLOGY

The first point of view comes from the product owner of Mobile Upsell and Xsell squad. He started to be part of Vodafone 4 years ago when he was not yet working with the agile method, so he worked according to the traditional method. It was a company that reasoned in a standard way with a classic model, which can be called waterfall. For 2 years a part of the company has been transformed and started working in agile, while a part remained in the old status. So, he has been working in agile for 2 years, since Vodafone has also started the transformation.

As for this team, the job to be done is always the same, but how the work is performed is different. The products they offer have not changed, maybe new ideas have come out thanks to the agile cross-functional contamination, but the real change was in the way

³⁰ Video Talk ABD19: <https://www.agilebusinessday.com/2019/09/26/surfing-organizational-entropy-abd19-enrica-lipari/>

they started to work. How did the “old” Vodafone department work? Marketing team made its market analysis with its own budget, thinking about its own products, and later on they communicated their decisions to products and services function, which was an interface between marketing and technology. *“Marketing and technology were two worlds that did not understand each other”* – Business Product Owner. With this statement he wants to mean that the first spoke a commercial language, while the second a more technical one focused on systems and technological architectures. Products and services function, then, was the vehicle through which marketing and technology exchanged information.

Requirements came to technology team, they had to analyse them and estimate times and costs in order to negotiate the output by common accord with product and service function, and, finally, they turned to the marketing team who accepted or rejected the proposal. If the answer was negative, a new negotiation was agreed upon the three teams. If the answer was positive, they proceeded with the process and after a certain number of months the product entered the market with the hope of being successful by receiving positive feedback from consumers.

Now what has changed? *“The transition does not happen from 0 to 100 in a few seconds”* - PO. Of course, the transition is not immediate, but at least now all the interlocutors work at the same table. In the old process, instead, there was a need for n-alignment meetings and all these negotiations were done in ad hoc meetings. With the new mode, the product & service team is incorporated in the squad eliminating negotiation layers. It is therefore possible to work in a more harmonious and fluid way. As a positive effect there was also the fact that the informality of relationships has increased and many things are no longer established in formal meetings, but more easily, allowing to obtain the same product but in shorter times, at least from the process point of view. Today the system is more a circle, starting all together aligned and moving organically in order to deliberate the product first and this also helps to apply the learn-test methodology more effectively, no longer having to wait 6 months for the release of the product. Before, in fact, you had to wait 6 months to take a test and another 6 for releasing the complete product to the customer. Today the due date of delivery is 3 weeks for a test, and after a check and refinement period another 3 weeks are necessary to go on market. The agile has therefore enabled this new more iterative work methodology.

Therefore, what he thinks is that he would not go back to the old way of working, accepting all the pros and cons that the new method of operating brings with it. Apart from the benefits of its functionality, agile practice is equally important because, differently from what happens in all the traditionally structured companies, people at seniority levels are always in touch with all the employees of the team, giving the possibility also to junior people to increasingly learn and grow and to make them feel completely involved in the system. In this way, having their boss at the table or at least a person from reference like the product owner, all the squad members may be contaminated by more strategic speeches increasing the own responsibility in the projects. Let me explain better: before one person was assigned project A, another person was following project B and another one the project C. Each person was responsible for exactly one project, so if someone asked the person in charge of project A, how was project B going, he replied that he didn't know because he was not responsible for it. Today there is always a reference person for each project, for each product or business line. Therefore, having more structured sharing moments on the projects that each person is conducting, led to a way of working in which there is more employees' accountability but also a greater amount of information that circulates and everyone is updated on everything. This can be seen because even in case of absence of the specific people who follow a project, information needed can be given also by squad members even if they do not manage it directly.

Obviously, it would be totally different to implement the same methodology in environments where there is a large gap between the age of seniors, especially if used to hierarchical roles, and that of juniors. Having such an approach in some cases may become a real issue.

It can potentially be a risk in companies where management, due to a question of age, does not fit into the new logic, but this is not the case of Vodafone since the management is young and favour this type of iteration.

His opinion is that there is a big trade off in the transition between waterfall and agile mode whether put in the balance: on the one hand, as I said earlier, there is a greater speed, greater contamination and on the other the negative part of being too fast leading to difficulties in being aligned. Imagine to be in a car that goes at 20 km/h, in this case you have time to look at what surrounds you because you go slow, but if you drive at 200 km/h you are forced to look straight ahead otherwise you will crash, and the consequence is

that you won't look at what is around you, in order to avoid risk. Basically, what weighs negatively is a greater difficulty in being aligned with what happens outside your squad since faster ideas are released and also their realization is rapid, having fewer formal moments in which they can share them.

A crucial role is played by the product owner who has to be very good in maintaining connections to understand what happens around (part of the time must be invested also in this) and at the same time the company should be good to create sharing moments between all the squads in order to give an overview of what is going on because what someone does could have an impact on the other people. Previously there were meetings with high-level managers which required until two months of preparation and they were an occasion to present and exchange information on the overall programs. Once approved, the projects came out 3/6 months later so there was still time to understand them.

Now, instead, an idea is developed, then tested and after that it needs to go on the market immediately without waiting for the meeting with the CEO. The same happens in all the squads, therefore the product owner ability consists on being aware not only of his projects, but he also has to pay attention to what occurs on the whole company.

For this reason, a formal moment was established, once every three months, in which all tribes report on what happened in the previous quarter and what will happen in the next quarter (objectives plus hypothesis of action), as a way to be updated on the strategy and direction of the other tribes. In addition, it is useful to realize if one tribe could potentially be impacted by the others, and if there is something to be replicated in the own market or customers. Besides, within the tribe there are moments of alignment, while within the clusters it was agreed to set up the "Plenaria", which corresponds exactly to what is done between tribes but at a smaller dimension. The overall policy is therefore trying to structure moments that do not slow down too much and do not have too much impact on the various company levels. In fact, there are also rules to follow, for example the cluster of marketing growth squad has decided that the employees do not have to dedicate time to prepare additional presentations for these meetings, but they either make do or they use presentations made for other occasions related to current projects and objectives.

This rule is used to pass the message that you should not invest overly long in alignment, because it can be done in a very streamlined way. In conclusion, his point of view clearly

highlights the fact that the agile transformation has an overall positive effect but brings with it all the consequences linked to people need of metabolizing it.³¹

The second opinion comes from the product owner of VB Digital Marketing squad, a new-born team, which can give a different perspective about the transformation.

If the question to answer is about the efficacy of agile approach in Vodafone, his personal opinion is that the methodology as a whole works. The problem he often encountered when talking about agile is not concerning its principles, but their applications to the company because sometimes they are taken too literally, running into the error of carrying out models that maybe do not work for a specific team or for specific people since what is suitable for a person, for another one, even doing the same job, it is not. One reason could be the fact that those people are not used to certain mental and structural approaches, to work according to certain patterns and following certain ceremonies.

So, the attitude that should be adopted when applying the agile methodology is understanding the principle selected and testing the possible ways of implementing it.

It could be required to try it more than once in order to get a benefit, because not necessarily it will work immediately since it calls for a metabolization period. In the cases in which it doesn't work even after 10-time attempts, there is no point in continuing as it means it is not the right method to put in practice. Taking the methodology and putting it down rigidly as it is presented, will always cause critical issues.

At the beginning, when he arrived in Vodafone, there was McKinsey & Company, the international management consultancy company, that had facilitated the implementation of the agile methodology, and one of the things he observed with the team that was already there, was the strict application of many methods. Often, the following behaviour had created negativities because the team did not approve and was not happy to implement those methodologies. How McKinsey & Company answered was counter-productive since they pushed to follow in that way, until the clash. The initial resistance may be normal but what makes the difference is understanding that the system is not working with the chosen methodology and still insisting on applying it at any price. In that case, more serious problems may arise with the team at the motivation level or even at the leadership level because, then, the risk becomes losing authority. The team taken into consideration, according to agile coaches' opinion, is one of the teams that works best

³¹ Interview to Vodafone Business Product Owner of Mobile Upsell and Xsell squad

with the methodology. In fact, they do not apply many ceremonies, for example they don't use stand-up meetings because they did not see the benefits, but they prefer retrospective, which they always make use of.

What the product owner wants to focus on is the difference between his team and other teams which apply these ceremonies much more literally, appearing agile on the surface, but not being agile at all in the working methods, when collaborating internally or with the other teams: they still work according to the schemes "my boss said this and I accomplish", much more similar to waterfall model with very strong hierarchies.

On the contrary, in this new team there exist minimum hierarchies and verticality: the seniority degree matters with respect to the employee job position, , then there is the PO, the lead, the junior and specialist, but the difference is that actually they sit at the same tables trying to interact as much as possible, both inside and outside the team.

In addition, in order to not create situation in which juniors feel uncomfortable and intimidate by superiors, they try to find a space for everyone to express themselves and contribute, working in a very integrated way among them. The theme of collaboration is one of the main topics to work on in the company. Collaborating, exchanging information and being aligned brings benefits on both sides. Often, workers concentrate just on their own goals, worrying about carrying out their own results without understanding that by contributing to the results of others, perhaps they will increase outcomes accordingly. The risk is losing sight of the broader end goal. Instead, as stated by the product owner, agile methodology seems to run correctly within this team, in fact agile coaches often give them very positive feedback declaring that, compared to the other agile teams in Vodafone, they are embodying the principles of methodology, carrying them out.

The reason behind the fact that it was also quite simple for this team to adapt to this methodology is that the majority of the members grew up in a different environment compared to the most people who work in Vodafone.

The team is made up of people who were employed in media agencies, and in the media centres the way of working, especially in the digital part, is much closer to agile principles than to traditional methods (Waterfall etc). A clear example is the creative agency, where the web designer, the copywriter and the app designer collaborate in everything they have to do. Still, when a client in the media agency comes with a brief, basically even if the teams works from separated posts, all the channels such as social version, display version and search version, which require different skills, are grouped around the same table in

order to decide a choral strategy to approach the brief. Something that often does not happen in the corporate environment, in fact, even the tasks are much more specific on a given discipline: those who make sales, make sales, those who make marketing, do marketing and they don't talk to each other. That is one of the problems to overcome with agility. Not always, at least as it is going in Vodafone, you are fully able to carry on this discussion and the approach of individual people become really relevant. If someone makes resistance and tries to oppose, it is difficult to bring them on board and change their mind. What happened in the last year was that many people, a little bit for this reason a little bit for other variables, have decided to leave the company because the reorganization intended in this way destabilising. The consequence was a bit of turnover. In the agile team everyone arrived for about a year and a half or less ago and therefore they entered directly into the agile structure. So, the people who started working in this department knew what they were up to and what structure they would find. During the interview, people were told what it meant to work there. There is no positive or negative side, they have not felt the change, also because they come from communication agencies that work more or less in the same way, therefore they probably have not found big differences in the mode of working.

"There is always room for improvement because anyone will never be 100% expert on anything" – Business Product Owner.

Talking about the possible improvements, he replied saying that for sure they have to continue on this path, but they could also test ceremonies that they have not tried yet, while others, which was discarded because of their malfunctioning, could be reintroduced, taking advantage of the acquired maturity in order to approach them differently. Being a new team has the advantage that it's less probable encountering resistance and any particular problem which could emerge at the agile level.

While, other people in Vodafone have found it much more difficult to implement this methodology and achieve positive results. What he stated is that there are teams that do much more in terms of agility methods, as for example making use of post-its. His team almost do not use them, except in a very precise way for some dashboards (whiteboards created for specific projects) in which the post-it is moved to mark the progress of the project. It is not used in an exaggerated way as in other teams which end up by generating confusion in the work organization.

This is perhaps due to the fact that they had to force the methodology within the team to make it understood by the people. For VB Digital Marketing squad, it has been a more natural transformation since they went directly to the metabolization phase. They needed to force it only in some cases for example with the ceremonies that were completely new and unknown for everyone. ³²

³² Interview to Vodafone Product Owner of VB Digital Marketing squad

CONCLUSIONS

As stated by Marc Andreessen (2011), it seems like Software is eating the World, spreading the idea that every company needs to develop into a software company.

In 2018, the first five companies which were elected as more successful in terms of market capitalization were IT firms: Amazon, Apple, Facebook, Google and Microsoft.

What was found out is that the point is not the software but the way an organization is managed in order to compete successfully in the market. Nowadays, being lively, flexible and able to adjust on the fly is a must for firms to meet the shifting requirements of customer marketplace. Can firms organized in a traditional and hierarchical way respond to the upcoming consumer needs? It may be difficult and ineffective.

Running the agile method is the answer to be successful in this new business reality, concentrating more on delivering value for customers, organizing in small teams in short cycles, and electing networked organization instead of top-down bureaucracy.

The world of industry is entering a new age, called “the age of Agile”, in which everyone is connected with everything and everywhere.

Firms that want to win in this market have to bear this transformation, delivering rapid, intimate and collaborating value for the customers toward an easier and more convenient human life. (Denning S., 2018)

Vodafone, starting from this awareness, has decided to contribute to support those cultural and professional changes that offer all generations involved effective tools to be active and successful in personal and social development processes. Social well-being increasingly benefits from digital technologies.

Therefore, reaching everyone with innovative digital technologies and ultra-fast networks to better live the present and build a better future represents a real challenge for the company, which has to interact with a new customer, who has even difficulties in imagining a world where people manage to survive without mobile phones and Internet. In light of what was discussed in my paper, I can conclude saying that, even if Vodafone is at the beginning of this organization revolutionary process, it is a very big step forward they made toward innovation which leads to the achievement of important benefits, direct and indirect, for the country's economy and people's well-being.

What they have to focus on is diffusing and establishing a solid agile culture and mindset within the organization, since as of today the company still face a big gap between the traditional part and the new one. Thus, their challenge is making the two segments collaborate as fluently as possible.

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