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PROJECT MANAGEMENT

Intragroup Emotional Intelligence and Conflict Management in Agile Software Development Teams

Catarina Isabel de Moura Ferreira

11/2022

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Catarina Isabel de Moura Ferreira

Advisor(s): Davide Rua Carneiro
António Manuel Pereira da Silva Amaral

"One day, in retrospective, the years of struggle will strike you as the most beautiful."

Sigmund Freud

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ABSTRACT

With the evolution of the technological industry, Agile software development teams are facing increasingly complex and ambiguous problems. Organizations are aware of the existing strong competition in the business and, therefore, look to be unique and better. By being comprised of people with different intelligence and skills, with strong emotional, conflict management and decision-making skills, organizations will be equipped with unified people and, consequently, present an improved performance. This will enable them to be better prepared to stand-out and offer their customers enhanced solutions and long-lasting relationships. Hence, it is crucial to study and understand how the emotional state that each member of an Agile software development team presents, how their role on the team can influence the entire group's vision and management of conflicts and contribute to or even enhance the teams' wellbeing and performance. To make this study possible, an exploratory investigation was developed, through the use of the qualitative method, with the inclusion of primary data based on semi-structured interviews with several Agile software development teams and secondary data related to the software tools used by these teams. It is possible to infer that different roles in Agile software development teams have different metrics they rely on and are more valuable. Even so, the team's velocity is one of the most used quantitative metrics and the team's capacity. It was possible to conclude that the complexity of the items they work on directly affects their velocity. The conflicts emergent in these teams have distinct origins, precedents, evolutions and management styles.

In the future, it would be extremely important and valuable to validate the study with a greater diversity of population samples. Namely, from other organizations and/or departments, and use emotion detection tools to obtain greater veracity and authenticity in the feelings and reactions from the software development team members' experience.

Keywords: Emotional Intelligence; Conflict Management; Scale; Agile Software Development Teams; Performance.

RESUMO

Com a evolução da indústria tecnológica, as equipas ágeis de desenvolvimento de software confrontam-se progressivamente com obstáculos ambíguos e complexos. As organizações encontram-se cientes da forte competição inerente ao negócio e, como tal, procuram ser únicas e melhores. Ao serem constituídas por pessoas com diferentes inteligências e capacidades, especificamente com fortes aptidões emocionais, de gestão de conflitos e de tomada de decisão, as organizações estarão munidas de pessoas integradas e unidas e, consequentemente, obterão um melhor desempenho. Todos estes fatores qualificam-nas a estarem bem preparadas para se sobressaírem e oferecerem aos seus clientes melhores soluções e relações duradouras. Assim, é crucial estudar e entender como o estado emocional que cada indivíduo de uma equipa ágil de desenvolvimento de software possui, como cada cargo possui a capacidade de influenciar a generalidade da visão grupal e gestão de conflitos, contribuir ou até melhorar o bem-estar da equipa e o seu desempenho. De forma a possibilitar este estudo, foi desenvolvida uma investigação exploratória, através da utilização do método qualitativo, com a inclusão de dados primários baseados em entrevistas semiestruturadas a diversas equipas ágeis de desenvolvimento de software e dados secundários relativos às ferramentas de software utilizadas por essas mesmas equipas. É possível inferir que diferentes funções nas equipas Ágeis de desenvolvimento de software têm métricas diferentes nas quais confiam e lhes são mais valiosas. Não obstante, a velocidade da equipa é uma das métricas quantitativas mais utilizadas e foi possível concluir que a capacidade da equipa e a complexidade dos itens em que trabalham afetam diretamente a sua velocidade. Os conflitos emergentes nas equipas entrevistadas têm origens, precedentes, evoluções e estilos de gestão diferenciados.

Futuramente, seria de extrema importância e utilidade proceder-se a uma validação do estudo com uma maior diversidade de amostra populacional, nomeadamente, de outras empresas e/ou departamentos e utilizar ferramentas de deteção de emoções de forma a ser possível obter uma maior veracidade e autenticidade nos sentimentos que os membros de equipas de desenvolvimento de software sentem e nas suas reações.

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LIST OF ABBREVIATIONS AND ACRONYMS

CIB	Corporate and Investment Banking
EI	Emotional Intelligence
IQ	Intelligence Quotient
IT	Information Technology
MODE	Management-of-Differences Exercise
NASA	National Aeronautics and Space Administration
NPS	Net Promoter Score
PMI	Project Management Institute
PMBOK ®	Project Management Body of Knowledge
ROCI-II	Rahim Organizational Conflict Inventory-II
TKI	Thomas – Kilmann MODE Instrument
VUCA	Volatility, Uncertainty, Complexity and Ambiguity

PART I – THEORETICAL FRAMEWORK

1 INTRODUCTION

This chapter aims to present the dissertation's theme and relevance, define its main and specific objectives, and highlight its cutting-edge aspects.

1.1 Presentation and Opportunity of the Theme

> *"Today's workforce is being judged by a new yardstick. Not just by how smart we are, or by our training and expertise, but also by how well we handle ourselves and each other"* - Goleman, 2020, p.11

Emotions are essential in how organizations work and evolve (Ashforth & Humphrey, 1995). Fear, anger, frustration, happiness, sadness, confusion, and hassles are present in everyday activities and human interactions. Findings suggest that people's mood at work can become linked to the mood of their teammates (Totterdell et al., 1998).

The study of emotions started over 100 years ago, specifically in 1884, when Professor William James asked, in his book Mind, a simple yet highly relevant question: "What is emotion?". Nevertheless, it was pivotal the work presented by Daniel Goleman, the acknowledged father of Emotional Intelligence (EI) and one of the most influential authors in the field of emotions and EI. In his bestselling work – Emotional Intelligence – Why It Can Matter More Than IQ - he extended his work and research in the field of EI into the organizational context (Fisher & Ashkanasy, 2000). From that moment onwards, the amount of dedication to the topic increased exponentially and few areas of psychology have generated so much popular attention as EI. An inquiry conducted, in 1997, by the American Society for Training and Development concluded that 4 out of 5 organizations are promoting emotional intelligence amongst its personnel (Goleman, 2020).

In today's fast-paced and competitive software industry, more than ever, employees need to manage their emotions and deal appropriately with others, which could support them in managing hazardous situations, such as conflicts. EI has the power to reduce conflicts (Ashkanasy & Dorris, 2017) potentially, but apparently prior studies failure to capture the influence that the EI of team members working on long-term and complex projects has, is probably causing the

positive impact of EI to be underestimated (Khosravi et al., 2020). Therefore, researchers must pay special attention to personal characteristics, attitudes and skills that can boost teams' performance in large-scale projects, drive them to success and foment intragroup relationships.

1.2 Main Objectives

The main objectives of this dissertation are to understand how emotions and conflicts are created and managed through emotional intelligence and the extent to which they can influence the performance and engagement of Agile software development teams.

Intrinsic to these arduous objectives are the achievement of specific goals. They are:

- Clear and pithy definition, historical context and implied concepts of emotions, emotional intelligence, and conflicts in Agile software development projects;
- Most common project lifecycle phase(s) in which emotional intelligence and conflicts are more frequent and critical;
- Use previously validated conflict management and/or measurement scale(s) to assess conflict and its management in real Agile Software Development Teams;
- Identify which performance metrics / indicators are more useful to the various Agile roles available in Software Development Teams and which can better foresee conflicts amongst team members.

1.3 Innovative Contributions

Emotions, EI and Conflict Management are not unknown or relatively new topics in Project Management. According to the Project Management Institute (PMI), attention is given to relationships and conflicts and how adequate management is one of the key competences a project manager must possess (Project Management Institute, 2017). Nonetheless, scholars' available research on Agile software development teams mainly focuses on the project manager and their skills. It does not emphasize the different roles each member has on the team and how their emotions and ability to manage them can positively or negatively influence their daily activities, the interactions with other members of the team, the origin and/or management of conflict and, ultimately, work performance.

This study contributes to theory and practice in several ways. First, it aims to stress the importance of the role emotional intelligence and conflicts play on Software Development Teams and contribute to the existing theoretical literature on the topics. This study also intends to use previously validated conflict management and measurement scale(s) together with the team members' emotional intelligence, to study how emotions, conflicts' intensity, evolution, and management can influence the performance and productivity of the team as a whole, which can hopefully stimulate further research and be used in posterity, for additional investigations.

1.4 Dissertation's Organization

The dissertation is organized into three different parts, each subdivided into different chapters:

(1) Part I - Theoretical Framework

   a. Introduction;

   b. Literature Review.

(2) Part II - Empirical Investigation

   a. Research Methodology;

   b. Analysis and Presentation of the Results.

(3) Part III - Conclusions and Future Research

   a. Conclusions;

   b. Limitations;

   c. Future Research.

Figure 1 illustrates the dissertation's general organization:

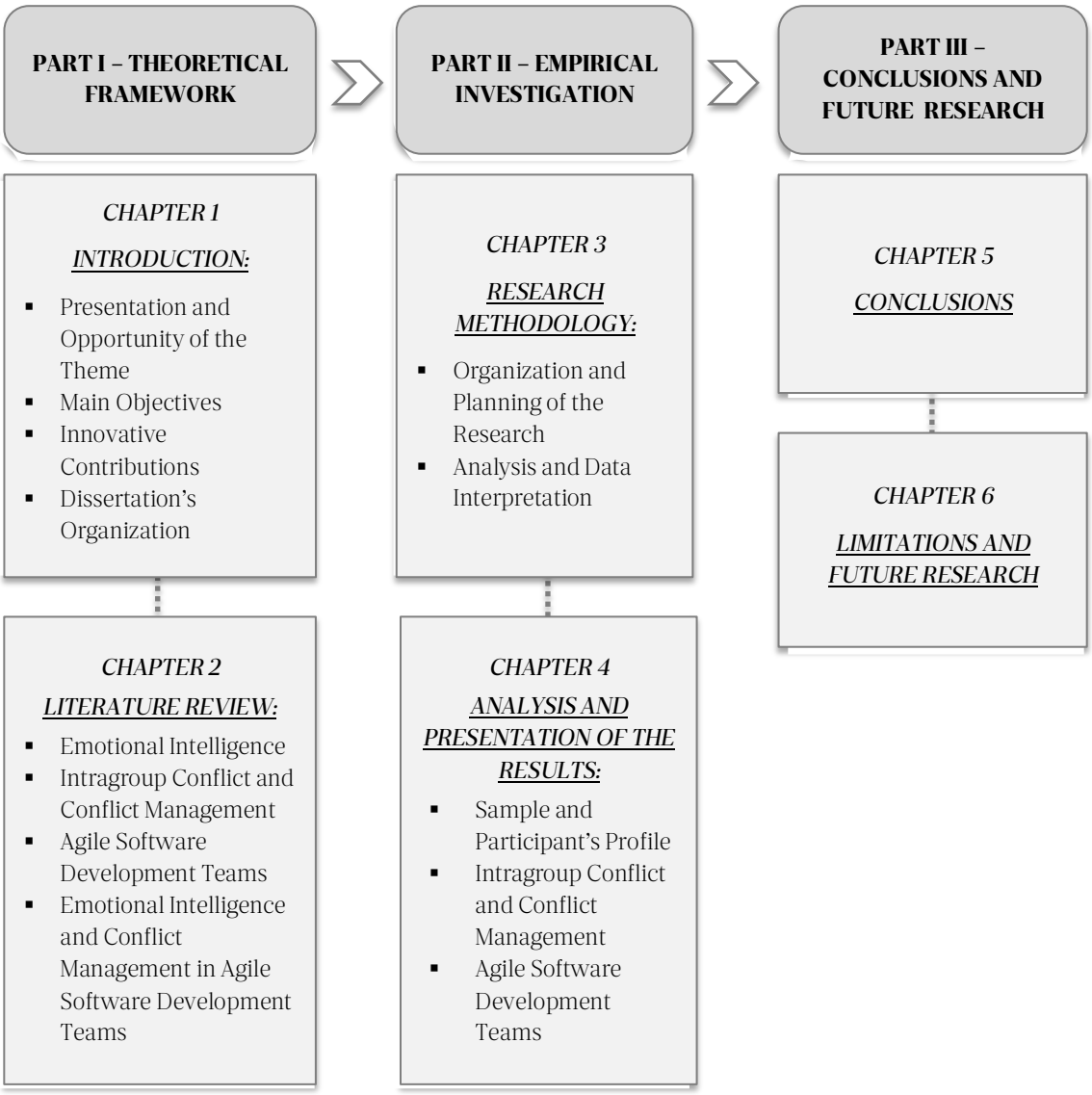

Figure 1 - Dissertation's General Organization | Source: Own Elaboration

The presented dissertation is organized in five chapters, inserted in two different parts.

The first part, **Theoretical Framework**, is subdivided into two chapters: the **Introduction**, where the main topics, objectives, contributions and organization of the dissertation are enumerated and the **Literature Review**, dedicated to the exploration of the main conceptualizations on emotional intelligence, intragroup conflict and conflict management and also Agile software development teams, topics with fundamental support to the Empirical Investigation conducted in further chapters of the document.

The second part, **Empirical Investigation**, comprises three chapters: Research Methodology, Discussion and Presentation of the Results and Conclusions and Future Research. **Research**

Methodology is characterized by the presentation of the investigation and the methodological approach, which include the planning and organization of the research, its goals, the type of investigation chosen, and the instruments nominated for data retrieval. In chapter four - Discussion and Presentation of the Results – the investigation sample is portrayed, and the main results are presented. Finally, in the last 2 chapters – Conclusions and Limitations and Future Research – and based on the results attained, the key conclusions and limitations of the study are presented, and recommendations for future steps being taken on the subject are suggested.

2 LITERATURE REVIEW

"... a literature review may be the best methodological tool to provide answers."

Snyder, 2019, p.334

This section describes the state-of-the-art research on the topics of this dissertation. Initially, brief descriptions of emotions, intelligence and EI are presented, followed by the concepts of conflict and conflict management. Then, a brief description and characterization of Agile related topics, specifically Agile methodologies, and Agile software development teams, is given, and, to complete, emphasis is given to the interconnection of the foremost concepts of this dissertation: emotional intelligence, conflict management and Agile software development teams.

2.1 Emotional Intelligence: a symbiotic relationship between emotions and intelligence

2.1.1 Emotions

Emotion drifts from the Latin word motere, which means "motion", connected with the prefix "-e", which in turn means to "stir away". This represents the diffusion of signals outside of an individual's body, precisely indicating the emotion she/he is feeling through the voice, gestures, expressions, movements and even heart rate.

It can be difficult for people to lucidly understand and make the most out of their EI due to their lack of knowledge concerning emotions (Brooks et al., 2017). Notwithstanding, over the years, emotion has been defined as *"(...) a feeling and its distinctive thoughts, psychological and biological states, and range of propensities to act."* (Goleman, 1995, p.255). *Emotions are, in essence, impulses to act (...)."* (Goleman, 1995, p.14). Mayer et al., (1999) propose that *"emotions are internal events that coordinate many psychological subsystems including physiological responses, cognitions, and conscious awareness. (...) typically arise in response to a person's changing relationships."* (p.1).

Regardless of emotion being studied by various groundworks such as anthropology, cognitive science, social psychology, and philosophy (Ashkanasy & Dorris, 2017), its exact definition has not reached, to this day, a consensus (Goleman, 1995), which is believed to be driven by the *"arise*

from the observation that an emotional reaction is not one reaction, but a constellation of related reactions" (Weiss & Cropanzano, 1996, p.17).

By analysing some of the existing definitions of emotion in the literature, it is possible to infer the vital role emotions play in people's daily lives. Therefore, they can be perceived as lie detectors since they aid in better understanding what a person is feeling. They have the potential to improve communication, bring people closer and even make an individual aware of what he/she is experiencing towards something or someone.

Ekman (1992) determined there were at least six basic emotions "(...) anger, fear, sadness, enjoyment, disgust and surprise" (p.170). Afterwards, in 1995, Goleman indicated the seven main emotions considered, at the time, to be essential:

(1) **Anger:** it is a direct result of felling attacked and unable to achieve something desired. Incites the desire to hurt back;

(2) **Sadness:** a result of the loss of something or someone close and important;

(3) **Fear:** sentiment caused by physical and/or psychological threats. Triggers anxiety, panic, concern and provokes either the freeze or flee response;

(4) **Love:** includes sexual desirability and affectionate feelings. It incites opposite reactions of both anger and fear, generating a state of peacefulness and gratification;

(5) **Surprise:** it is the shortest emotion, usually caused by an unexpected event. It is physically represented by a lift in the eyebrows, to find more details about the unforeseen event;

(6) **Disgust:** provoked by disapproved and abhorrent ideas and/or actions. It is bodily expressed by an *"upper lip curled to the side as the nose wrinkles slightly"* (p.16);

(7) **Happiness:** the most heterogenous of the seven emotions listed, triggered by numerous events. It is frequently desired and enjoyable.

Posteriorly, Ekman & Cordaro (2011, p.365) state there are seven universal emotions, modifying Goleman's list to: (1) "Anger"; (2) "Fear"; (3) "Surprise"; (4) "Sadness"; (5) "Disgust"; (6) "Contempt"; (7) "Happiness".

Humans are biologically gifted with the necessary skills to react to the surrounding events, both positive and negative. They experience unique *"physiological bodily changes"* (Weiss &

Cropanzano, 1996, p.18), allowing them to perceive and become aware of the triggers they experience, whilst their rationality keeping their best interests in mind. For example, an individual senses fear immediately before crossing the street. Hence, she/he looks both ways to avoid an accident.

Despite being contradictory and sometimes even clashing, emotions interact closely with rationality. In Goleman's words (1995, p.18): *"we have two minds, one that thinks and one that feels"*. The logical mind provides consciousness, grasp and deliberation. The emotional intellect is much more thoughtless and unreasoned and *"can be used to guide logical thinking and goal-oriented actions"* (Obradovic et al., 2013, p.275). Both the relationship and antagonism of emotion and reason have a biological explanation which is demonstrated through the brain's evolution – the emotional centre has evolved from the brainstem, and from this emotional zone, the neocortex or the "thinking brain" developed – which stipulates the emotional brain's origin took place before the origin of the rational brain. The brain's emotional areas are tangled through innumerable circuits to all components of the neocortex, allowing emotions to impact rational decisions. Another important brain component is the amygdala, located in the limbic system of the brain, which is the unit responsible for an individual's emotions and social behavior. The bodily signals experienced by an individual are released by the eyes and/or ears and then have three different paths:

(1) travel from the eyes and/or ears to the thalamus;
(2) a first chemical signal is sent from the thalamus (station of reorganization of the stimuli) to the amygdala;
(3) a second signal is sent from the thalamus to the neocortex.

These paths demonstrate that the amygdala responds earlier than the neocortex, consequently, resulting in an emotional takeover of the brain.

Arruda (2014) specified that when the neocortex, the amygdala and the pre-frontal cortex are in complete synchronization and complement each other, the Intellectual and Emotional Intelligence of an individual increase.

2.1.2 Intelligence

The word Intelligence is derived from the two Latin words inter (between) and legere (choose). Hence, an intelligent person is someone who learns how to "choose between".

Sternberg (1997) proposed that intelligence *"comprises the mental abilities necessary for adaptation to, as well as shaping and selection of any environmental context"* (p.1030). Humans cannot only adjust to their surroundings but also learn throughout life what is best and worse and perform a selection according to their needs, goals, and intuition about the situations they must face, fight for, and quit.

"Your degree of happiness is important. If someone is always pissing and moaning, then that affects your evaluation of them... (...) Happy people are nicer to be around. It's important to be an up person" (Jackall, 1988, p.59). Several emotions emerge from human interactions and, consequently, define how groups interact and work together. *"Emotions are contagious, and a single person can influence the emotional tone of a group by* modelling." (Cherniss & Goleman, 2001, p.3). The power of emotions and how each individual can influence and be influenced by them is gigantic. However, they can also be of little value if not correctly rationalized and managed (Mayer, Roberts, et al., 2008). Henceforth, it is crucial to possess the necessary skills and intelligence to know how to not fall into an environment where *"the brightest among us can founder on the shoals of unbridled passions and unruly impulses"* (Goleman, 1995, p.29).

The paradigm of intelligence was significantly broadened when Howard E. Gardner published his well-respected work "Frames of Mind", in 1983. Gardner (1983) identified eight types of intelligence, which shaped the Theory of Multiple Intelligences, represented in Figure 2.

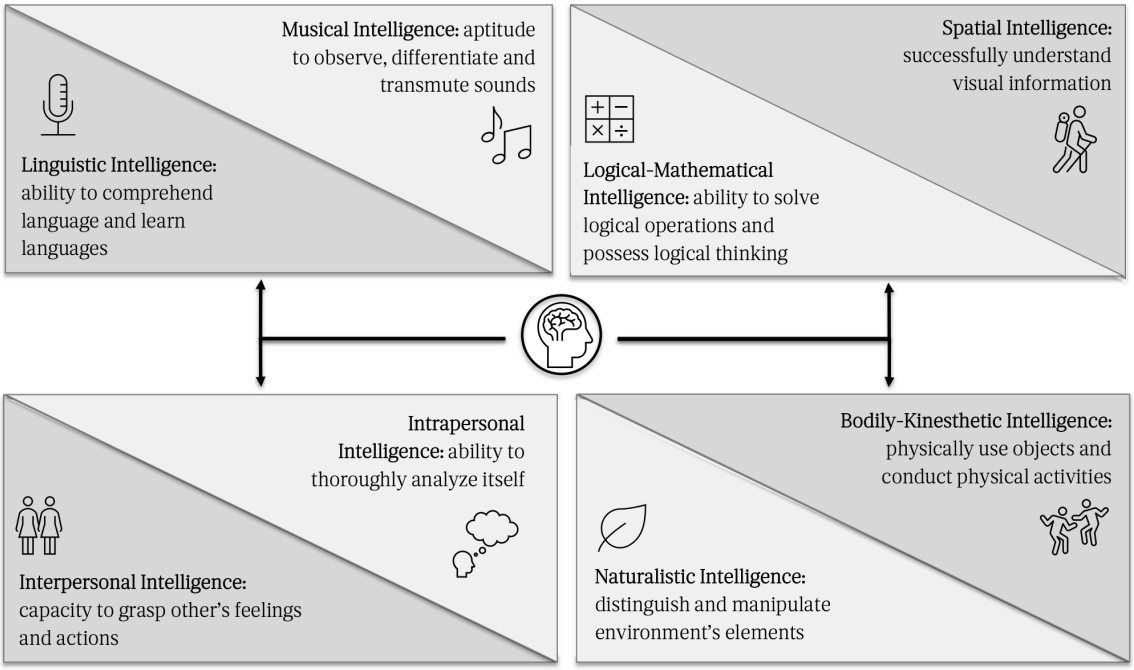

Figure 2 - Theory of Multiple Intelligences. Source: Own Elaboration, based on Gardner (1983)

A standard intelligence must meet specific criteria, classified, and divided into three categories: conceptual, correlational, and developmental (Mayer et al., 1999). In their study, Mayer et al. (1999) affirmed that emotional intelligence *"is, in fact, an intelligence"* (p.271) because it meets the three criteria categories:

(1) Conceptual: emotions convey information. For example, when an individual report pleasant feelings, but this is differently perceived by the group, who view less enjoyable feelings;

(2) Correlational: emotional intelligence defines a set of abilities that are moderately intercorrelated with one another;

(3) Development: intelligence matures with age and experience.

2.1.3 Emotional Intelligence (EI)

Peter Salovey and John Mayer, generally regarded as the official introducers of the concept of emotional intelligence and deeply responsible for what is currently known (Ashkanasy & Daus, 2005) were pioneers in illustrating how EI could be measured (Mayer et al., 2011). They base their work on the Theory of Multiple Intelligences, where Gardner (1983) identified, amongst others, two types of intelligence – intrapersonal and interpersonal – where EI is incorporated.

As reported by Goleman (1995, p.42) *"Interpersonal intelligence is the ability to understand other people: what motivates them, how they work, how to work cooperatively with them (...)* and it *"includes the capacities to discern and respond appropriately to the moods, temperaments, motivations, and desires of other people."* (p.43). *"Intrapersonal intelligence . . . is a correlative ability, turned inward. It is a capacity to form an accurate, veridical model of oneself and to be able to use that model to operate effectively in life"* (p. 42). *"In intra-personal intelligence, the key to self-knowledge, he included "access to one's own feelings and the ability to discriminate among them and draw upon them to guide behavior."* (p.43). Despite his breakthrough work, Gardner did not explore with much detail the enormously important role emotions play in these spheres of intelligence (Goleman, 2020).

Contrariwise, (Mayer et al., 2000), expressively, included emotions in their definition of EI – *"ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others."* (p. 82). Despite, according to the literature, the first official definition of Emotional Intelligence being provided in 1997, by Salovey and Mayer, the popularization of the concept occurred when journalist Daniel Goleman came across Salovey and Mayer's work and decided to name his best-seller book "Emotional Intelligence: Why It Can Matter More Than IQ". Goleman (1995) introduced the idea that a person's Intelligence Quotient (IQ) does not determine his/her success or unsuccess in life, highlighting the superficiality of the definition of intelligence at the time.

Goleman's work inspired Time magazine to instil and bring to the limelight the idea that not only intellect is a valid variable to determine success:

"(...) It's not your IQ. It's not even a number. But emotional intelligence may be the best predictor of success in life, redefining what it means to be smart." (Ciarrochi et al., 2001, p.17).

An individual's intelligence is, in its most traditional method, measured through an IQ test which *"measures crystallized knowledge, emphasizing the method of using paper and pencil, but do not assess the ability to assimilate and solve every day, professional or even personal problems."* (de Azevedo Brunelli Rêgo & Fraga Rocha, 2009, p.142).

2.1.3.1 Emotional Intelligence (EI) Models

According to the literature, there are three EI Models – (1) ability model; (2) mixed model; (3) traits model (Kanesan & Fauzan, 2019). Each model was designed due to the different definitions of EI in academic research.

- **Bar-On Model of Emotional-Social Intelligence (ESI)**

Bar-On, in 1997, based on the work developed by Goleman in 1995, concluded that EI comprises non-cognitive abilities and skills with a direct impact and influence on an individual's success while enduring burdens and pressures of the environment in which it is involved. According to the author, there are five social and emotional components which allow an increase in EI and *"(...) determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands."* (Bar-On, 2006, p.14):

(1) **Intrapersonal Aptitude:**
   - Self-regard;
   - Emotional Self-Awareness;
   - Assertiveness;
   - Independence;
   - Self-Actualization.

(2) **Interpersonal Aptitude:**
   - Empathy;
   - Social Responsibility;
   - Interpersonal Relationship.

(3) **Stress Management:**
   - Stress Tolerance;
   - Impulse Control.

(4) **Adaptability:**
   - Reality Testing;
   - Flexibility;
   - Problem-Solving.

(5) General Mood:

- Optimism;
- Happiness.

♦ Mayer and Salovey's Four-Branch Model of EI

"Emotional intelligence refers in part to an ability to recognize the meanings of such emotional patterns and to reason and solve problems on the basis of them"

Mayer et al. (2000, p.400)

With wide acknowledgement, Mayer and Salovey defined and described EI as an ability model. This model describes several emotional and neurological abilities (Macht et al., 2019), inserted in four distinct branches or divisions - "The Four-Branch Model of Emotional Intelligence" - which compose an individual's EI, and are shown below in Figure 3.

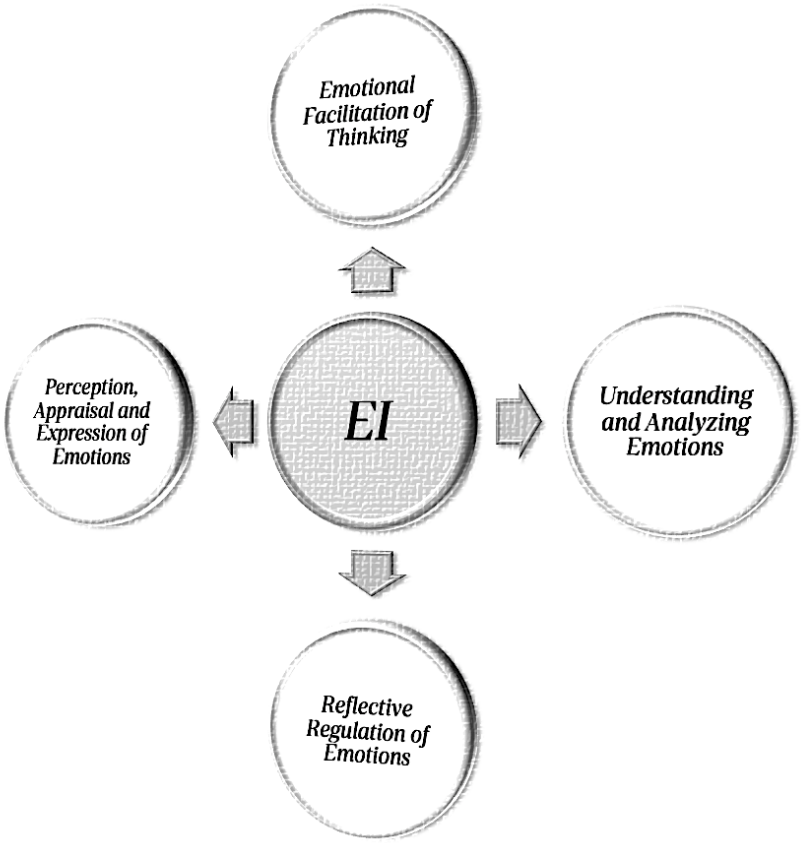

Figure 3 - Mayer and Salovey's Four Branch Model of Emotional Intelligence | Source: Own Elaboration based on literature review

This model sets that individuals have four specific aptitudes of Emotional Intelligence (EI), each with four levels that range from the most basic to the highest level (Kanesan & Fauzan, 2019):

(1) the ability to **perceive, appraise and express emotions**: comprehending the identification and deciphering of emotions as they happen to an individual and others (Goleman, 1995, p.37; Fiori et al., 2018). Human beings have the ability to, as they grow and mature, associate empathically different emotions (such as joy, sadness, excitement) to facial expressions, objects and can even determine which emotions and bodily representations of them are true or false (Mayer et al., 2000);

(2) the capability of **emotional facilitation of thinking**: through the analysis of and reflection on emotions as auxiliaries to problem-solving, decision-making and empathy skills;

(3) the aptitude to **understand emotions**, that is, to grasp how different emotions are connected, how they change over time and the signals they convey (Fiori et al., 2018; Mayer et al., 2008);

(4) the ability to successfully **manage emotions**, one's own and of others, to achieve specific objectives (Fiori et al., 2018; Mayer et al., 2008).

- **Daniel Goleman's Framework of Emotional Intelligence**

In 1995, Daniel Goleman presented an updated version of his EI Framework of Emotional Competencies.

Table 1 – Daniel Goleman's Framework of Emotional Intelligence | Source: Own Elaboration based on Goleman (1995).

	Personal Competence	Social Competence
Recognition	***Self-Awareness: Understanding Feelings and Accurate Self-Assessment*** ♦ Emotional Self-Awareness: being able to recognize one's emotions and of others; ♦ Accurate Self-Assessment: identify own strengths and weaknesses; ♦ Self-Confidence: the good notion of a person's value and skills;	***Social-Awareness: Reading People and Groups Accurately*** ♦ Empathy: understanding other's emotions, needs and nonverbal expressions, as well as being genuinely interested in their problems; ♦ Service Orientation: comprehend clients' and stakeholders' desires and apprehensions; ♦ Organizational Awareness: the ability to read the emotional and political realities of groups and teams of an organization;

Regulation	*Self-Management: Managing Internal States, Impulses, and Resources* ♦ Emotional self-control: having control of emotions and the consequent reactions/impulses to them; ♦ Trustworthiness: demonstrating honesty and integrity ♦ Conscientiousness: comprehending the importance of responsibilities and being honourable in attending to them ♦ Adaptability: being open to new information and flexible towards new events or change ♦ Achievement Drive: represents the willingness for continuous improvement and drive for excellency; ♦ Initiative: be proactive, grasp opportunities and anticipate problems	*Relationship Management: Inducing Desirable Responses in Others* ♦ Developing Others: recognize and help others develop their competencies through constant constructive feedback; ♦ Influence: being persuasive to cope with others' emotions and responses; ♦ Communication: be a good listener, creating an open and transparent environment and communicating with others; ♦ Conflict Management: excel at identifying and handling conflict and disputes with optimism and open discussions; ♦ Visionary Leadership: inspire others to work effectively together, broadcast the vision and mission and essentially lead by example; ♦ Catalysing Change: recognize the positive aspects and be open to change; ♦ Building bonds: cultivate and maintain healthy relationships; ♦ Teamwork and Collaboration: capacity to generate a good team spirit and stir it up amongst the team.

McClellan et al. (2017) identified the "Emotional Intelligence Process". According to this process, several steps occur during the engagement in emotional intelligence. First arises the unconscious existence of an emotional response. Second, the realization of the occurrence of the emotion, with a subconscious emotional reaction. Then the third step, where the individual becomes aware of the emotional response. Afterwards, it becomes essential for the individual to distance himself from the situation and reflect on the available options for the actions to be taken, so that the best is chosen. Afterwards, the individual must select the most appropriate behavior and control its emotions and attitude to attain the idyllic outcome. Whilst this process is highly beneficial and precise, McClellan et al. (2017) support the idea that too much focus is given to negative emotions, narrowing the actual usefulness of emotional intelligence.

2.2 Conflict and Conflict Management

2.2.1 Conflict: Conceptualization

"Conflict is an unavoidable component of human activity."

Brahnam et al., (2005, p.204)

Conflict is ubiquitous. With organizations continuously investing in relationships amongst contrasting people, with different goals, opinions, expertise, incentives and management strategies, conflict occurs between various individuals because of their frequent interaction with each other (Madalina, 2016).

It is not easy to describe conflict; its conceptualization and opinions have evolved and altered over the years (McIntyre, 2012). In the literature, there are available several definitions for conflict. Some examples include:

Thomas (1992) refers to conflict as the process that initiates when someone discontents another or intends to, presenting a vaster definition of the concept.

Conflict is a process amid an individual or group whose beginning is caused by dissimilarities or oppositions between the differences in beliefs, values, or interests (de Dreu & Beersma, 2005).

"Conflict refers to some form of friction, disagreement, or discord arising between individuals or within a group when the beliefs or actions of one or more members of the group are either resisted by or unacceptable to one or more members of another group" (Madalina, 2016).

"(...) any struggle or dispute over ideas, opinions, resources and duties." (Khosravi et al., 2020).

Despite the non-existence of unanimity on the definition of conflict, similarly to what happens with the concept of emotion, there are three common ideas the existing definitions of conflict agree on (Thomas, 1992; Cunha et al., 2016):

(1) **interdependence:** each of the involved parties can hamper the other;

(2) **incompatibility**: were episodes of animosity between the concerns and goals of the parties occur;

(3) **interaction,** represents the origin of the conflicting situations and contact between its elements.

In 2001, A. M. Rahim found, despite the confusion created by scholars of different topics, their definitions coincided in five foundations (p. 18):

(1) *"Conflict includes opposing interests between individuals or groups in a zero-sum situation";*

(2) *"Such opposed interests must be recognized for conflict to exist";*

(3) *"Conflict involves beliefs, by each side, that the other will thwart (or has already thwarted) its interests";*

(4) *"Conflict is a process; it develops out of existing relationships between individuals or groups and reflects their past interactions and the contexts in which these took place";*

(5) "*Actions by one or both sides do, in fact, produce thwarting of others' goals".*

Conflict can be studied within a group. The proportions of the existing conflict-themed literature became much more significant when focused on organizations, notably on their constituent groups and teams. This work will have tremendous importance since it will focus on conflict, particularly intragroup conflict management in Agile software development teams.

2.2.2 Process of Conflict

The conflict has been perceived, by many scholars, as a sequence of recursive stages and events, each with equal importance and forming the process of conflict (Cunha et al., 2016). This process is illustrated in Figure 4.

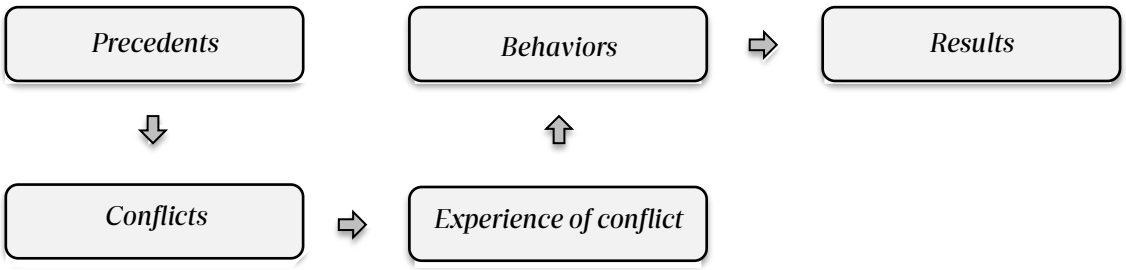

Figure 4 - Process of Conflict | Source: Own Elaboration based on Cunha, M., Rego, A., Cunha, R., Cabral-Cardoso, C., & Neves, P. (2016)

- Conflicts have precedents of multiple natures, such as:
  - Personality traits;
  - Relationships with other people;
  - Leadership style;
  - Task interdependency.

- The precedents can help understand conflicts which arise in three types:
    - Resource conflicts;
    - Intellective conflicts;
    - Evaluative conflicts.
- Consequently, the parts involved in a conflict experience intentions, strategies, feelings, and actions. For example:
    - **Moods:** tend to be a stimulus for how people think, perceive others and envisage situations. People with happier thoughts and intents have more ease in remembering good aspects of life and implement less hurtful approaches;
    - **Emotions:** positive emotions promote creativity which, in turn, may prompt more creative solutions. On the contrary, negative emotions towards people and situations, namely and as an example, revenge, may harm and aggravate the conflict.
- Subsequently, individuals adopt behaviours and styles to manage the conflict they are in, which popularly can be described as:
    - Competing;
    - Collaborating;
    - Compromising;
    - Avoiding;
    - Accommodating.
- Lastly, the conflict's process has outputs, positive or negative, for both parts tangled, such as:
    - Triumph;
    - Overthrow;
    - Hostilities;
    - Anxiety;
    - Frustrations.

2.2.3 Levels and Types of Conflict

The variety of conflicts triggers them to be classified in various forms (Cunha et al., 2016; Madalina, 2016).

Conflicts can be categorized according to their different levels: interpersonal, intrapersonal, intragroup, and intergroup, explored in detail in Table 2.

Table 2 - Levels of Conflict | Source: (Cunha et al., 2016, p.467)

LEVEL	DEFINITION	EXAMPLES
Interpersonal conflict	***The conflict occurs between individuals.*** "Interpersonal conflict refers to the manifestation of incompatibility, disagreement, or difference between two or more interacting individuals." (A. M. Rahim, 2001, p. 117)	The superior and the subordinate disagree on the infringement of a task's deadline
Intrapersonal conflict	***The conflict occurs within an individual.*** "Difficulty in making a decision because of uncertainty or if he or she is pushed or pulled in opposite directions" (A. M. Rahim, 2001, p.97)	A new employee experiences uncertainty about the tasks she/he must perform
Intragroup conflict	***The conflict occurs within a group.*** "Intragroup conflict refers to the incompatibility, incongruence, or disagreement among the members of a group or its subgroups regarding goals, functions, or activities of the group." (A. M. Rahim, 200, p.143)	Members of the same team disagree about how they must react to a specific organizational policy
Intergroup conflict	***The conflict occurs between groups.*** "Intergroup conflict refers to the collective incompatibility or disagreement between two or more divisions, departments, or subsystems in connection with tasks, resources, information" (A. M. Rahim, 2001, p 163)	Different departments of the same company clash on the payment deadlines to the customers

This dissertation will be focused on the intragroup conflict in Agile software development teams.

According to scholars, intragroup conflicts' origin and development are factors of the utmost importance, since they *"provide great insight into recurring patterns affecting teams"* (Shah et al., 2021). As evidenced by Shah et al. (2021), the source of intragroup conflicts can be of four types:

(1) **individual:** one member of the team initiates a conflict with the others. They are typically described as toxic individuals;

(2) **dyad:** existing conflicts between two people in the team. Can lead to mistrust, miscommunication, and insults;

(3) **subgroups:** occurs between two or more people in the team. Studies have shown that diversity amid subgroups often produces conflicts;

(4) **whole team:** most of the team members are in conflict caused by different standpoints and interpersonal incompatibilities.

The same authors refer to three paths for the evolution of conflict:

(1) **continuity:** conflict continues unresolved throughout time;

(2) **contagion:** diffusion of the conflict originated by one of more members to others;

(3) **concentration:** occurs when a conflict initiated at a higher level becomes more focused at a lower level.

Conflicts can be classified additionally by what constitutes them and on the predecessor circumstances, grouping them by different types (A. M. Rahim, 2001; Cunha et al., 2016), well-described in Table 3.

Table 3 - Types of Conflict | Source: (Cunha et al., 2016, p.466)

TYPE	DEFINITION
Goals/Interests/Resources	Incompatibility between goals, interests, and preferences of the people involved in the conflict. *"when each party, sharing the same understanding of the situation, prefers a different and somewhat incompatible solution to a problem involving either a distribution of scarce resources between them or a decision to share the* work of solving it" (Druckman & Zechmeister, 2016, p.450)
Cognitive / Substantive / Intellective	Expressed through controversies of the divergencies in the evaluation of factual information. *"substantive conflict is associated with the task or other business-related issues involved in such a situation."* (A. M. Rahim, 2001, p.21)

Normative / Evaluative	Result of differences in taste and values. *"occurs when two social entities differ in their values or ideologies on certain issues"* (A. M. Rahim, 2001, p.22)
Affective / Socioemotional	Portrayed by personal frictions, personality clashes, hostility, mistrust. *"occurs when two interacting social entities, while trying to solve a problem together, become aware that their feelings and emotions regarding some or all the issues are incompatible"* (A. M. Rahim, 2001, p.21)

Before 1990, considerable organizational literature alleged that conflict was detrimental, ineffective, and unproductive (Jehn & Bendersky, 2003). However, Litterer (1966) promptly affirmed that conflict could be positive and constructive for organizations, particularly when organizations have modernization and change, urging organizations to avail the good and elude the bad of conflict (McCarter et al., 2020).

Jehn (1995) made clear the distinction between conflicts triggered by emotional, and personal relations and issues, such as different personalities, values, and ideals amongst the group, causing negative emotions such as tension and hostility – relationship conflict – and team and conflicts related with tasks, their content, and outcomes the group or team is executing – task conflict (de Wit et al., 2012). Posteriorly, in 1997, another type of conflict was identified – process conflict -, characterized by disagreements among a group or team members concerning the method of task execution, such as delegation of responsibilities (de Wit et al., 2012) and how to get the work done (Bendersky & Hays, 2012). Bendersky and Hays (2012), through the analysis of the literature on organizational conflict, perceived by that plentiful examples were not adequate to fit into one of these three classifications. Namely, because they involved clashes over status and the emblematic power an individual obtains when in positions of higher status, through the approval and respect of low-status individuals (Bendersky & Hays, 2012). According to Bendersky & Hays (2012) this is classified as status conflicts, which are efforts individuals make to defend or elevate their prominence in the social hierarchy of their group (Lee et al., 2018).

De Dreu and Weingart (2003) concluded that task conflict negatively impacts team performance and satisfaction. On the contrary, Jehn (1995) suggested that task conflict can positively impact

team outcomes when arising under certain circumstances, such as when combined with affective/socioemotional conflicts (Cunha et al., 2016). Jehn (1995) also confirmed what most of the studies support: the idea that relationship conflict has a negative effect on the team's outcomes which happens due to three reasons:

(1) directly associated with anxiety, causing a higher difficulty in information processing by members of the team;

(2) individuals are more resistant to task-related ideas by others as a consequence of the hostility provoked by this type of conflict;

(3) time and energy consuming for the team members, creating a barrier to progress.

Through Bendersky and Hays's (2012) research, they concluded that groups experience task conflicts rather than status conflicts and that there are significant differences in task conflicts when status conflicts did or did not occur: when status conflict did not occur, the task conflicts have positive effects on group performance with assumptions being doubted, information shared, and options critically discussed. On the contrary, when status was present in the interaction, were previously evidenced by the benefits of sharing and debating were less significant. In this scenario, individuals defended their social status and conflict was more likely to arise as unproductive and conceivably hazardous.

Table 4 - Potential Conflict Precedents | Source: Cunha et al., 2016 (p.479)

PRECEDENTS	EXAMPLES / DESCRIPTION
Interdependency	The execution of tasks is dependent on and limited to the cooperation of all members
Conflicts of responsibilities/functions	Due to differences in the interpretation of roles or organizational structure, people can consider themselves as either responsible or not responsible for a specific topic
Different goals	The objectives of each team member may be different and clash
Aggressive stance	People with aggressive conflict management styles tend to generate more conflict than people with assertive conflict management styles
Incompatible personalities	Some personality profiles may not be the stimulus of conflicts but generate conflict when interacting with exact profiles
Poor performance	Individuals with reduced performance can provoke unpleasantness reactions among superiors and colleagues
Inadequate criticism	The team member may criticize others, resulting in feelings of anger, retaliation and low self-esteem

Cultural differences	Certain behaviours may not be acceptable for every culture, causing distrust and difficulty in establishing an effective relationship
Functional and hierarchical differentiation	High hierarchization may lead to status differences, barriers to communication and dependencies
Ambiguous policies, rules, or patterns	When the performance patterns are incredibly high, team members may be negatively affected by them, have high levels of stress and anger
Tight deadlines	Tight deadlines result in high levels of pressure, tension, anxiety, miscommunication and irritation
Stereotypes	A person's vision of other people may be directly influenced by stereotypes and not by how people effectively are. This could lead to aggressive behaviour and defiance
Elevated number of decision makers	Differences of opinion and interests may cause disagreements
Workplace's diversity	Sexual, ethnical, and cultural diversity may induce distinct visions of the organizational world, which in turn can lead to stereotypes, themselves conflicts generators
Emotions	Positive emotions can cause empathy, openness, and candour, but when negative, they can lead to aggressive responses and behaviours
Favouritism	Occurs when the team perceives one or more members are being favoured, causing negative emotions and potentially conflict among the disadvantaged
Rewards System with a null logic	People are competitive and strongly believe that for them to be successful, others cannot
Distrust	Relationships are not built with a strong foundation, and the entire information exchange and intents are negatively perceived
Low level of group cohesion	Groups with low levels of cohesion tend to have more conflicts and disagreements, even though this can also conduce to high levels of group thinking
Communicational barriers	Communication is vital amongst groups. When the communication is not efficient – due to status differences, obstacles in the meaning of words or perceptions – conflict may arise
Unresolved conflicts	Unresolved conflicts can, consequently, escalate, reappearing frequently progressively vigorous
Dominating strategies	When one of the parts adopts a dominating conflict management style, the other can feel resented and the need for retaliation
Leadership Styles	When the group's leader is aggressive, inflexible, or insecure, the possibility of conflicts to exist increases
Broken Promises	Promises of bonuses, promotions, or salaries unfulfilled may have as a consequence frustration, protests, mistrust and negative emotions towards the decision-makers

2.2.4 Conflict Management

"What we need for contemporary organizations is conflict management, not conflict resolution."

A. M. Rahim (2001, p.76)

In 1957 the study of conflict in management began when Robin Dubin observed power conflicts between labour unions and managers within organizations (McCarter et al., 2020).

Thomas (1992) suggests conflict and conflict management at work substantially influence individual, group, and organizational effectiveness, as well as wellbeing. Conflict management practices are prone to use their influence in reinstating healthy team dynamics when conflict befalls (Nesterkin et al., 2012).

Through analysing conflict management tactics and styles in organizations, it is possible to obtain information about how valuable and practical they are in particular scenarios (Weider-Hatfield, 2016).

If managed well, conflicts can result in creativity, changes, development, and the generation of comfortable and safe climates in organizations rather than being destructive (Çınar & Kaban, 2012).

2.2.4.1 Conflict Management Styles

When choosing the best conflict management approach, three factors should be taken into consideration:

(1) Seriousness and urgency of the conflict;

(2) Ponder and consider the most suitable outcome;

(3) Individual preferences.

Thomas & Kilmann, in 1974, reinterpreted Black & Mounton's work and developed the "Thomas – Kilmann MODE (Management-of-Differences Exercise) Instrument (TKI)" a thirty-paired (A. and B.) questions inventor, which assesses an individual's behaviour in generic and unspecified conflict circumstances. Further, the TKI instrument acknowledges there are five specific styles to manage conflict (McIntyre, 2012):

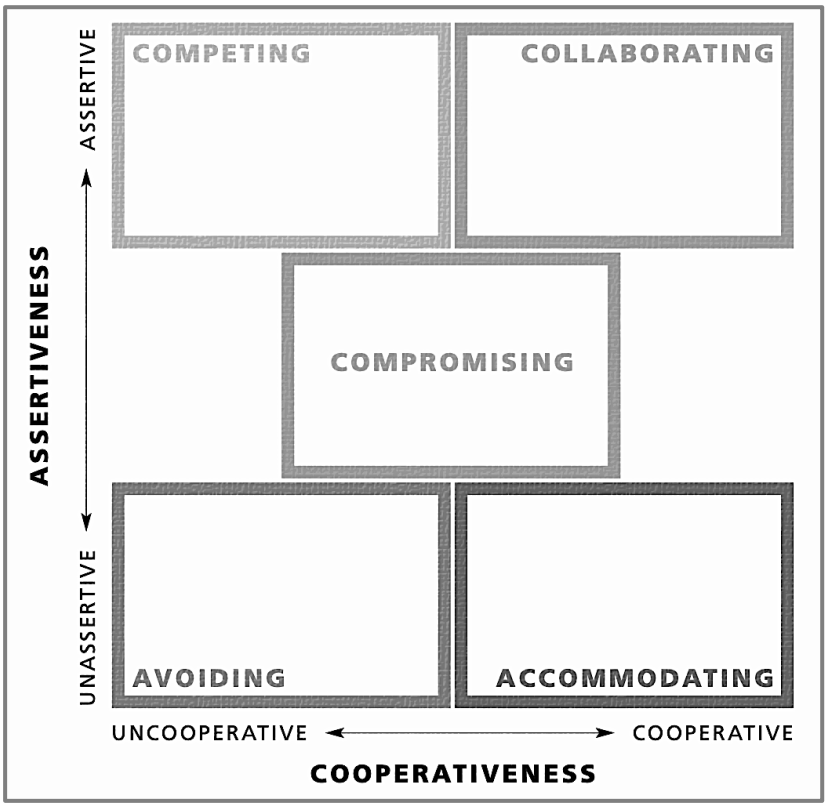

Figure 5 - Thomas-Killman Instrument | Source: Kilmann & Thomas (1977)

(1) **Competing (high concern for self, low concern for others):** in this style, the individual's interests and opinions have priority and must be imposed. It is highly associated with an authoritative and competitive profile and is also used when an urgent action must be taken in crucial or emergency situations (Madalina, 2016). It may not tackle the root cause of the conflict, opening the possibility to further conflicts in the future;

(2) **Collaborating (high concern for self and others):** achieving an optimal solution, where the best interests of everyone involved are met, is the main goal of this conflict management style. Its main characteristics are assertiveness, cooperation amongst the involved parties, and healthy discussion. It is considered the most significant and most effective conflict management style (Madalina, 2016; McIntyre, 2012). Extroverted people tend to use this conflict management style much more often than introverted people (McIntyre, 2012);

(3) **Compromising (moderate concern for self and others):** *"it can be used as a temporary solution"* (Madalina, 2016, p.810). The goal of this style is to fulfil each other's needs, in order to achieve a final understanding, where everyone benefits from compromising;

(4) **Avoiding (low concern for self and others):** here, the conflict is evaded for many different reasons – prevent tense situations, poor communication and relationships, hoping that the conflict will diminish over time and even difficulty in dealing with confronting circumstances - leading to the individuals to flee the situation. Notwithstanding, *"the reasons for the conflict remain intact"* (McIntyre, 2012, p.299);

(5) **Accommodating (low concern for self and high concern for others):** the main target is to build a harmonious environment with a sense of self-sacrifice due to the detriment of the needs and desires of one involved. People who adopt an accommodating conflict management style are altruistic, compliant, generous and sympathetic.

To sum up, the five styles used in the TKI Instrument to determine an individual's TKI profile are:

- Unilateral obligation of the solution;
- Concessions;
- Negotiating a compromising result;
- Avoid the conflict hoping, with time, it will fade;
- Relinquish one of the involved in the conflict.

All five styles have benefits and disadvantages, which are presented in Table 5:

Table 5 – Benefits and disadvantages of the Conflict Management Strategies | Source: Cunha et al. (2016, p.472)

Style	Benefits	Disadvantages
Competing	Stimulates creativity	The losing part can become resented, which can difficult future negotiations
Collaborating	The involved parts deal with the parties' interests and not positions	Duration can become excessive
Compromising	Quick solutions	None of the parties is satisfied with the outcome
Avoiding	Conflict escalation can be stopped	Temporary solution
Accommodating	Encouragement of future cooperation	The problem itself is not completely tackled

The five modes were evenly distributed along the paired questions (Kilmann & Thomas, 1977). On each pair of statements, each individual must choose the option that best describes actions taken to determine the KPI scores, which in turn have as an outcome the catalogue of conflict management style used. An individual's score is merely the number of times statements representing that mode are selected over other statements (Kilmann & Thomas, 1977). Internal consistency coefficients of the MODE instrument were in the moderate range, excluding the ones for the accommodation mode. Yet, these coefficients have a very positive equivalence compared to other instruments' coefficients (Kilmann & Thomas, 1977).

Subsequently, and in line with Black & Mouton, in 1964, and Thomas & Kilmann, in 1974, Rahim, in 1983, developed the Rahim Organizational Conflict Inventory–II (ROCI-II) a 28, 5-point Likert items (*"from strongly agree to strongly disagree"* (Weider-Hatfield, 2016)) with the intent to measure conflict management styles along two dimensions – *"concern for self and others"* (M. A. Rahim, 1985) . It contains three instruments that allow scaling the self-report of the styles along different members: (A) the individual's superior; (B) the individual's subordinate; (C) the individual's peers.

M. A. Rahim (1985) named these styles:

(1) **integrating:** "high concern for self and others";

(2) **obliging:** "low concern for self and high concern for others";

(3) **dominating:** "high concern for self and low concern for others";

(4) **avoiding:** "low concern for self and others";

(5) **compromising:** "intermediate in concern for self and others".

These styles directly correlate with the styles identified and named by Thomas & Kilmann (1974), previously enumerated. Generally, integrating and compromising (in some situations) are appropriate for dealing with strategic issues and the remaining for tactical and daily situations (M. A. Rahim, 1985). This inventory serves the purpose of measuring the different conflict styles, recommending intervention tactics, and revealing the role communication plays in organizations (Weider-Hatfield, 2016). The test-retest reliability, internal consistency, item analysis, factor structure, content, concurrent, construct and predictive validity of the scales in this inventory was found to be fairly adequate, classifying the ROCI-II as a possible instrument used to predict

appropriate conflict behaviours and assessing five conflict styles. The existence of mixed encouragement is suggested by the fact that only three out of the five conflict management styles are assessed by the scale (Weider-Hatfield, 2016).

When the conflict is not correctly managed, resulting in an increase in the level or intensity of the conflict, the main consequence is an escalation of the conflict. Table 6 describes each phase of the conflict escalation levels.

Table 6 - Conflict Escalation Levels | Source: Cunha et al. (2016)

PHASE	DESCRIPTION	HOW EACH PART SEES THE OPPONENT
Rationality and Control	Exists cooperative behaviour, since people involved in the conflict are fully aware of the strains but try to maintain rationality and control	*"We can still understand each other"* (p.485)
Breakup of the Relationship	The main reason for the stiffness becomes the relationship between the people in the conflict. They do not see each other as valuable to conflict management any longer, instigating disrespect, hostility and distrust	*"He/she has bad intentions and bad character... I am better than him/her – but I have to answer"* (p.485)
Aggression and Destruction	Positivity and cooperation are eliminated and replaced with obliteration and disbelief. People become illogical, jeopardizing their own safety	*"I have to destroy him/her – otherwise, I'll be the one to wither"* (p.485)

2.2.4.2 Conflict Measurement Scales

With conflict inherent to organizations and teams' interactions, it is extremely important to understand the benefits and/or disadvantages conflict can give them (Jehn, 1995).

In this section, three models/scales of intragroup conflict in organizations are described, along with the authors' methods and main conclusions.

- Jehn's Intragroup Conflict Scale (ICS) (1995)

The questionnaire suggested and tested by Jehn (1995) has been widely applied in conflict-related investigations (De Dreu & Weingart, 2003). For example, to assess the amount and type of conflict in organizational teams, Jehn (1995) developed an eight-item questionnaire, on a 5-point Likert scale, with the first and latter options being "1 = 'None' and 5 = 'A lot".

1. How much friction is there among members in your work unit?
2. How much are personality conflicts evident in your work unit?
3. How much tension is there among members in your work unit?
4. How much emotional conflict is there among members in your work unit?
5. How often do people in your work unit disagree about opinions regarding the work being done?
6. How frequently are there conflicts about ideas in your work unit?
7. How much conflict about the work you do is there in your work unit?
8. To what extent are there differences of opinion in your work unit?

Figure 6 - Intragroup conflict items | Source: Jehn (1995).

In the research, Jehn (1995) additionally measured individual performance *"through performance appraisal ratings, departmental records and supervisors' ratings of individuals"* (p.265). In the supervisor's ratings of individuals, supervisors rated their employees on a scale from "0 = "Unsatisfactory" to 4 = "Extremely Satisfactory"", the performance appraisals considered the employee's performance, productivity, velocity, exactness and error rate. Group performance was also measured in this study. Supervisors, managers, and vice-presidents rated their teams on a 7-point Likert scale from "1 = Not at All Effective" to "7 = Very Effective", allowing Jehn (1995) to infer conclusions on group performance.

Individual's reactions and satisfaction were also considered in Jehn's (1995) study and measured through a 5-point Likert question and a faces scale. In this method, individuals had to circle their face, which better indicated how they felt while working in the team.

In the conclusions of the study, Jehn (1995) was able to find that, predominantly, relationship and task conflicts were negatively correlated with positive reactions, and relationship conflicts, satisfaction and intention to stay were directly related: the more individuals perceive relationship conflicts, the less they are inclined to stay, and a reduction in their satisfaction is verified. Relationship conflict provoked psychological distress in members who observed conflicts amongst other team members.

Task conflicts were negatively related to individuals' satisfaction an intent to stay in the team. Jehn (1995) disintegrates task types into specific types: routine and nonroutine group tasks. The results indicated task conflict was consistently negatively associated with performance in routine group tasks and contrarily, positively related with performance in nonroutine group tasks.

The effect of conflict norms on member's reactions was also proved in the survey and the conclusions were that conflict norms promoting openness augment the beneficial effects of task conflict but also increase the negative power of relationship conflict.

- Jehn & Mannix (2001)

After the identification by Jehn of the process conflict (de Wit et al., 2012), Jehn and Mannix (2001), argued that in order to understand the associations between conflict types and team performance fully, it is necessary to comprehend when conflict arises and also the patterns a team develops with time.

In this work, Jehn and Mannix (2001) identified three hypotheses, matching with the three types of conflicts being studied:

(1) **Hypotheses 1:** "high performance groups would experience process conflict differently than low performing groups";

(2) **Hypotheses 2:** "high-performing groups would experience low levels of relationship conflict throughout the interaction compared to low-performing groups";

(3) **Hypothesis 3:** "high performers would experience moderately high levels of task conflict at the middle of the group interaction, relative to the beginning and end." (Jehn & Mannix, 2001).

Additionally, they incorporate one more variable to the study: antecedents, formulating one more hypothesis: (a) "*group value consensus among members would lead to beneficial patterns of conflict*"; (b) "*the effects of group value consensus would be mediated by group atmosphere*".

Questions such as "*How much relationship tension is there in your work group?*", "*How much conflict of ideas is there in your work group?*", "*How often do you disagree about resource allocation in your work group?*", "*How much do you trust your fellow group members?"* or "*To what degree was conflict dealt with openly in your work group?*" allowed Jehn and Mannix (2001) to argue high-performance teams felt higher levels of process conflict when forthcoming the task deadline. On the contrary, low-performance teams experienced a higher process conflict at the start and the end of the interaction. Concerning relationship conflict, high-performance teams demonstrated low levels of relationship conflict until the end, with relationship conflict showing a

perpetual increase towards the delivery date. Low-performance teams experienced a continuous and stable relationship conflict: it started low and remained so until the end. Last, high-performance teams demonstrated a higher task conflict between the first and the last weeks of contact. In low-performance teams, task conflict levels significantly increased when reaching the project deadline. These variations allowed to deduce that conflict is not a static experience.

"One major strength of this study is its ability to examine conflict during different phases of a group's life" (Jehn & Mannix, 2001, p.23).

- Bendersky & Hays (2012)

Researchers Bendersky and Hays (2012) explored how status conflict is different from, connected with and how frequent along task, relationship, and process conflict are. In order to accomplish this, first, they conducted a study to identify the characteristics of status conflicts among peers. The results denoted that 47 percent of all conflicts experienced by the participant groups involved some facet of status.

To distinguish status conflicts from task, relationship and process conflicts, the authors concluded there were conflicts motivated by the social hierarchy of the group, naming them as being "*pure status conflicts*" (Bendersky & Hays, 2012, p.10). Overall, they found that team members generally used one of three arguments to modify or strengthen the hierarchy: (1) "*asserting superior legitimacy of a viewpoint*"; (2) "*attempting to assert dominance relative to others*"; (3) "*devaluing another's or inflating one's own contributions*"; (4) "*mobilizing allies during conflicts*" (Bendersky & Hays, 2012, p.11). In the research, it was also possible to identify that task conflicts ascended from differences of opinion related to the task at hand – "*pure task conflict*" (p.12). "*Pure relationship conflicts*" (p.13) were also identified and motivated by a negative interpersonal relationship grounded on different morals, likings, and priorities. Last, "*pure process conflicts*" (p.13) were due to, fundamentally, logistical debates.

At the end of their qualitative study, Bendersky and Hays (2012) found that defensive and less information-sharing approaches were employed when someone tried to use task conflicts as a way to gain status and also that emotionally intense environment could be heightened when two people with a negative interpersonal relationship amongst each other interact in a status conflict.

The second step of Bendersky and Hays (2012) was to create a four-item survey status scale, which included the nine items from Jehn's (1995) ICS and Shah & Jehn (1993), typically used to measure task, relationship, and process conflict.

The reliability of the four-item, and most common manifestations of status conflict observed, status conflict in the scale was high and for the other conflict was satisfactory. The results of model comparisons confirmed that the unrestrained four-factor model demonstrated the best fit of the data, and the aggregation statistics sustained group-level aggregation. The authors concluded that *"status conflict improves the explanatory power of models of conflict on group performance beyond those that include just task, relationship, and process conflict"* (p.23).

2.3 Agile Software Development Teams

Volatility, Uncertainty, Complexity and Ambiguity. These four characteristics have been used to explain the rapid economic and technological changes, challenges, demands and competitiveness of today's business world, or as it became commonly known, VUCA world. The term VUCA was frequently used in the 90's to explain the world after the Cold War -"In situations that are characterized by volatile, uncertain, complex, and ambiguous (VUCA) conditions, it becomes necessary to structure organizations in such a way that will meet the challenges presented by the environment." (Whiteman, 1998) – and is now a reason for unrest among management professionals (Popova et al., 2018).

According to the Project Management Institute, Project Management refers to *"(...) the use of specific knowledge, skills, tools and techniques to deliver something of value to people".* The most popular methodologies are divided into two main groupings – Traditional and Agile.

2.3.1 Traditional vs Agile

2.3.1.1 Waterfall

In August 1970, Winston W. Royce presented, at the WESCON[1] conference, the first software development model - the Waterfall Model – *"the oldest software development process model"* (Huo et al., 2004, p.2). The seven sequential development parts this Model comprises are represented in Figure 7.

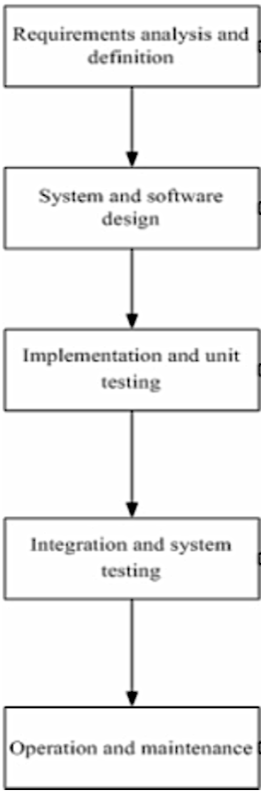

Figure 7 - Waterfall Model | Source: Huo et al., (2004)

(1) **Requirements analysis and definition:** the needs and global requirements are established and agreed on;

(2) **System and software design:** model the technological solution for the identified problem;

(3) **Implementation and unit testing:** codification of the design in a specific programming language;

[1] *Annual scientific convention sponsored by the IEEE.*

(4) **Integration and system testing:** after the implementation, it is necessary to test the integrations needed for the software to be functional in the customer's environment;

(5) **Operation and maintenance:** installation of the software in the customer's environment for continuous support.

The Waterfall Model has numerous advantages, such as (Miguel, 2019):

- Easy to understand and use;
- Offers a good structure for inexperienced people;
- Milestones are well understood;
- Provides stability to the requirements;
- Good for management control;
- Suitable when the quality is more important than the deadline or cost;
- Assists in the knowledge transfer among team members.

Notwithstanding, it presents the following disadvantages (Miguel, 2019):

- Requirements need all to be known at the beginning of the project;
- The deliverables created in each stage are definitive, not enabling flexibility;
- It can give a false impression of progress;
- Does not reflect the nature of problem-solving of the software developments;
- Integration only occurs in the end of the project;
- Very few opportunities for the customer to have a forecast of the final system.

Despite its advantages and popularity in the late 60s, the main reason this model may not be suitable or efficient in large software development projects is its inflexibility. Moreover, more and more, factors directly impact the software development process and the need for a method which could tackle and manage these with success these factors increased. Henceforth, the Agile methods were created.

2.3.1.2 Agile

What is the meaning of being agile?

"Agility refers to the ability of moving quickly and easily" (Pinto & Tscharf, 2019, p.1).

Possibly partially fuelled by an increasingly distributed universal workforce (15th Annual State of Agile Report, 2021), Agile project management is continuously gaining extensive public attention. It is still the project management methodology for today's projects (temporary endeavours undertaken to create a unique product, service, or outcome (PMI, 2017)). *"Agile processes are designed to capitalize on each individual and each team's unique strengths*" (Cockburn & Highsmith, 2001, p.132). According to findings of the 15th Annual State of Agile Report (2021), significant growth in Agile adoption within software development teams and projects occurred– it expanded from 37% in 2020 to 86% in 2021. According to the same report, two thirds of the participants identified tangible positive impacts from Agile adoption, such as *"managing priorities, visibility, or alignment between business and IT"*.

The globalization of the Agile concept and its subsequent propagation arose with the Agile Manifesto publication in 2001. Seventeen people from the software industry gathered for two days with the intent of discovering an alternative to the traditional methodologies. To correctly understand and apply any possible agile methodology, it is necessary to comprehend the four values presented in the Agile Manifesto. They are:

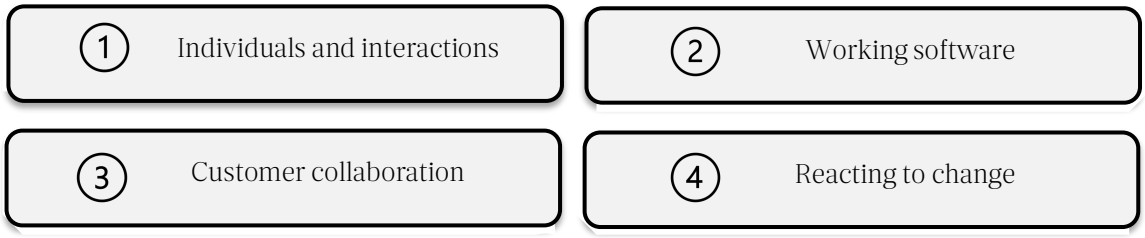

Figure 8 - Four values of the Agile Manifesto | Source: Own Elaboration from Literature Review

The Agile Manifesto also includes twelve principles, namely:

(1) *"Our highest priority is to satisfy the customer through early and continuous delivery of valuable software";*

(2) *"Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage";*

(3) *"Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale";*

(4) *"Businesspeople and developers must work together daily throughout the project";*

(5) *"Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done";*

(6) *"The most efficient and effective method of conveying information to and within a development team is face-to-face conversation";*

(7) *"Working software is the primary measure of progress";*

(8) *"Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely";*

(9) *"Continuous attention to technical excellence and good design enhances agility";*

(10) *"Simplicity--the art of maximizing the amount of work not done--is essential";*

(11) *"The best architectures, requirements, and designs emerge from self-organizing teams";*

(12) "*At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly".*

According to Henriksen and Pedersen (2017) the publication of the Agile Manifesto has augmented the success rates of Agile software development projects.

The Project Management Institute defines Project Management Methodology as a set of rules, methods, techniques, and processes used in a project (PMI, 2017). According to the 15th Annual State of Agile Report (2021), the most implemented Agile methodology continues to be Scrum, with 66%.

Although Scrum is the most popular Agile methodology, various methodologies following Agile patterns and principles were developed. The most common of those are represented in Figure 9.

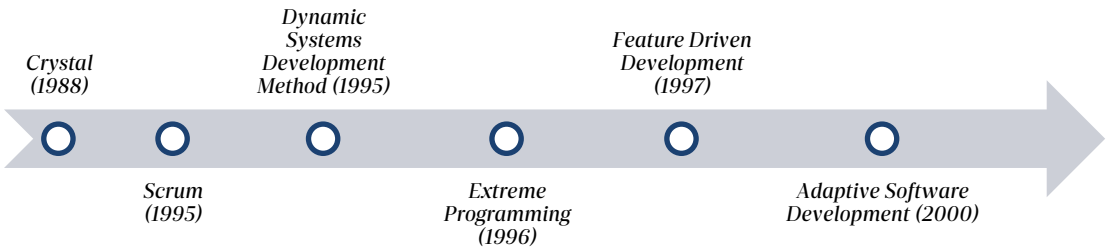

Figure 9 - Chronology of major Agile methodologies | Source: Own Elaboration based on Literature Review

Agile methodologies select features such as quality, budget, time, and business strategy, proving a sustainable option to face the everyday challenges the software development industry holds. Agile teams are characterized by self-organization and intense collaboration, allowing them to organize through several adversities. One distinct feature of these teams is that their members can be figuratively classified as chameleons, allowing them to administer and control challenges as they arise. Nonetheless, leaders are still vital components of an Agile software development team, as these teams, similar to what Cockburn and Highsmith (2001) perfectly state, *"should not be leaderless"* (p.132).

The main differences between the Agile Methodology and the Waterfall Method (Table 7) clarify the limitations of the latter and the need and benefits Agile can provide.

Table 7 - Comparison between the Agile Methodology and the Waterfall Method | Source: Pinto & Tscharf (2019, p.8)

FEATURE	AGILE METHODOLOGY	WATERFALL METHOD
Focus	People	Processes
Domain	Unpredictable	Predictable
Documentation	Minimum as possible	Extensive
Quality Assurance	Focused on the customer	Focused on the process
Style of the Process	Iterative	Linear
Organization	Self-managed teams	Managed teams
Anticipated Planning	Reduced	Elevated
Perspective towards change	Flexibility	Sustainability
Requirements Prioritization	Based on value and regular updates	Permanent on the project's plan
Project Management Style	Decentralized	Autocratic
Leadership Style	Collaborative	Controlling
Return of Investment	As soon as possible and throughout the project	Only by the end of the project

Agile methodologies are increasingly popular in software development and in the most common of them – Scrum – teams are constituted by specific and expected roles, working under a specific lifecycle.

"... even groups comprising brilliant individuals will make bad decisions if the group disintegrates into bickering, interpersonal rivalry, or power plays." (Goleman et al., 2002)

Agile software development relies on human capital to be successful and must be shaped around capable, dedicated, and professional people (Tam et al., 2020). Success and its measurement may seem easy and inherent to project implementation, but universally specifying what constitutes success can prove to be a difficult task. Traditional project success measurements focus solely on the well-known project management's iron triangle – time, cost, and quality (Serrador & Pinto, 2015). Still, success is not only a function of team members' talents and the available resources but also the processes team members use to interact with each other to accomplish the work (Marks et al., 2001). Recently attained results by Tam et al. (2020) concluded that team capability and customer involvement are key factors to explain and differentiate the success of Agile software development projects, encouraging managers to select a competent team to achieve that goal.

2.3.1.3 Scrum

Many of the concepts present in the Scrum methodology have their basis in the 1986 influential article "The New New Product Development Game" by Hirotaka Takeuchi & Ikujiro Nonaka (Harvard Business Review, 1986). The authors diffuse the idea that the traditional "relay race" approach, comprised of a series of rigid and meticulous steps and practised by several organizations such as the National Aeronautics and Space Administration (NASA), would not keep up with the high demands on speed and flexibility of companies. Hence, they proposed an integrated *"or "rugby" approach – where a team tries to go the distance as a unit, passing the ball back and forth (...)"* which would be aligned with today's requirements. With this new approach, the development process would comprise team members, working together throughout the whole development cycle, not necessarily following rigorous methods or processes.

Regardless of being revolutionary, this approach was designed to develop indiscriminate new products. With technological advances and competitiveness, it becomes necessary to adapt it to

specific fields of proficiency and industries. In 1993 Jeff Sutherland and his team created the structure for the Scrum methodology designated for the software development industry and object-oriented development (Pinto & Tscharf, 2019, p.18). Later, in 1995, Ken Schwaber published the first article about the Scrum methodology – "SCRUM Development Process", where he specified that in object-oriented development, Scrum is a management and enhancement methodology applied to any existing system, with the assumption of the existence of design and code (Schwaber, 1995).

According to the SCRUMstudy (2022), Scrum *"(...) is an adaptive, iterative, fast, flexible, and effective framework designed to deliver significant value quickly and throughout a project."*

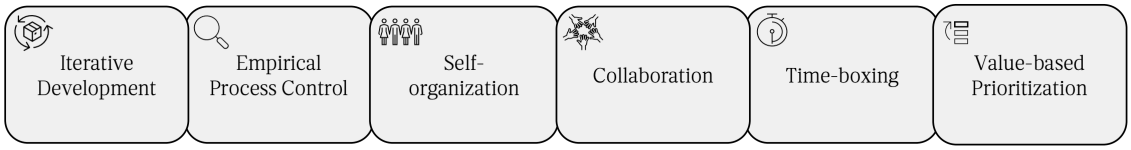

Figure 10 - General Scrum Structure | Source: Own Elaboration, adapted from Pinto & Tscharf, 2019).

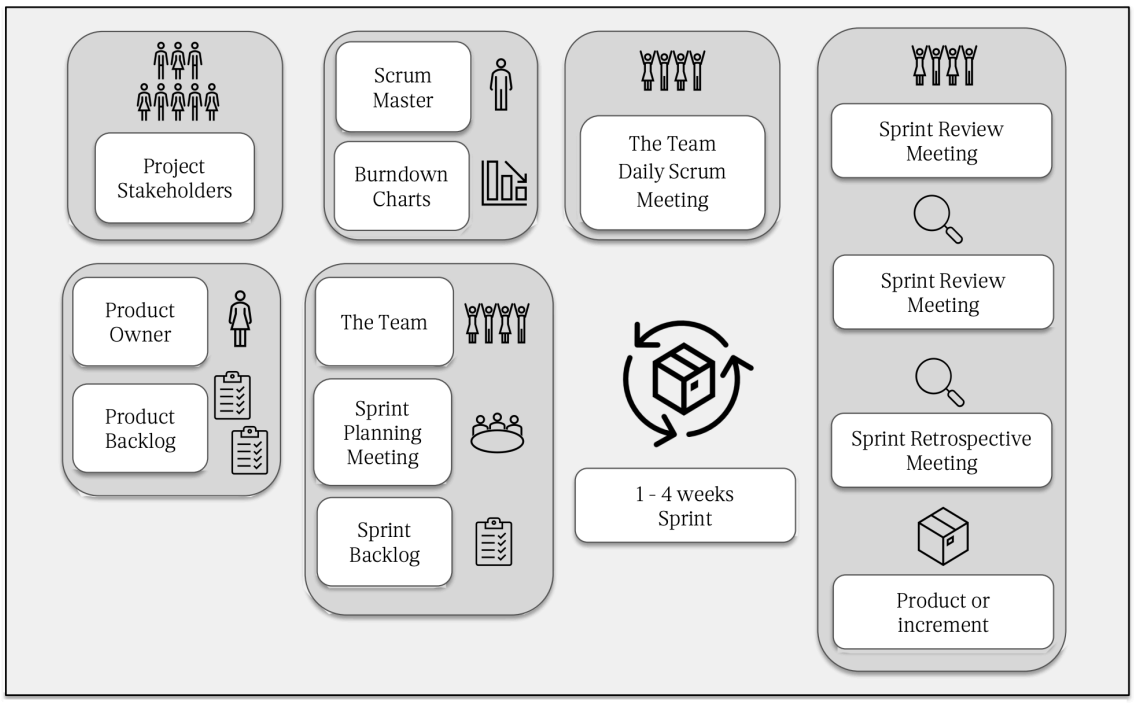

Figure 11 - General Vision of the Scrum | Source: Own Elaboration, adapted from Pinto & Tscharf, 2019).

The main actors/roles in the Scrum methodology are:

- Scrum Master (SM): responsible for teaching Scrum to everyone involved in the project and implementing this methodology so that it becomes part of the organization's culture;

- **Product Owner (PO):** responsible for representing the interests of all project participants and for its ongoing funding. It also has sole responsibility for deciding what will be built and when;
- **Scrum Team (ST):** usually a small team responsible for the growth of the product, doing its management and organization.

These actors use short development iterations, known as sprints, operating typically for one to four weeks, while simultaneously receiving customer feedback and validation, using them as opportunities to obtain support and minimize threats and vague requirements.

Scrum encourages the execution of four key events:

(1) Sprint Planning Meeting

a. The Scrum Team (ST) plans the work to be done during the Sprint, reviewing the User Stories (US) present in the Prioritized Product Backlog, and discussing them in detail. This meeting must last 2 hours for every two weeks of the Sprint.
b. The PO suggests the US that is essential to the Sprint;
c. The ST determines the amount of US it will be able to perform in the Sprint;
d. The US to be included in the Sprint are determined;
e. The ST determines how to transform the US into tasks/increments which will, in the future, be deliverable;
f. The ST commits to Sprint deliverables.

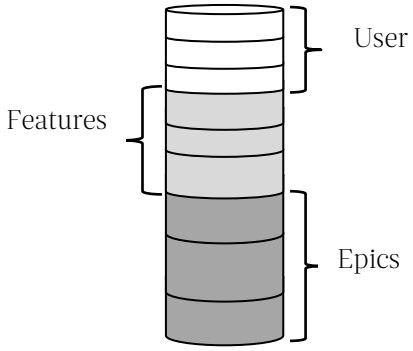

Figure 12 - Product Backlog illustration | Source: Own Elaboration based on the Literature Review

- **User Stories:** express all the requirements or requests, meaning there is no need for detailed documentation about the needs and requirements of the customer/end user. They are focused, simple, direct, and easy to understand;
- **Features:** large bulks of work, which can be broken down into User Stories (smaller tasks);
- **Epics:** define and drive the work towards a common goal.

(2) Daily Standup Meeting

a. The Daily Standup Meeting/Daily Scrum is a short meeting, which lasts a maximum of 15 minutes, in which each member communicates to the rest of the team the status of their work and their plans for the next 24 hours, reviewing the work completed since the last meeting and predicting what can be done until the next meeting (Pinto & Tscharf, 2019);

b. It has the following characteristics:

1. The entire team must be present;
2. It starts at the scheduled time, and its duration must respect the exact 15 minutes;
3. Everyone should be standing throughout the meeting in order to keep the meeting short and agile;
4. Each ST member must answer three questions:
    1. What did I conclude yesterday?
    2. What am I going to complete today?
    3. Am I encountering any impediment or obstacle?

(3) Sprint Review Meeting

a. This meeting takes place at the end of a Sprint and has a time limit of four hours (variable according to the duration of the Sprint). It has the following objectives:

1. Review completed and incomplete work;

2. Present the completed work to the client/user through a demonstration of the functionalities in operation;
3. The presence of the following elements at this meeting is mandatory:
    1. the Product Owner: acts as the "owner" of the product/service;
    2. the Scrum Master: facilitates dialogue;
    3. the Scrum Team: opportunity to meet stakeholders, learn and receive feedback;
    4. Relevant stakeholders.

(4) Sprint Retrospective Meeting:

a. Held at the end of each Sprint and with a limited duration of 3 hours. It has the following objectives:
    1. Reflect on the sprint now finished;
    2. Make continuous improvements to the process;
    3. Reflect on what can be improved in the next Sprint;

b. The Scrum Team must participate, as well as the Scrum Master. The Product Owner can participate in this ceremony. However, his presence is not mandatory.

c. A Sprint Retrospective Meeting can be divided into five steps:
    1. Define the state: phase where those present at the meeting understand the purpose of the meeting and the feelings of the participants;
    2. Gather data: the team shares data and information about the Sprint now finished, discusses, and analyses in detail the strengths and weaknesses, strengths, and weaknesses;

3. Generate reflection: stage focused on finding the answer to the question: "Why? Why did some things work, and others need to be changed?";
4. Action: all participants are involved in the process of defining actions to improve performance and/or prevent errors;
5. Question and closing circle: opportunity to share questions or doubts. In the end, everyone involved thanked them, and the meeting ended.

It is extremely important to monitor the progress of the Sprint, as well as to know where the team is exactly in terms of completing tasks – for this, the Scrumboard is commonly used (Figure 13).

SCRUMBOARD				
USER	*TO DO*	*IN*	*TESTING*	*DONE*
1		*X*		
2		*X*		
3				
4	*X*		*X*	

Figure 13 – Scrumboard example | Source: Own Elaboration adapted from Pinto & Tscharf, 2019).

The typical Scrum board contains four columns to indicate the progress of the estimated tasks for the Sprint (Pinto & Tscharf, 2019):

- A **"To do"** column: for tasks not started. All tasks are placed in this column at the beginning of the Sprint;
- An **"In progress"** column: for tasks already started but not yet completed;
- A **"Testing"** column: for completed tasks but in the testing phase;
- A **"Done"** column: for successfully completed and tested tasks.

Although the Scrum board can be very useful for management purposes, as projects and teams are more complex, larger and with higher levels of uncertainty, it became necessary to have a more in-depth analysis of the projects and the teams – metrics.

2.3.1.3.1 Agile Team Performance Metrics / Indicators

"Metrics helped us determine both present and an often-questionable prediction of the future." (Kerzner, 2013, p.84) and *"(...) can be developed to track organizational maturity in project management as well as innovation progress."* (Kerzner, 2013, p.81).

Mas et al., (2020), comprise suggestive material which specifies a historical trajectory to the Agile teams, their management professionals, and customers, allowing them to have more confidence and control over their work. According to the same authors, because metrics are inherent to the core idea of Agile – *"iterative and incremental approaches in order to adapt to high degrees of change and deliver value more often"* (p.3) -, they must be combined with the monitoring and control activities typically steered during the four major Agile meetings, which can, in themselves, be contemplated as review and planning materials as well.

Metrics used by Agile teams can be included in one or more-time frames (Kerzner, 2013, p.89):

- ***"Metrics with full project duration measurements":*** used for the whole length of the project;
- ***"Metrics with life cycle phase measurements":*** exist only during a particular life cycle phase;
- ***"Metrics that use rolling-wave or moving-window measurements":*** starting and finishing measurement periods can change as the project evolves;
- ***"Alert metrics and measurements":*** applied to denote an unusual condition's existence.

When choosing Agile metrics, specific characteristics must be taken into consideration in order for them to be effective (Kerzner, 2013; Mas et al., 2020):

- Raise Warnings / Provide useful information: metrics must advise when an evident value is reached, either positive or negative;
- Drive Behavior / Focus toward a target: metrics should influence team members' behaviour;
- Teach: metrics should help to learn and to improve individuals;

- **Expire or Recycle:** metrics should be checked and replaced when they become extinct and unproductive or modified when they are not providing the necessary information correctly;
- **Can be measured:** inherent to this characteristic, seven questions must be asked and answered:
    - What should be measured?
    - When should it be measured?
    - How should it be measured?
    - Who will perform the measurement?
    - Who will collect the information?
    - When will the information be collected?
    - When and how will the information be reported?
- **Supports proactive management:** more often than not, without team metrics, team members and leaders are much more responsive and not pre-emptive.

Despite being a mechanism, which can optimistically help teams and managers to understand and gather status on the current work being developed and envisage future work there is still some reluctance to apply performance metrics analysis in some Agile organizations/teams. However, according to Kerzner (2013, p.92) this is encouraged by the fact that:

- "*Metrics management was viewed as extra work and a waste of productive time";*
- *"There was no guarantee that the correct metrics would be selected";*
- *"If the wrong metrics are selected, then we are wasting time collecting the wrong data";*
- *"Metrics management is costly, and the benefits do not justify the cost";*
- *"Metrics are expensive and useless";*
- *"Metrics require change, and people often dislike changes to their work habits";*
- *"Metrics encourage unintended and/or unwanted behaviour";*
- *"Employees will not support a metrics management" with the sole purpose of measuring the "performance of individuals".*

Agile teams continuously use multiple metrics to check a project's performance. Some examples are:

- **Velocity:** is the number of story points completed in a Sprint/Iteration. Story Points often include relative approximations of User Story's complexity, effort, and duration (Cohn, 2004). Figure 14 is an example of a Velocity chart.

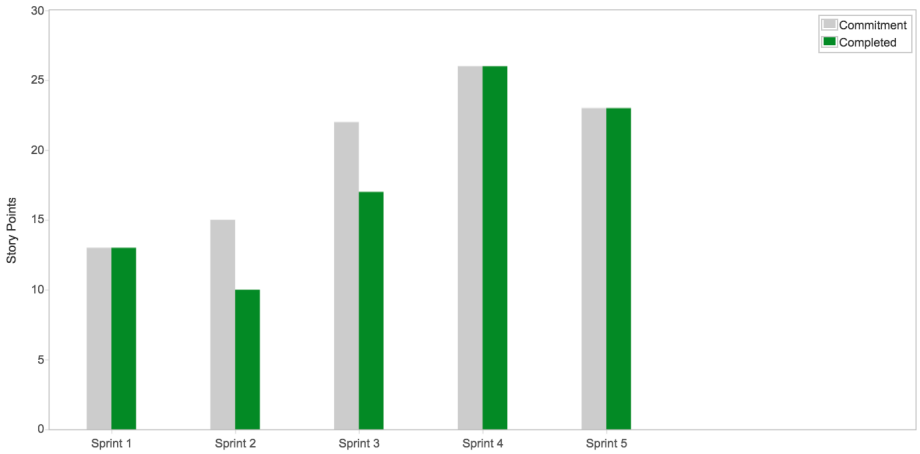

Figure 14 - Velocity Chart example | Source: Atlassian (2022)

For a correct determination of velocity and in order to obtain valuable conclusions, some procedures must be followed (Cohn, 2004):

- Use only finished/closed User Stories;
- The differences between the number of story points planned and completed during a Sprint can be employed to provide the actual and planned team's velocity;
- Only one or two Sprints/Iterations are not enough to predict tendencies.

This metric indicates the amount of work the team can complete in a Sprint (Pichler, 2010).

- **Sprint Burndown Chart:** indicates if a project is overdue or ahead of schedule through the number of total days in the Sprint versus the work finished (Cooper & Sommer, 2016). According to Cooper and Sommer (2016, p.168) it is a "*better and more visually intuitive progress metric*". Figure 15 illustrates that by analysing the Sprint Burndown Chart, concretely the ideal remaining effort and actual remaining effort, it is visually possible to understand if the project is behind or ahead of schedule.

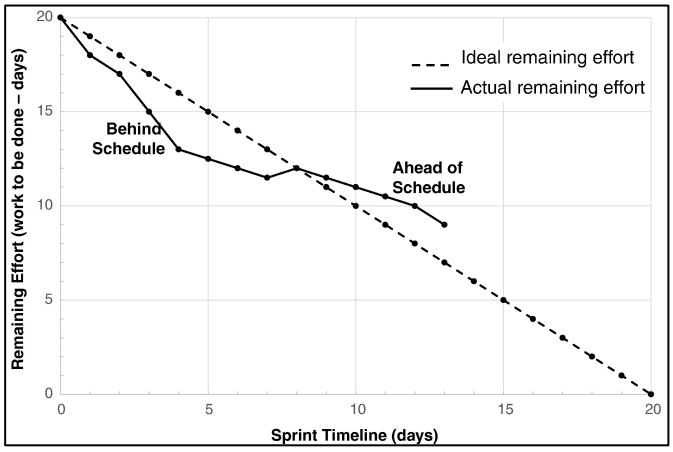

Figure 15 - Sprint Burndown Chart example | Source: Cooper & Sommer (2016).

This chart must be updated daily so that the team can obtain conclusions of the ongoing work in each Daily Standup Meeting (Pinto & Tscharf, 2019).

- **Lead Time:** total time consumed since the team received the request, specifying how long it took for an item to be completed (Mas et al., 2020). Figure 16 demonstrates the insertion of the Lead Time in a product's timeline.

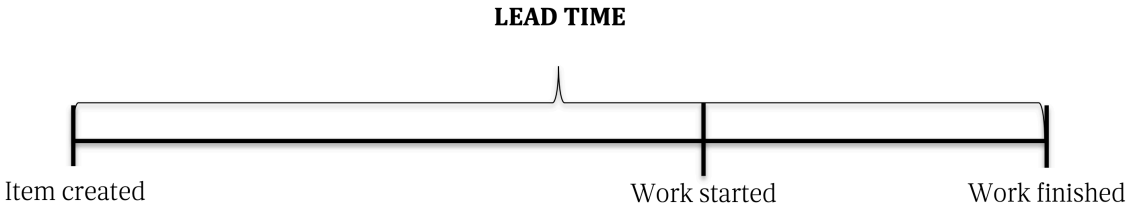

Figure 16 - Lead Time explanation | Source: Own Elaboration based on the Literature Review.

- **Cycle Time:** the amount of time spent since the team started working on the task and was moved to the next workflow state (Mas et al., 2020). Its calculation occurs from the beginning of one process until the start of the following process (Microsoft, 2022). Figure 17 exemplifies the Cycle Time of a team.

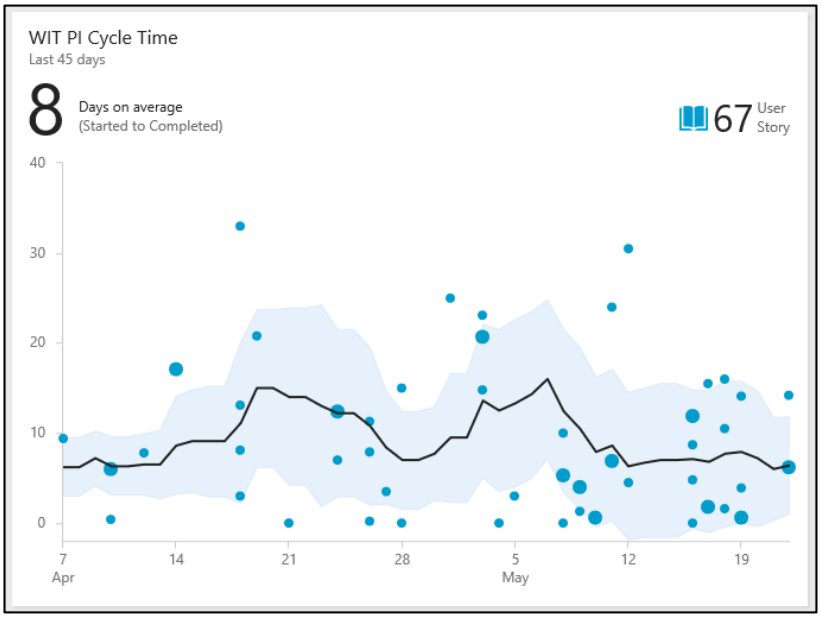

Figure 17 - Cycle Time example | Source: Microsoft, 2022.

- **Cumulative Flow Diagram (CFD):** a graph which portrays the number of tasks in each workflow state at the end of each working day, representing the *"health of the process"* (Mas et al., 2020). In Figure 18, that the CFD displays the count of items in each Scrumboard column for the selected date.

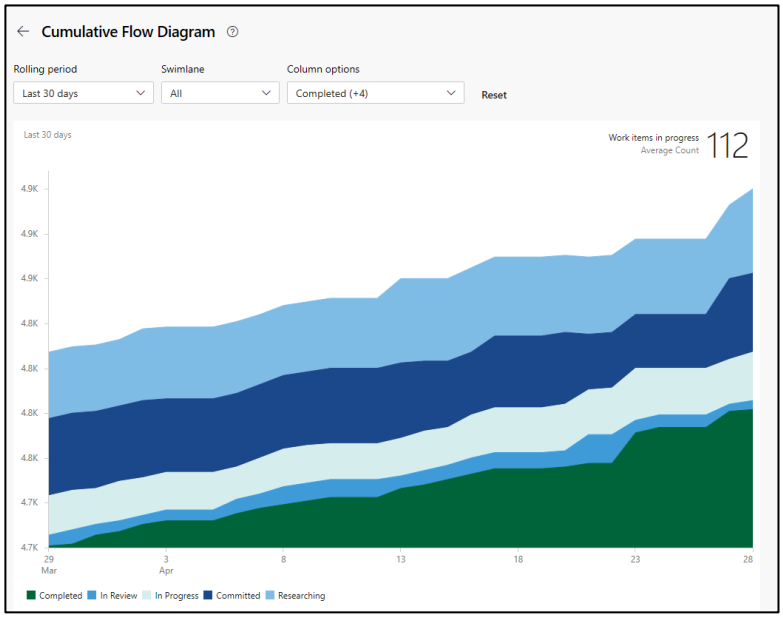

Figure 18 – Cumulative Flow diagram example | Source: Microsoft, 2022.

Agile teams have used several tools to automatize the obtention of performance metrics, such as JIRA[2], the main issue tracking and project management electronic platform, developed by Atlassian, used by the Agile software development teams and by over 25,000 customers worldwide (Ortu et al., 2015) and Azure DevOps Server [3], a software development tool that allows teams to work collaboratively. By using software such as the previously mentioned, every team member can access the project's performance information and understand more clearly how their work is progressing, and how the team as a whole is behaving.

What constitutes the capability of a team, and its members underwent adjustments, mainly due to the implementation of Agile methodologies (Cockburn & Highsmith, 2001). Now, a project not only comprises the traditional time, cost and quality measurements but also includes people, their well-being, and the excellence of relationships. It is built from people having divergent personalities and differing abilities working within an organizational culture, as stated by Cockburn & Highsmith (2001). Moreover, scholars have revealed that successful project delivery largely depends on human skills, personal attributes, and the competencies its members have rather than technical skills (Khosravi et al., 2020).

Teams with effective managers maximize team performance (Wakefield et al., 2008). In addition, highly complex projects have a crucial skill for project managers - emotional intelligence (Mayer et al., 2004). Nonetheless, much significance has been given to the importance of EI not only on how skilful project or team managers are in managing their teams but also on how each member of the team controls their emotions, behaviours, relationships, decisions, and those of others.

Organizations are now looking for *"wonder-teams"* (Goleman, 2020, p.206) - a combination of people with advanced technical skills and strong emotional skills. Moreover, the importance set to EI is directly aligned with what Troth et al. (2012) identified previously - emotional intelligence is a critical factor in developing a constructive environment, fruitful communication, and high-performance teams.

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[2] *https://www.atlassian.com/software/jira.*

[3] *https://azure.microsoft.com/pt-pt/services/devops/server/*

The dissemination of the components of EI to others, which in turn can broadcast that to others, creating a domino effect, fall into what Cherniss and Goleman (2001) introduced as "group emotional intelligence" (GEI). Cherniss and Goleman (2001, p.133) defined GEI as *"the ability to develop a set of norms that manage emotional processes so as to cultivate trust, group identity, and group efficacy."* These norms will grant the group or team the development of trust, to uniqueness and effectiveness, leading to cooperation and collaboration. Becoming aware of emotional evidence of the surrounding environment, control it and respond accordantly.

Weiss & Cropanzano's (1996) Affective Events Theory (AET) proposes that momentary moods and emotions experienced at work fundamentally shape employees' behaviours and attitudes. In this theory, affect oscillates over time and can cause either positive or negative levels of affectivity, that is, positive and negative emotions, respectively. For example, positive emotions enable project teams to perform better in projects where uncertainty and ambiguity are high, such as Agile software development projects (Troth et al., (2012); Sy et al. (2006); Dönmez & Grote, 2018). Contrasting, negative emotions such as interpersonal tension, anger, exasperation, hostility, and frustration can often obstruct real-time information sharing, resulting in poor performance (von Glinow et al., 2004). In software development, when software developers are confronted with a particular scenario, their competence in managing and regulating their emotions enables them to control their feelings and behaviours by observing and evaluating the emotions and feelings of other team members (Rezvani & Khosravi, 2019).

In 1998, Daniel Goleman presented the components of EI, which are imperative for endowing each individual to develop the desired set of emotional skills. Later, Cherniss and Goleman (2001) presented the foundational components of GEI. They are as follows:

(1) Group Self-awareness: the ability to know and understand group emotions, strong points and weaknesses and needs;

(2) Group Self-regulation: the power to control emotions and disruptive impulses in order to promote essential emotional well-being;

(3) Group Social awareness: incorporates empathy - consciousness of feelings, needs and anguishes of other groups - and organizational awareness, which by itself is the aptitude to analyse and objectively interpret currents of emotions and situations in groups;

(4) **Group Social skills:** encompasses a set of competencies allowing individuals to be persuasive, to conceive an atmosphere of unambiguousness, to detect predicaments and take the necessary actions to manage them, to inspire people to work together in order to achieve common objectives, to recognize the need to change, to create and develop bonds.

As organizations embrace more heterogenous teams with different cultures, backgrounds and expertise, employees are becoming more interdependent and more tangled in decision-making processes. These evolutional transformations have, as a consequence, an increase of new conflicts, positive and/or negative, which require further understanding of employees' emotions and of others and how to control and adjust them. Thus, this results in an impact in the way conflict influences team effectiveness and performance, sustained either by Weiss and Cropanzano (1996), who claim emotional factors can have a deep-rooted effect on team performance, and also by Ashkanasy & Dorris (2017) while stating EI can potentially help reduce conflicts.

The relation between conflict and software development has been considered critical for decades (Jiang et al., 2014). Managers and employees think of conflict as negative. However, other studies prove the contrary: intragroup conflict can be beneficial (Jehn & Bendersky, 2003). Jehn (1995), task conflict can promote creativity and cooperation among team members, resulting in higher individual and team performance. Jehn and Bendersky (2003), broaden this perspective by stating that task conflict management also improves organizational performance and progression, as this type of conflict is a vital instrument to bring forward to the spotlight the collective team's interests.

Organizations are using conflict management instead of conflict resolution to harness workplace disputes' positive potential. Conflict management and conflict resolution go beyond semantic: resolution infers decrease or abolition of conflict, whereas management does not unavoidably indicate a lessening of the conflict (M. A. Rahim, 1985). Through this positive and motivational perspective, organizations can benefit from rational and sustainable incorporation, in the organizational culture, of different types and levels of conflict, fostering critical thinking, creativity, productivity and healthy competition amongst its teams instead of solely having the motivation to mitigate conflict.

Notwithstanding, conflicts have both positive and negative characteristics (Table 8).

Table 8 - Potential Benefits and Disadvantages of Conflict | Source: Cunha et al. (2016, p.487)

BENEFITS (FUNCTIONAL EFFECTS)	DISADVANTAGES (DYSFUNCTIONAL EFFECTS)
Permits the clarification of topics and foments the clarifications of the counterparty's arguments	Destroys groups and organization's morale
It is a solution against group thinking	Can induce hostiles comments between the people involved in the conflict
Enables innovation, change and adjustment	The levels of satisfaction can potentially decrease
Leads to new methods of approaching the problem, resulting in a resolution of longstanding disagreements	The levels of stress and tension arise, which can consequently provoke psychological and physical problems
Enables the exchange of points of view, values and goals of the other people involved in the conflict	Obstructs cooperation
Can induce the necessary motivation and energy to a better task execution	Negative stereotypes can be created about the others involved in the conflict
Increases the possibility of new and creative ideas and solutions due to the grand diversity of viewpoints	Deviates the team's energy from the most important tasks
Facilitates innovation, change and adaptation	The communicational flow can be distorted
Increases group's loyalty and cohesion	Can ruin people's career
Strengthens professional relationships when the conflict is solved constructively	Increases the levels of turnover
Helps people solve their intrapersonal conflicts, allowing them to take a more confident stance and opinion	Can possibly destroy the team
Offers the possibility of improving the quality of the decisions to be made	Decision-making suffers delays and indecision

PART II – EMPIRICAL INVESTIGATION

3 RESEARCH METHODOLOGY

3.1 Organization and Planning of the Research

In the early stages of this work, the research was oriented to detect and explore facial expressions as a procedure to better understand how emotions are managed and if the emotional state of people working together could help, harm or be a source of conflict among team members of Agile Software Development Teams. However, the following enumerated aspects altered the course of this study:

(1) Not finding a suitable open-source tool which allowed a precise detection of natural facial expressions;

(2) Some members of the teams to be considered were not comfortable with being recorded;

(3) The author's organization's Compliance and IT Security Departments declined the utilization of the organization's technical equipment to install an open-source tool for the research.

A different method had to be executed to exclude the previously mentioned possibility. After careful consideration, it was decided to explore the tools used daily by the author's organization's Agile Software Development Teams to study how the existence and management of conflicts and the members' emotional characteristics can influence the performance of each team.

Figure 19 illustrates the organization and planning performed for the research development.

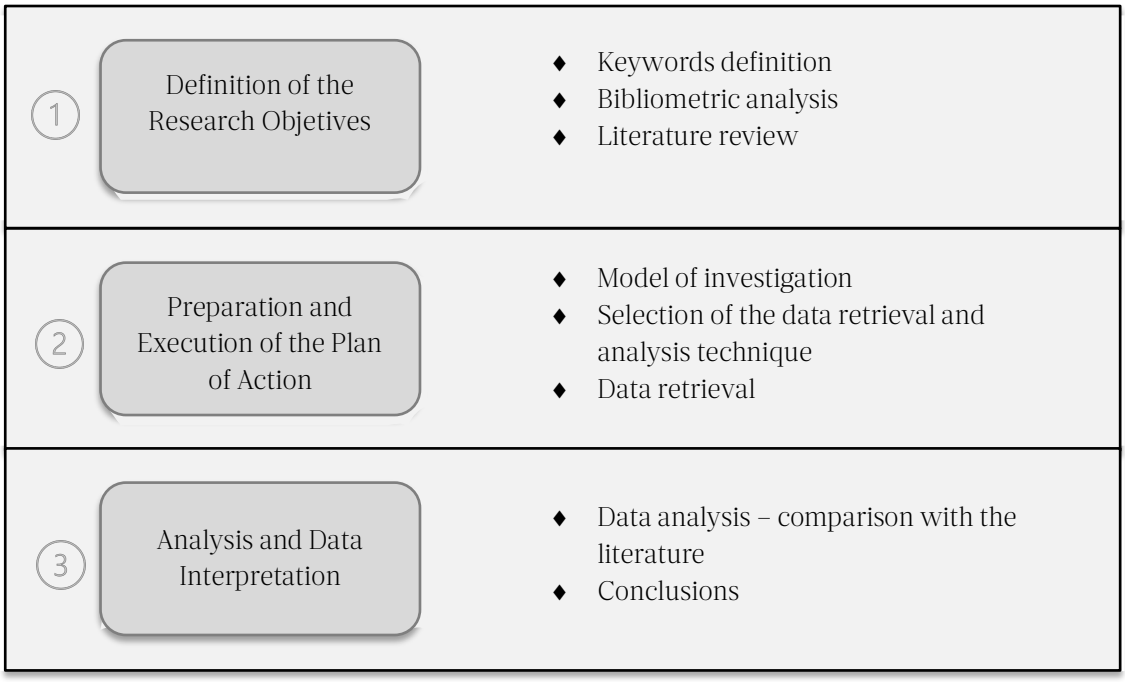

Figure 19 - Research's Organization and Planning | Source: Own Elaboration

3.1.1 Definition of the Research Objetives

The first step was the definition of the Research Objectives, the moment where the global and specific objectives of the dissertation were outlined. To accomplish this, a keyword definition and a bibliometric analysis were led. Using primary (articles, dissertations, thesis, and reports), secondary (books and review articles) and also tertiary (dictionaries) information sources, a keyword search was conducted in several scientific databases such as Web of Science (WoS), ScienceDirect, ResearchGate and Proceedings of Academic Management, with special emphasis to WoS since it *"is the world's leading scientific citation search and analytical information platform*." (Li et al., 2018, p.1). Independent and crossings searches were conducted to find information sources with the intended topics. After using the references in the results presented by Web of Science, and to conduct a better selection of the scientific articles to be considered, Q1 or Q2 quartile have priority over other quartiles. In order to do so, the SCImago Journal Rank was consulted, allowing the evaluation of each journal and article's scientific impact.

Afterwards, the foundation of the academic research was executed - a literature review, illustrated in Figure 20. It "(...) *should be valid, reliable, and repeatable.* " (Xiao & Watson, 2019, p.93). It allows not only to explore and describe past academic scientific research as a way of

mapping and to understand the depth of the research area but also to analyse the resultant slits (Xiao & Watson, 2019) and pave the way for the areas which need additional research (Snyder, 2019). For a more efficient organization of the process, the suggestion given by Campenhoudt et al. (2019) was pursued, and a reading grid was elaborated. The selected articles were registered in an Excel spreadsheet containing several columns, such as the Scimago Index, quartile, title of the article, main-ideas, and main topics of each segment of the articles.

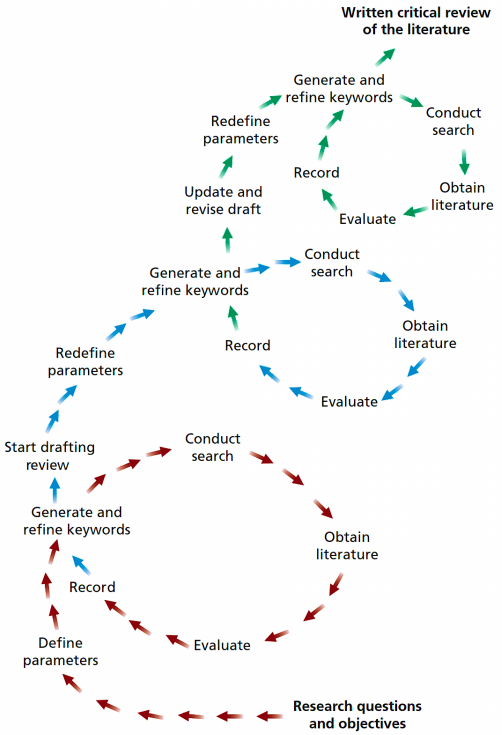

Figure 20 - The Literature Review process | Source: Saunders et al., 2009.

3.1.2 Preparation and Execution of the Plan of Action

The second step of the research methodology aims to offer a practical component to the dissertation.

According to Yin (2003), there are five main research approaches (Table 9):

Table 9 - Different Research Strategies | Source: Yin (2003, p.5)

STRATEGY	FORM OF RESEARCH QUESTION	REQUIRES CONTROL OF BEHAVIORAL EVENTS?	FOCUSES ON CONTEMPORARY EVENTS?
Experiment	How? Why?	Yes	Yes

Survey	Who? What? Where? How many? How much?	No	Yes
Archival Analysis	Why? What? Where? How many? How much?	No	Yes / No
History	How? Why?	No	No
Case Study	How? Why?	No	Yes

In order to choose the most suitable research methodology, it is crucial to have in mind the following questions (Yin, 2003):

- How is the research question formed?
- Does the researcher need to have control over behavioural events?
- Is it necessary to concentrate on the present-day and not historical events?

In 2009, Saunders et al. focused their work on exploring seven research methods: (1) Experiment; (2) Survey; (3) Case Study; (4) Action Research; (5) Grounded Theory; (6) Ethnography; and (7) Archival Research.

After in-depth analysis, the empirical investigation of this dissertation was based on the implementation of a single case study with Agile software development teams to explore and answer the questions regarding emotional intelligence, conflict management and performance in Agile software development teams.

According to Robson (2002), a case study is *"a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context"* (p.178). It generates answers to the question 'why?' as well as the 'what?' and 'how?' questions, although 'what?' and 'how?' questions tend to be more the concern of the survey strategy (Saunders et al., 2009). The data collection methods include interviews, observation, documentary analysis and questionnaires, and the triangulation technique is frequently used - "*use of different data collection techniques within one study in order to ensure that the data are telling you what you think they are telling you"* (p.146);

After selecting the research strategy, it is vital to select a data collection technique – quantitative and/or qualitative. A quantitative collection technique involves the usage or generation of

numerical data, results of questionnaires, charts, or indicators. Juxtapose, the qualitative technique comprises the usage or generation of non-numerical data as a result of interviews or data analysis.

The qualitative technique used in this dissertation included primary data based on semi-structured or semi-directive interviews. Semi-structured interviews are designed with a series of open questions, with guidance purposes, whose content and order may vary according to the person being interviewed. The structure is somehow flexible, and the communication between the investigator and the interlocutors may extend and start a dialogue or discussion, invoking the need to record the audio of the interviews (Campenhoudt et al., 2019; Saunders et al., 2009). In addition to the primary data collected throughout the interviews, documented secondary data was also used to triangulate the outcomes of the interviews – JIRA.

3.1.2.1 Interviews

The Co-Head of IT Corporate Investment Banking was contacted to obtain permission to conduct a study with the teams within his Department and the contacts of the Team Leaders/people responsible for those teams. After speaking with them, the author individually contacted each member of the teams to validate their openness to participate and possibly schedule the date, time, and location of each interview. To acquire as many participants as possible, the importance of the investigation and its results was highlighted to the author and the Team Leaders and their teams. According to Saunders et al. (2009), managers cooperate and agree to be interviewed much more *"(...) if the topic is seen to be interesting and relevant to their current work."* (p.324).

The interviews were performed individually with 46 people from 7 different Agile Software Development Teams belonging to the Corporate and Investment Banking (CIB) Department, from the author's organization, during June and July of 2022. The length of the interviews was on average, 13 minutes. Due to the fact that the Agile professionals interviewed were, at the time, working in hybrid mode, the interviews were performed virtually, by Microsoft Teams, and physically, in the company's facilities. In both scenarios, before each interview, four steps were taken into consideration:

1. an explanation of the dissertation's objectives, at the beginning of each interview, in order to try for the exchange of information and communication between the investigator and the interlocutors to be as direct and honest;
2. request to audio-record the interview and assurance of data protection and confidentiality;
3. interviewer and interviewee bias. Interviews can be quite intruding and explore sensitive information, which may condition the participants' answers. In-person professional relationships were built prior to the interviews, with each team, with the purpose of building a little more trust and facilitate the communication between the investigator and the interlocutors and to obtain direct and honest reactions and responses as much as possible;
4. annotation of contextual data such as: the location of the interview, date and time, immediate impression, and interviewee's profile, contained in the interview's script.

The interview's script (APPENDIX I – INTERVIEW SCRIPT) is comprised of 3 sections:

1. Participant's profile;
2. Participant's team characteristics;
3. Team's Metrics/Performance Indicators.

Table 10 - Interviews' Script | Source: Own Elaboration

Interviews' Script – Emotional Intelligence and Conflict Management in Agile Software Development Teams
Section 1 - Interviewees' profile
1. Gender
2. Age
3. Nationality
4. Role + Seniority Level
5. Total number of years of professional experience in the current position
6. Total number of years of professional experience

Section 2 - Interviewees' team characteristics
7. Size of the team
8. Level of cultural diversity (low, medium, high)
Section 3 – Interviewees' teams Metrics/Performance Indicators
9. What are the metrics/performance indicators you currently use, as well as your team?
10. What is, in your opinion, the TOP5 of metrics/performance indicators, in what concerns their value to you and your team?
11. What are the metrics/performance indicators you miss and believe would be advantageous to your current role for decision-making and/or individual feedback? a. What would its name be? b. How would it be used? c. What would be the golden source of information of this metric/performance indicator?
12. Are there, in your opinion, any metrics/performance indicators which allow the anticipation of conflicting situations, both positive or negative, in your team and/or with the stakeholders?

3.1.3 Analysis and Data Interpretation

After the data retrieval, it becomes necessary to analyse them in the Analysis and Data Interpretation phase.

3.1.3.1 Content Analysis Technique

The results of the interviews were examined through the content analysis technique defined by Bardin (2018) as a set of mechanisms which intend to objectively describe the communicational content, applied to various speeches.

The three chronological steps stated by Bardin (2018) in the context analysis are:

(1) pre-analysis;

(2) material assessment;

(3) treatment of results, inference, and interpretation.

The pre-analysis is dedicated to organising the interviews and systematising the ideas expressed by the interviewees. In order to achieve these goals, the transcription of the audio of the interviews was conducted, with as much detail as possible in order to assure the words and expressions used by the participants was strictly transcribed and included in the analysis. In this first step, all 46 interviews were read, and the initial deductions were obtained.

In the material assessment phase, the main keywords spoken by the interviewees are identified and combined, which helps to highlight the main ideas and opinions of the participants.

The last step – treatment of results, inference, and interpretation – involves the analysis of the results by inference, which allows canvassing of the causes and repercussions of specific events. Through the content analysis and keywords identification, evidence of the valid inferences were sought in the interviewees' speech, to draw conclusions about the topic and specify whether or not the dissertation's objectives were fulfilled.

4 ANALYSIS AND PRESENTATION OF THE RESULTS

The main goal of this chapter is to present the result of the analysis technique chosen. First, the population and participants' profile was drawn to provide a precise context for the analysis. Then, the interviews' section is then investigated in detail to identify the primary outcomes of the Case Study.

4.1 Populations, Statistical Population and Participants' Profile

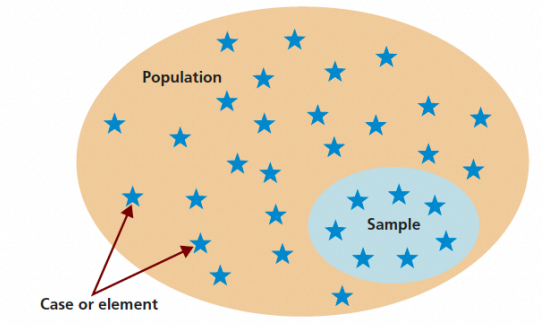

Figure 21 - Population, sample, and elements | Source: Saunders et al., (2009)

The statistical population is comprised of 46 members of the Corporate and Investment Banking (CIB) Department of the organization. For confidentiality purposes, the organization will, from now on, be referred to as Company X.

Table 11 explores section 1 of the interviews - the profile of the participants. To preserve the participants' confidentiality, their name was replaced with a sequential ID.

Table 11 - Participants' Global Information | Source: Own Elaboration

ID	Gender	Age	Nationality	Current Role	Total years of experience in the current role	Total years of professional experience
1	Male	34	Portuguese	Tech Lead	3	13
2	Male	35	Portuguese	Team Leader	2	14
3	Female	24	Portuguese	Business Analyst	2	2
4	Male	33	Portuguese	Product Owner	3	12

5	Male	28	Portuguese	Mid-Level Developer	2	5
6	Female	26	French	Business Analyst	2	4
7	Male	29	Portuguese	Business Analyst	2	6
8	Male	45	French	Team Leader	8	25
9	Male	45	Brazilian	Tech Lead	6	24
10	Male	30	Portuguese	Mid-Level Developer	4	8
11	Male	33	Brazilian	Mid-Level Developer	3	8
12	Male	26	Portuguese	Junior Developer	3	3
13	Male	40	Portuguese	Team Leader	2	16
14	Female	42	Portuguese	Team Lead	4	18
15	Male	35	Portuguese	Mid-Level Developer	2	5
16	Female	27	Portuguese	Business Analyst	1	3
17	Male	32	Kazakhstan	Project Lead	4	10
18	Male	27	Portuguese	Business Analyst	2	3
19	Male	29	Portuguese	Team Lead	3	7
20	Male	27	Portuguese	Senior Developer	2	5
21	Male	26	Portuguese	Mid-Level Developer	2	4
22	Female	29	Portuguese	Junior Developer	3	8
23	Female	30	Portuguese	Scrum Master	1	7
24	Female	38	Portuguese	Scrum Master	3	15
25	Male	34	Brazilian	Senior Developer	5	12
26	Male	27	Portuguese	Product Owner	3	5
27	Female	31	Brazilian	Scrum Master	2	8
28	Female	27	Portuguese	Mid-Level Developer	3	4

29	Male	28	Portuguese	Product Owner	2	7
30	Female	25	Ukrainian	Quality Assurance Analyst	3	3
31	Female	33	Portuguese	Project Lead	7	11
32	Female	32	Portuguese	Quality Assurance Analyst	4	9
33	Female	35	Portuguese	Scrum Master	6	12
34	Female	26	Portuguese	Senior Developer	4	4
35	Male	34	French	Senior Developer	4	10
36	Male	35	Brazilian	Senior Developer	3	10
37	Male	36	Brazilian	Senior Developer	7	14
38	Female	25	Portuguese	Junior Developer	2	3
39	Male	27	Portuguese	Junior Developer	3	3
40	Male	29	Brazilian	Senior Developer	2	6
41	Female	32	French	Project Lead	2	6
42	Male	28	Portuguese	Mid-Level Developer	2	4
43	Female	27	Portuguese	Product Owner	2	5
44	Male	30	Brazilian	Senior Developer	4	5
45	Female	26	Angolan	Quality Assurance Analyst	4	4
46	Female	29	Portuguese	Product Owner	3	4

The interviews participants' scope was meant to provide a general perspective of the different roles in the CIB Department of Company X and their opinion on the main topics of this dissertation. It is imperative to understand how the Department is hierarchically organized to identify potential differences between the responses given by the participants according to their profile/role. The CIB Organizational Breakdown Structure is represented in Figure 22.

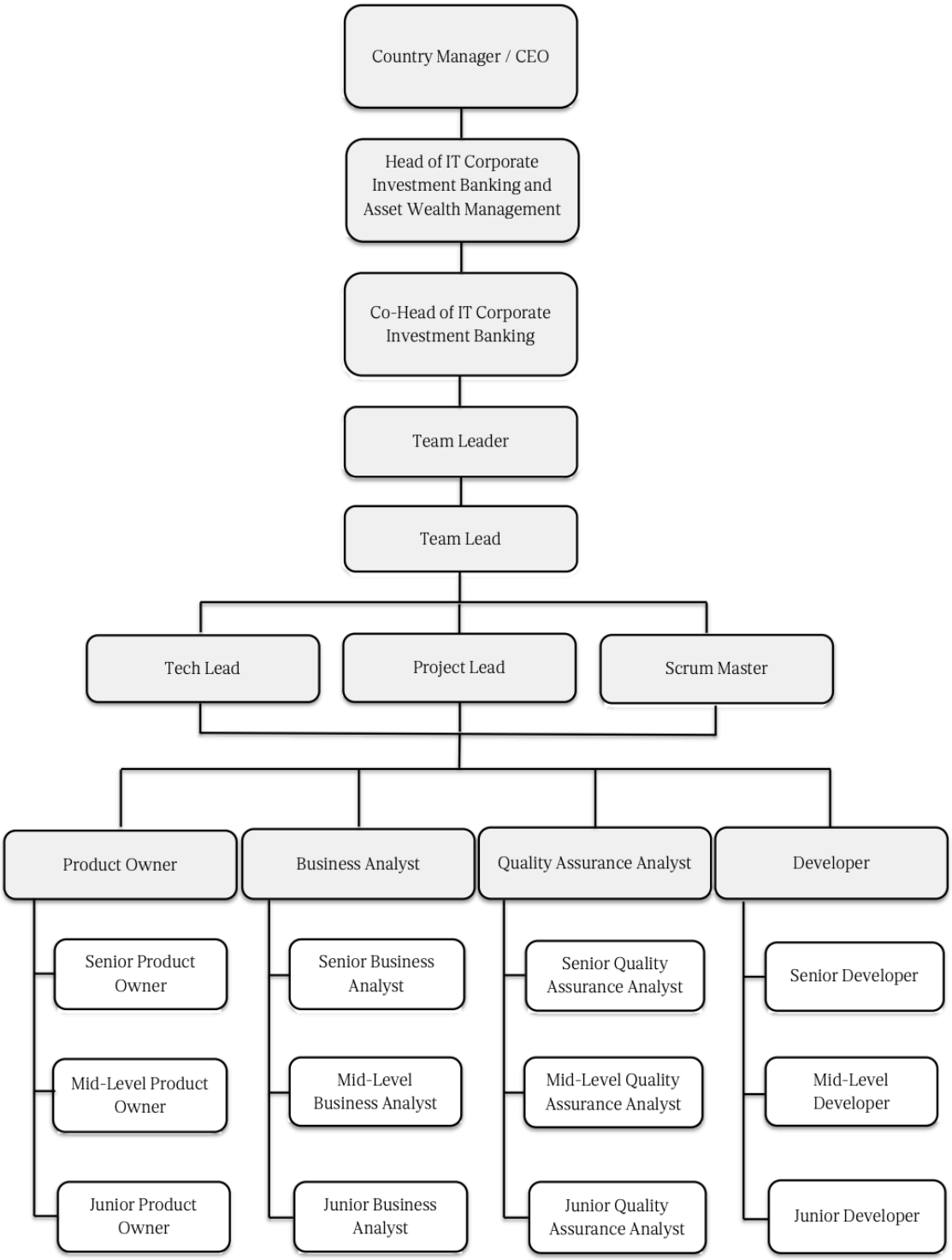

Figure 22 - Corporate and Investment Banking Organizational Breakdown Structure | Source: Own Elaboration

Next, a statistical analysis is performed in order to characterize the participants:

From Table 12 and Figure 23, it is possible to verify that more than half of the participants (60,87%) are male (28). Of the 46 total participants, the remaining 18 (39,13%) were female. This information

was somewhat expected at the beginning of the study since the core activity of the participants' organization is related to Information Technology (IT), an historically male-dominant atmosphere.

Table 12 - Participants' Gender

GENDER	FREQUENCY	PERCENTAGE
Female	18	39,13%
Male	28	60,87%
-	46	100%

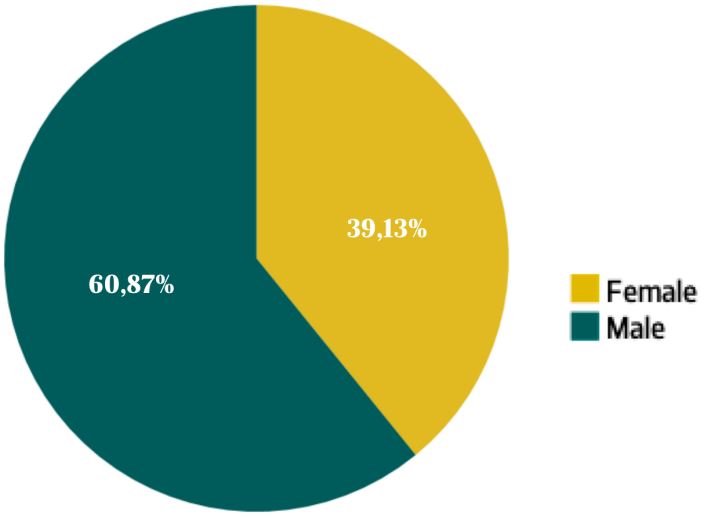

Figure 23 - Participant's Gender Plot

Regarding the participant's age, it was possible to conclude, by analysing Table 13, the higher prevalence is 'Less than 30', with a total of 47,8% of the participants (22). 45,7% of the participants were between 30 and 40 years old, and only 3 (6,5%) had between 41 and 50 years old.

Table 13 - Participants' Age

AGE RANGE	FREQUENCY	PERCENTAGE
Less than 30	22	47,8%
30-40	21	45,7%
41-50	3	6,5%
Total	46	100%

Since Company X was based in Porto, but was a French multinational, the interviewees did not have the same nationality. When analysing Figure 24 and Table 14, most participants were Portuguese (35), followed by Brazilian (7). French, Angolan, Ukrainian and British nationalities were also registered among the participants (total of 4 participants), representing 8,4% of the total statistical population.

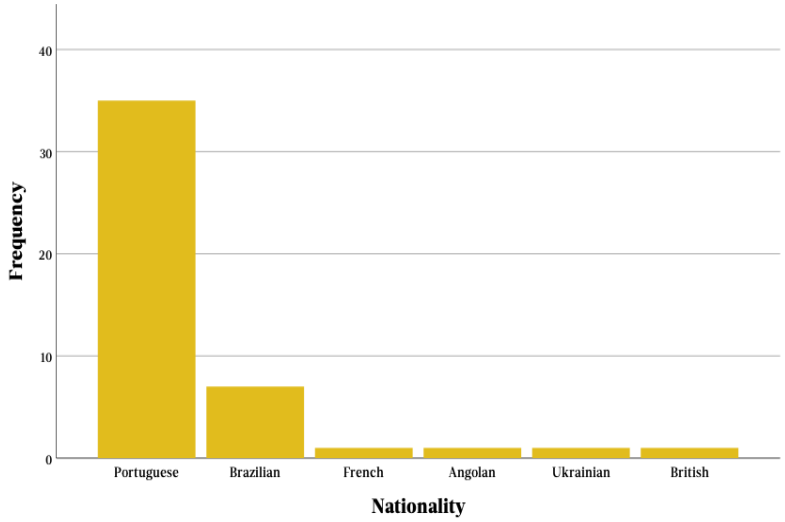

Figure 24 - Area Graph of the Participant's Nationality.

Table 14 – Participants' Nationality.

NATIONALITY	FREQUENCY	PERCENTAGE
Portuguese	35	74,5%
Brazilian	7	14,9%
French	1	2,1%
Angolan	1	2,1%
Ukrainian	1	2,1%
British	1	2,1%
Total	46	100%

Regarding the participant's current role, it was determined, by analysing Table 15, the majority of participants are Senior Developers and Quality Assurance Analysts, representing 17,4% of the total participants.

Table 15 - Participants' Current Roles.

CURRENT ROLE	TOTAL	PERCENTAGE
Junior Developer	4	8,7%
Mid-Level Developer	7	15,2 %
Senior Developer	8	17,4%
Senior Business Analyst	8	4,3%
Mid-Level Quality Assurance Analyst	3	17,4%
Senior Product Owner	2	10,9%
Scrum Master	4	10,9%
Project Lead	3	6,5%
Team Lead	2	4,3%
Tech Lead	1	2,2%
Team Leader	4	2,2%
Total	46	100%

The perception of each member regarding their team's cultural diversity was also known. Therefore, participants were asked to classify the diversity according to the following classifications: 'Low', 'Medium', and 'High'. Figure 25 represents the percentage of the classifications given by the interviewees.

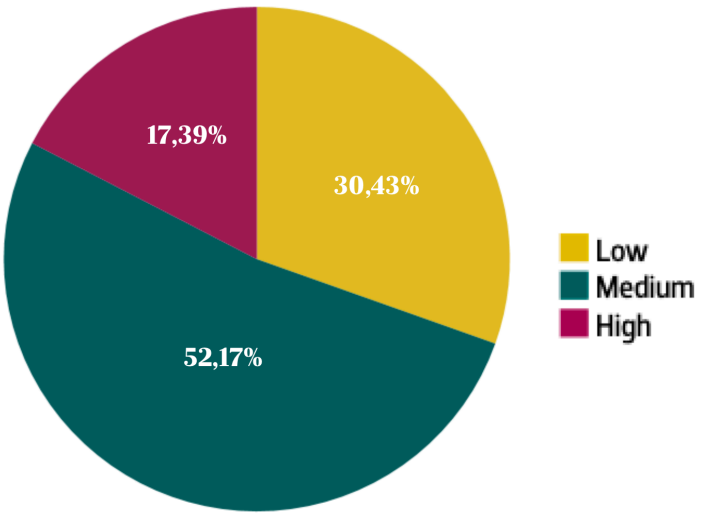

Figure 25 - Participants' Teams Cultural Diversity

52,17% of the participants considered the diversity of their team to be 'Low', 30,43% to be 'Medium' and 17,39% to be 'High'. All the participants felt the need to justify their answers. Some interviewees specified that most of their team members are Portuguese or Brazilian, resulting in a few differences in behaviour and values. Some, and since Portuguese, Brazilian, and French members constituted the team, considered their team to have a medium cultural diversity. Eight people considered their team highly diverse since they contact with people from Portugal, France, Brazil, UK, and Spain every day. One member of this team said, *"the majority of this team is not in Portugal which is great! It improves our English, we have contact with different values and perspectives, which is very enriching. On the other hand, it can cause difficult situations, since some attitudes, words or expressions can be misinterpreted and cause uncomfortable circumstances".*

Concerning the number of years of experience of the participants, 13 (28,3%) had less than 5 years, 21 (45,7%) between 5 and 10 years, 10 (21,7%) between 11 and 20 and 2 (4,3%) had more than 20 years of experience.

Table 16 - Participants' Total Years of Experience.

TOTAL YEARS OF EXPERIENCE	TOTAL	PERCENTAGE
Less than 5	13	28,3%
5-10	21	45,7 %
11-20	10	21,7%
More than 20	2	4,3%
Total	46	100%

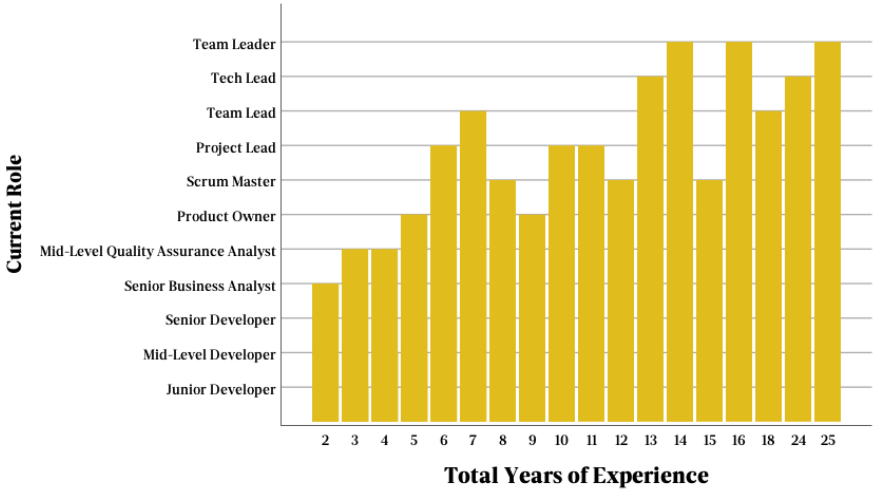

Figure 26 - Participants' Total Years of Experience by Role.

Table 17 - Participants' Total Years of Experience in Current Role

TOTAL YEARS OF EXPERIENCE IN CURRENT ROLE	TOTAL	PERCENTAGE
Less than 5	40	87,0%
5-10	6	13,0 %
Total	46	100%

4.2 Context Analysis

4.2.1 Identification of the Performance Metrics / Indicators used by the Teams

One of the interview questions was "What are the performance metrics / indicators you currently use, as well as your team?" to obtain a global vision, not only of the teams but also of the roles each participant has. All Team Leaders, Tech Leads, Projects Leads, Product Owners, Developers, Business Analysts and Quality Assurance Analysts answered the questions.

Many interviewees stated they use some performance metrics / indicators, but not in a rigorous way. Interviewee number 13, for example, stated, "*We are using metrics in a frivolous way, we are not very focused on them, but we still try to implement them as best as possible and to create that habit in people inside the team".* Participant number 8, with the same role as participant number 13, had a different opinion from the other Team Leaders because he expressed that one of his goals for his team is to eliminate performance metrics, even though he understands the importance performance metrics have and how they can, to a certain extent, to help teams. He justified this decision by saying: *"based on my previous experiences. I noticed that if people, especially in Agile software development teams where there are high levels of competition, use performance metrics, they start working merely for the numbers and not for the quality of what they are doing or how their emotional and mental state are. I experience that, in medium and long term, people start to value a good workplace upbringing, good co-workers, a challenging yet healthy environment, motivation and inspiring leadership. Being good on a technical perspective and working with the best technologies is not enough anymore. People expect a good work-life*

balance, they want leaders who genuinely worry about them and foment curiosity, healthy discussion, transparency, and excellent communication.".

One of the Mid-Level Developers expressed a similar thought when saying, *"My Team Lead has been using less and less performance metrics because he wants to focus more on people, in their daily activities and how they feel in the Sprints. There is a clear investment on his side in developing our soft skills, in sharing our emotions and feelings not only with him but also with colleagues.".* This supports Daniel Goleman's (2020) conclusions which highlighted the fact organizations are trying to have teams not only with strong hard skills but also strong soft skills.

Figure 27 represents the eight most indicated performance metrics/indicators.

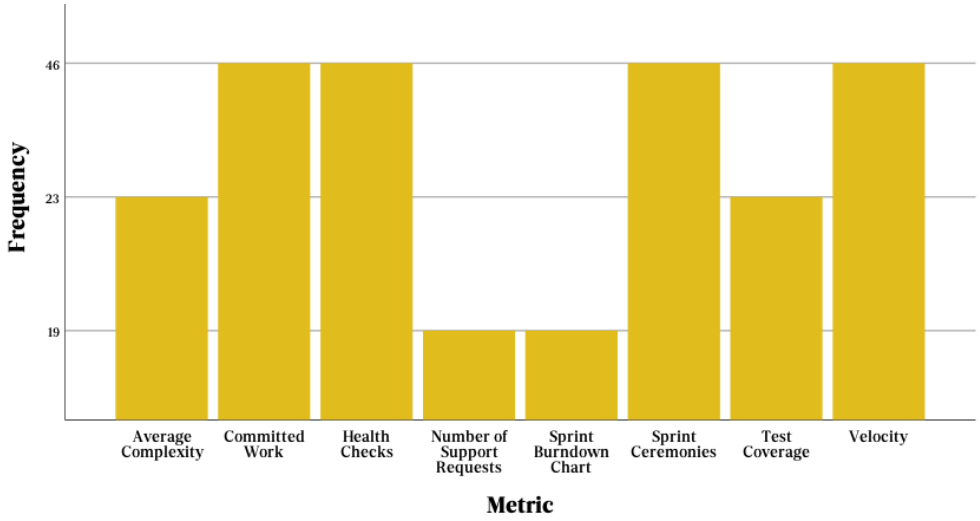

Figure 27 - Current Performance Metrics.

- **Average Complexity:** to each item in Jira is given, during the Sprint Planning Meeting, a complexity classification – Low, Medium, High. This will allow not only to assign each item to people according to their time on the team but also to the general experience of each member;
- **Committed Work:** the amount of Story Points each member and the team settles in each Sprint is one of the four metrics used by all the interviewees. Through dialogue, the team tries to achieve a consensus and a commitment for their three weeks Sprint;
- **Health Checks:** this was one of the first metrics indicated by all 46 participants when answering. Health checks are also designated as "One-on-One". This moment is

purely dedicated to clear, direct, and honest communication between the Team Lead and/or Team Leaders and all the team members directly below him/her. According to the 2 Team Leads and 4 Team Leaders interviewed, *"this moment is dedicated to focus on what each team member is feeling. If he/she is happy, fulfilled and if there is/was a specific situation to be discussed and shared. Many times, I understand what people are going through only in this monthly moment. It is when I know how I can help them stay motivated, with high energy and help them on a professional level. Many situations are dealt with privately, in this meeting, so that the privacy of people can be respected. That is the moment devoted to looking at the people we work with daily as human beings, with feelings, thoughts, offer them advice and work on their soft skills".* Junior, Mid-Level and Senior Developers also share the same vision about the health checks – *"I try to be as much as possible an open book. I share with my superior what troubles me, what I need to stay motivated and improve. I express what I believe is causing negativity in the team and what I believe needs to be done to reduce those negative aspects. I think it is a very effective method to foment communication and to make us feel better with ourselves and our team.";*

- Number of Support Requests: 1 out of the 7 teams does not have a rotational Support process – that is, 1/2 developers, exclusively and rotationally, in charge of the team's Helpdesk inbox/platform. This forces them to use the number of Support requests as an important metric to justify to the customer their velocity, and why they sometimes did not deliver all the items, they set themselves to. The Project Leader of that team states, *"The fact we don't have a rotating helpdesk system, makes this an important metric to have and present to the customer. Azure DevOps, fortunately, allows us to do that a little faster and have the time spent and the number of support requests with detailed descriptions and categories (for example, accesses to the application, technical extraction requests, documents generation issues)";*
- Sprint Burndown Chart: 19 of the interviewees said the Sprint Burndown Chart allows them to verify if the team's Sprint is indeed going as planned or not. All the 19 participants had non-developing roles, that is, they were all Business Analysts,

Product Owners, Scrum Masters, Project Leads and Team Leads. One Product Owner explained the importance of this chart: *"I use the Sprint Burndown because it is an easy way to validate if the team's performance is good or bad. If we compromise with the customer to deliver certain items, I must guarantee they indeed are delivered. So, every day, when I look at the Burndown Chart, and if the developers are working on their topics more than expected, I speak with them in the Daily Standup Meeting so they can realize something is not working properly, that they exceeded or are about to exceed the time estimated for the topic, and also to try to understand why their original estimate for the topic failed. Then, I wrote it down and discuss with much more detail in the Sprint Retrospective".* The Project Lead with the ID number 17 stated *"A Sprint Burndown Chart is easy for you to look at! It doesn't require many effort or calculation. You open your Jira and there it is – ready for you to take your conclusions and help the team's performance.";*

- **Sprint Meetings:** specifically, the Sprint Retrospective Meeting, where the team expresses what they believe went well, and bad and needs to be improved / start being implemented in future Sprints. All participants indicated this ceremony, and 41 added the Daily Standup Meeting to this metric. 3 of the 4 Scrum Masters detailed one of the methods they currently use, which has been having very positive results - a personalized Niko-Niko Calendar [4] (Figure 28).

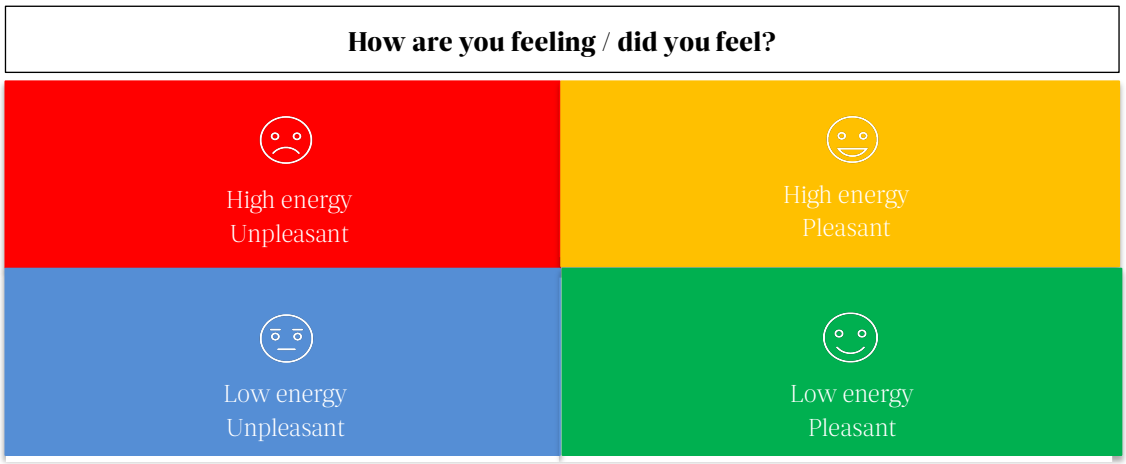

Figure 28 – Company X's Niko-Niko Calendar template. Source: Own Elaboration

[4] *https://management30.com/practice/niko-niko-calendar/*

"In the Sprint Retrospectives, the Product Owner asks team members to choose an emoji which best describes their mood/emotion throughout the Sprint and also in that exact moment of the Retrospective, which is, in my opinion, a witty and stress-free method of sharing and communicating emotions with our peers. It is quite difficult to have daily information because people get too busy, they don't always take the time to understand how people are feeling and what they are going through, and that has a tremendous impact on how trust and communication evolve in the team, and also in the performance and quality of people's work.". This type of initiative from the software development teams interviewed withstands what Cockburn & Highsmith (2001), Tam et al. (2020) and Troth et al. (2020) stated. The authors affirmed the new vision of project teams and how it is essential to observe people and their emotions, towards guarantee they are happy and foment a good organizational atmosphere for global performance to increase.

One of the teams detailed that they stopped using a Niko-Niko template because of the opposition of the French members of the team. According to this team's Scrum Master, *"A French member said he did not want to share he emotions with the team, stating emotions are not meant to be included in a professional setting. With time, other French members started being less participative, which caused some friction and discomfort. The team then decided collectively it was best to terminate this step in the Sprint Retrospective Meeting"*. This is justified by what was analysed in the literature by Cunha et. al. (2016) and Shah et al. (2021) – cultural differences are one of the conflict's precedents, and the conflict's origin was individual (one team member). However, the conflict was diffused by other team members. In this situation, the Scrum Master said the team decided to *"avoid further conflicts as to prevent tense situations and relationships"*, which is a classical justification for the utilization of the conflict management style of 'Avoidance' (as stated in the literature by McIntyre (2012)).

4.2.2 Top-5 Performance Metrics / Indicators

Even though the participants may not be using many performance metrics, it was asked for them if they could indicate a TOP-5. The frequencies of the TOP-5 most indicated performance metrics/indicators, from highest to lowest, are illustrated in Figure 29.

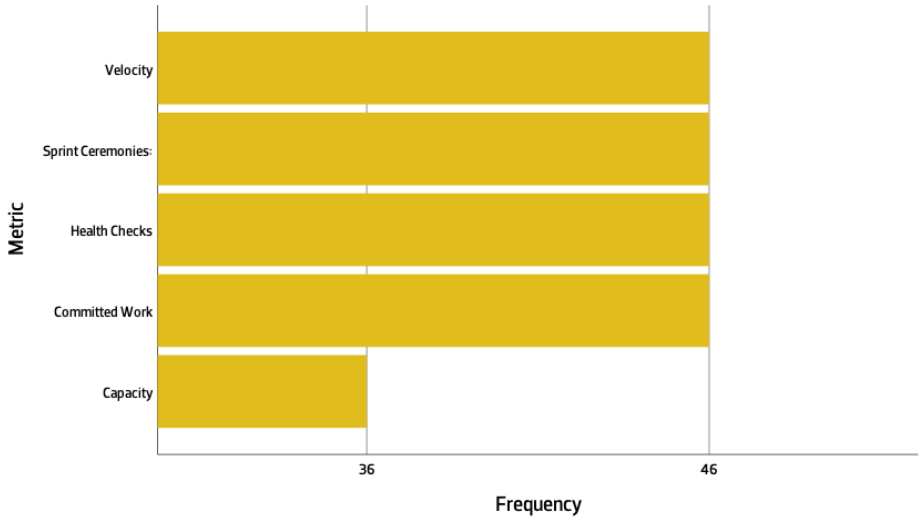

Figure 29 – TOP-5 performance metrics/indicators.

It is possible to analyse the 'Velocity', 'Sprint Meetings', 'Health Checks' and 'Committed Work' all had the consensus of the interviewees regarding their importance to measure or help to measure the team's performance. One new performance metric/indicator mentioned in the TOP-5 by 36 (78,3%) interviewees was the 'Capacity'. Interviewees 18 and 26 mentioned, *"sometimes, it is hard to estimate and commit to working during the Sprint without fully knowing the availability of the team members. We cannot properly assign the work to the members unless we consider their holidays and capacity per day to accomplish their tasks. Despite this not being directly a metric, it is an indicator of the amount of workload the team can handle and directly influences metrics such as committed work and velocity"*. A Team Leader even indicated that *"not having this indicator into consideration may lead to conflicts and frustration within the team, since members will feel unmotivated and overloaded, which will in turn affect their global performance"*.

4.2.3 Performance metrics/indicators useful to have

The third question of the semi-structured interview was "What are the metrics/performance indicators you miss and believe would be advantageous to your current role for decision-making and/or individual feedback?

A. What would its name be?

B. How would it be used?

C. What would be the golden source of information of this metric/performance indicator?".

To this question, the most popular answer was, *"I believe the current quantitative and qualitative metrics used by my team are enough. I don't miss using anything else".* However, 2 metrics stood out:

- **Test Coverage:** answered by 37% of the participants, mainly by technical and quality assurance roles. Most developers who participated in the interview emphasized the importance of producing and delivering high-quality code. This would "be a potential indicator not only of individual performance of each developer but also would make future work much easier and the perception of the team to the customers would overall improve." (participant number 35). According to the Tech Lead "using tools such as SonarQube is one of the top needs developers have and ask for. They are deeply concerned with the quality of their work, and such tools help them achieve exactly that";
- **Customer feedback:** having the perception of the customers is highly important to the Agile software development teams interviewed. "It keep us motivated to know if the customers we are delivering value to are satisfied. Of course, maybe the Team Lead and Product Owner have that feedback and perception, but it would be very interesting to listen directly from them their feedback and opinion", one Senior Developer commented. Business Analyst number 18 also stressed the importance "getting customer feedback and valuation is to the team's morale and continuous work". According to the interviewees, the golden source for this metric would be the NPS, since it is the "most direct way and quantifiable to register the customers' satisfaction" – participant number 29.

4.2.4 Identification of the Performance Metrics / Indicators which anticipate Conflicts

The last question of the interviews was "Are there, in your opinion, any performance metric / indicator which allow the anticipation of conflicts (positive or negative) in your team?" to obtain a global vision, not only of the teams but also of each participant regarding conflicts they experience

and/or have experienced and try to conclude if there are any metrics, they could use which could make them proactive towards conflicts. This was the question the participants had to think about the longest to answer. In fact, 32,6% of the participants, mainly with the roles of Junior Developers, Mid-Level Developers and Senior Developers weren't able to answer successfully to the question, despite having shown interest in the conclusions of this study on this question in particular – *"I don't know what specific metrics can help predict conflicts, because in the team we don't experience many conflicts, but this is something helpful, I think, for people in the team with management positions. For me, as a developer, having this metric maybe wouldn't help me as much since, in the end, the team's Business Analyst, Product Owner, Scrum Master or Team Lead are the people responsible for solving or managing the conflict"* (Interviewee number 36). A Junior Developer – participant number 12 alleged, *"since I tend to avoid conflict, and it's not part of my responsibilities to handle conflicts within the team, I usually don't pay much attention to metrics or indicators neither have a formed opinion on them".*

Despite not having 100% of the participants answering this question in an expected manner, their answers assisted in concluding metrics that can potentially help to anticipate conflict, be proactive about it and also give an insight into the conflicts process in the teams. Additionally, all participants stated other factors and variables, many of which are non-quantifiable, directly influencing conflicts and their management and, as a consequence, the team's performance, and relationships. Seven participants mentioned the importance motivation has on individuals' performance - *"Motivation not only of the team, but individual. I think that a metric which would allow to assess the motivation of each team member of the Scrum Team is extremely important because we are talking about human beings. When a person is not motivated, for any reason - whether the project is not fulfilling him/her, or because he/she dislikes the team or is unsatisfied with the organization or salary – that makes all the other metrics / indicators to eventually having a negative result. I believe a metric which allows to see if a person is motivated could help anticipate conflicts, because when someone is motivated, he/she will be pleased to produce more and better, will commit more, resulting in an improvement in all other quantitative metrics".*

The Tech Lead interviewed said, *"velocity, quality of the code, test coverage and capacity influence and allow to anticipate potential conflicts, but only when they are correctly accepted*

and implemented by all team members and also have an action plan associated. Otherwise, the metrics/indicators by themselves without any goal do not produce any solution or cause any improvement in the team and/or anticipation of conflicts".

Other answers given allowed us to infer the origin of many of the conflict teams' experience. All the members of one of the teams - Junior, Mid-Level, Senior Developers, Business Analyst, Scrum Master, Quality Assurance Analyst and Team Lead – claimed *"most of the conflicts in our team arise from differences of opinion in the Sprint Planning and also Sprint Retrospectives, because in the Sprint Retrospectives sometimes people think, in their opinion, something went well, but other people think it didn't go so well. In the Sprint Planning, specifically in the moment of estimation of the tasks/user stories, since the experience and perception of complexity is different amongst team members, it ends up creating some discussion so that an agreement is generated. It is a conflict that sometimes is positive and helps team to communicate better and for everybody, even introverts, to express their opinion, and other times is negative and can even damage the teams' performance and the daily activities of the members. This happens mainly when we notice someone is upset and not as happy as usual".* This is consistent with what was stated by Jehn (1995) and Cunha et. al. (2016) in the literature about task conflict and how it can have an impact on team's results when united with the fact people let their emotions take control and are not able to separate what they are feeling in the moment from the objective. Moreover, *"The pressure and urgency given by the Team Lead throughout the project in the developers, business analysts and quality assurance analysts cause them to have an aggressive attitude, resulting in great discomfort which makes people feel controlled. Sometimes, this has as a consequence the creation of internal conflicts, within the team and some members do not know how to handle conflicts. They become very emotional, and disrespectful and criticize a lot every little thing and everyone.".*

From the answers received from the participants, the life cycle of the project teams involved in affects the amount and intensity of the conflict they experience. The Project Lead and Team Lead of the same project indicated, *"our project is in beginning, which results in less conflicts because people understand what everybody is going through, the difficulties and pressure and try to manage the conflicts with more communication, compassion and collaboration".* This indicates that teams working on projects in the initiating phase adopt a more collaborative conflict

management style as to have the members' interests in mind, which is one of the benefits of this style, according to Cunha et al. (2016). These variations supported Jehn and Mannix's (2001) conclusion that conflict must not be perceived as a static event.

One Team Leader detailed: *"In my team, there is clearly a clash of personalities amongst some members, which is causing conflicts very often, low levels of satisfaction and creating an uncomfortable environment. The style people involved in the conflict adopt is very aggressive and self-involved, and because some people can't control their emotions and words, they are not able to think before they speak, sometimes negative words are said which results in tension and bad atmosphere. In order to try to adopt a different approach to conflicts and how they are integrated in the team, in the recruitment phase, I am now exploring candidates' emotional intelligence and how they select their conflict management style. I want to observe how they would handle certain situations if they were in sync with the rest of the team so that we can try to look at conflict as something natural and even positive. I am also investing in Team Building activities which can promote team spirit and management of difficulties, miscommunication, time pressure, etc.".* This supports Cunha et. al (2016) description of one of the conflict's precedents – aggressive stance – and the fact that this style often creates conflict much more than a calmer posture.

4.2.1 Most Relevant Metrics by Role

After all the interviewees, the most answered metrics according to the participants' roles were grouped. The results are evidenced in Table 18.

Table 18 - TOP metrics by role | Source: Own Elaboration

Metric	Junior Developer (%)	Mid-Level Developer (%)	Senior Developer (%)	Business Analyst (%)	Quality Assurance Analyst (%)	Product Owner (%)	Scrum Master (%)	Project Lead (%)	Team Lead (%)	Tech Lead (%)	Team Leader (%)
Velocity	100	100	100	100	100	100	100	100	100	100	100
Health Checks	100	100	100	100	100	100	100	100	100	100	100
Customer Satisfaction	25	85,7	100	100	100	100	75	100	100	0	75
Capacity	100	85,7	75	75	0	100	25	100	50	0	50
Sprint Burndown Chart	0	0	12,5	25	0	100	100	100	0	0	25
Committed Work	100	100	100	100	100	100	100	100	100	100	100
Average Complexity	100	85,7	62,5	75	0	100	25	0	0	100	0
Sprint Meetings	100	100	100	100	100	100	100	100	100	100	100
Test Coverage	100	100	100	0	33,3	0	0	0	0	100	0

From this data, 'Velocity' 'Health Checks', 'Sprint Meetings', and 'Committed Work' are important for all the people with the 11 interviewed roles. The 'Test Coverage' metric is much more valuable and important to the Junior, Mid-Level, Senior Developers and Tech Lead professionals whose

daily work is very technical and in a certain way allows them to evaluate the quality of their work. The Sprint Burndown Chart is a metric exclusively important to the Product Owner, Scrum Masters, and Project Leads, people usually responsible for guaranteeing the work is implemented without any problems throughout the Sprint. The team's capacity is primarily significant to the individuals dedicated to the implementation of the items and the people who oversee these individuals' work. 'Customer Satisfaction' is a key metric/indicator for people who have to ensure the product has good quality, and features and that the dates agreed on are accomplished. Senior Developers also expressed this would be a helpful metric which is due to the fact they *"have much more autonomy to be creative and are at a stage in their professional career where they don't just do as they are told, they start questioning and suggesting new features, based on what the customer needs."* – Senior Developer number 25.

4.2.2 Contributing Metrics to the Team's Velocity

Since the team's velocity was the most chosen metric by the participants to anticipate conflicts, and in order to understand what are the indicators which contribute to the team's velocity, a Multiple Linear Regression was performed. Multiple Linear Regression is a technique designed to establish a linear relation among variables and predict the value of a dependent metric variable from independent non-metric variables (metrics vastly mentioned by the participants).

- **Dependent metric variable:** Velocity;
- **Independent non-metric variables:** Committed Work, Team Capacity and Average Complexity.

Table 19 - Model Summary of the Results.

MODEL SUMMARY				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of Estimate*
1	,567	,322	,258	21,4

Predictors: (Constant), Committed Work (SP), Team Capacity, Average Complexity
Dependent Variable: Velocity (SP)

When looking at Table 19, it is observed that the Adjusted R Square (Ra2) = 0,258, which means that the total variability of the Velocity is explained by the Committed Work, Team Capacity and Average Complexity in 25,8%.

Next, an ANOVA rest was conducted in order to understand if the adjusted model is significant. The ANOVA Test will test the following hypotheses:

- p H0: Independent variables have no significant effect on the dependent variable;
- p H1: There is at least one of the variables that has a significant effect on the dependent variable.

Table 20 - ANOVA Test.

ANOVA						
Model		***Sum of Squares***	***df***	***Mean Square***	***F***	***Sig.***
1	Regression	6939,3	3	2313,1	5,0	,006[b]
	Residual	14637,4	32	457,4		
	Total	21576,7	35			

Dependent Variable: Velocity (SP)

Predictors: (Constant), Average Complexity, Committed Work (SP), Team Capacity

Analysing Table 20, the Significance (Sig.) level of the test is 0,006, a value smaller than 0,05, leading to the rejection of the null hypothesis (H0), that is, there is at least one of the independent variables that have a significant effect on the dependent variable.

Table 21 - Variables Coefficients.

Coefficients						
		Unstandardized Coefficients		***Standardized Coefficients***		
Model		***B***	***Std. Error***	***Beta***	***t***	***Sig.***
1	(Constant)	34,9	31,4		1,1	,28
	Committed Work (SP)	,238	,168	,213	1,4	,17
	Team Capacity	,342	,281	,191	1,2	,23
	Average Complexity	-14,6	6,1	-,375	-2,4	,02

Dependent Variable: Velocity (SP)

After realizing that at least one of the variables influences the dependent variable, it is important to understand which are the most considerable. Table 21 is then analysed, where it is deduced that the variables “Committed Work (SP)” and “Team Capacity” are the most significant when it comes to studying the factors that contribute to the velocity of the team. From this, it is possible to say the team's capacity directly influences its velocity, as visually represented in the boxplots in Figure 30.

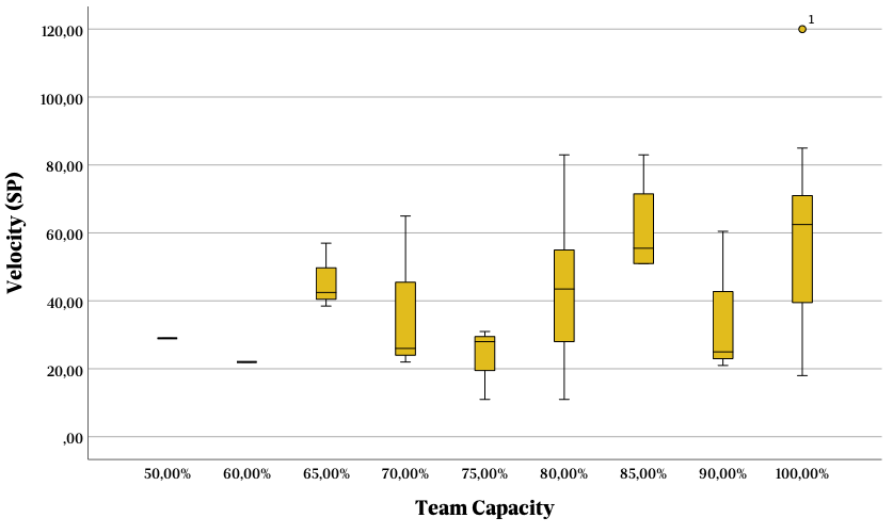

Figure 30 - Influence of the Team Capacity in the Team's Velocity.

It is also deduced that the variable “Average Complexity” negatively influences the team’s velocity, that is, the higher the average complexity of the item included in the Sprint, the lower the team’s velocity will be (Figure 31).

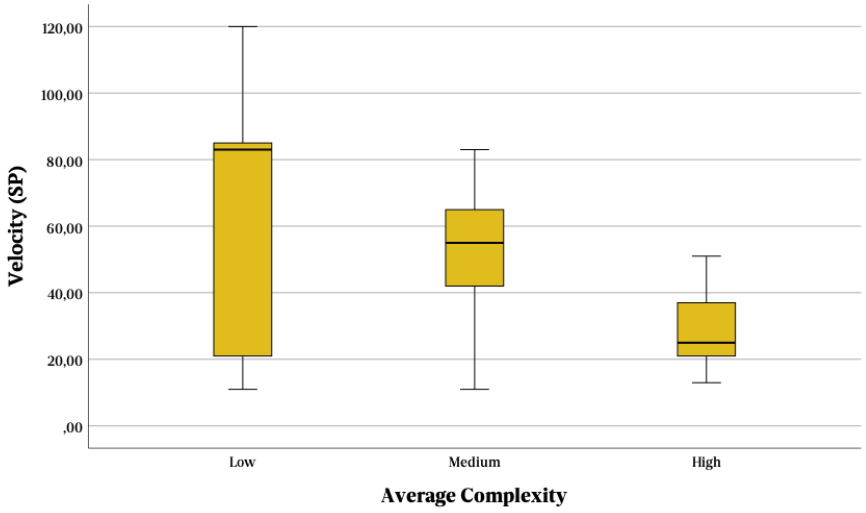

Figure 31 - Influence of the Average Complexity in the Team's Velocity.

PART III – CONCLUSIONS AND FUTURE RESEARCH

In this third part, the main conclusions about the dissertation are presented, the results are discussed, the study's limitations are evidenced and explained and, last, possible future work to conduct on the topic, based on the attained conclusions.

5 CONCLUSIONS

This dissertation had the following objectives:

- Understand how emotions and conflicts are created and managed through emotional intelligence and the extent to which they can influence the performance and engagement of Agile software development teams;
- Clear and pithy definition, historical context and implied concepts of emotions, emotional intelligence, and conflicts in Agile software development projects;
- Most common project lifecycle phase(s) in which emotional intelligence and conflicts are more frequent and critical;
- Use previously validated conflict management and/or measurement scale(s) to assess conflict and its management in real Agile Software Development Teams;
- Identify which performance metrics / indicators are more useful to the various Agile roles available in Software Development Teams and which can better foresee conflicts amongst team members.

As a first step, a literature review in scientific journals, books and other sources of information concerning the major topics of the dissertation - emotional intelligence, conflict management, agile software development teams and their performance - was conducted. As stated by the literature, emotions and intelligence are vastly connected. Emotions are inherent to almost every daily task / interaction individuals perform / have. Anger, sadness, fear, love, surprise, disgust, happiness are some of what are known as ‘basic emotions’, named and listed by Ekman (1992) and are felt not only in a personal context but also in a professional setting, as Goleman, in 1995, groundbreakingly presented. The need for employees, and not only managers / leaders, to know how and be well equipped to effectively manage their emotions, thoughts and reactions have

become increasingly important and a source for academic research and training all over the world.

Nowadays, an employee's value surpasses strong technical skills. Soft skills and well-being are the top priorities for many managers / leaders, when hiring people and managing a team, and also for employees when choosing an organization and team to work. Amongst those soft skills is conflict management. It is well known that the occurrence of conflicts is much higher, and almost unavoidable when people with dissimilar personalities co-exist and work together. However, the key difference is knowing how to manage those conflicts commendably and incorporating their advantages into the team. Conflict can have multiple origins, levels and types and management styles, henceforth, it is crucial to know the characteristics of the conflict, comprehend how each member manages conflict and which type of conflicts have a direct influence on the team's performance, satisfaction, and intention to stay in the team. This can be supported by the conclusions of previously validated conflict management and/or measurement scale(s), such as the Jehn's Intragroup Conflict Scale (ICS), the Jehn and Mannix Scale and the Bendersky and Hays Scale.

By conducting and analysing the results obtained from semi-structured interviews with different Agile Software Development teams, it was possible to conclude the importance of emotions and conflicts on the interviewees' teams' morale and performance.

The first evidence was the fact that some teams use the Niko-Niko calendar as a method for sharing amongst the team members their emotions and how they are feeling daily, or when they are discussing and sharing between them thoughts about previous work they have developed and delivered to the customers. This indicator can help each team member to understand better the behaviour expressed by others in specific situations and vouches for what is indicated in the literature, specifically by Cherniss and Goleman (2001) as Group Emotional Intelligence.

From the interviews, it was important to understand that the existing roles in the Agile Software Development teams have different metrics that are the most valuable to them. The interviewed Developers and Tech Lead highlighted the fact that test coverage is an essential metric for them because it allows them to understand the quality of the work they produce and deliver to the customers. Sprint meetings and health checks were 2 of the most mentioned metrics for all 12

roles interviewed, specifying the direct significance communication between leadership and employees and amongst employees themselves have on the team's well-being, environment, and daily work. The Sprint Planning Meetings and Sprint Retrospective Meetings are a source of conflict in the majority of the teams interviewed, but this is seen as natural in the teams and even positive. Since it encourages communication about the tasks being worked on during the sprint and shared decision-making amongst the involved. This is supported by Bendersky and Hays's (2010) deductions, in which they call these conflicts *"pure task conflict".*

Another conclusion was that when conflicts arose from relationship problems between team members, a reduction in the employees' satisfaction was confirmed, as proven by Jehn's Intragroup Conflict Scale (ICS) (1995).

Some participants mentioned the Agile methodology as a metric that helps them tremendously to monitor, control and manage individual and collective work. Customer satisfaction was another important metric to the majority of the participants, allowing them to obtain direct feedback of their work from the daily users of the applications / products they work on, representing a constant and trustworthy source of improvements and quality. Product Owner mostly uses the Sprint Burndown Chart, Scrum Masters, and Project Leads, representing in a very broad and visual technique the team's progress and helps people in these roles to understand if the team is working as planned / expected or not.

Software Developments team's performance is highly sensitive, and from the participants' responses, a team's performance is primarily measured / metrified by the team's velocity, that is, the amount of work the team can deliver by the end of each sprint. According to the interviewees and the quantitative metrics analysed, team's capacity and committed work are the factors which influence the team's velocity most.

6 LIMITATIONS AND FUTURE RESEARCH

It is extremely important to emphasize the limitations of the case study accomplished.

One of the limitations is the reduced diversity of the population. That is, despite being able to attain conclusions with the studied population, it represents teams of the same Department and the same Company. Future research must include more varied samples, examining individuals from other companies and/or departments compared to the individuals and teams used in this dissertation.

Another limitation of the present study is the fact that the secondary data used is inserted manually by the team members. That is, susceptible to human error and needs to be strictly and correctly inputted in Azure DevOps and/or Jira. The quantitative data was reduced because some of the teams involved in the study do not use metrics very often or are not very accurate with the information they insert in the Azure DevOps / Jira platforms.

In future research it would be interesting and useful to implement a questionnaire using a Conflict Measurement Scale, in combination with an emotion detection tool, to obtain greater veracity and authenticity in the feelings and reactions software development team members experience in certain moments such as internal and external meetings, and to give a touch of innovation to the research. The execution of a longitudinal study to observe Agile software development teams over a longer period of time would, in the future, strengthen or refute the conclusions achieved in this transversal study, which would be another possibility for future research.

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APPENDIX

APPENDIX I – INTERVIEW SCRIPT

INTERVIEW SCRIPT

Introduction

A. ***Introduce myself, thank for the availability and explain what will happen during the duration of the interview***

Good morning/Good afternoon, welcome to this interview. Before we start, I would like to thank you for your availability to discuss emotional intelligence and conflict management and how they can influence team's performance.

My name is Catarina Ferreira, and I am currently attending the 2nd year of the Master's Degree in Project Management at the School of Technology and Management of Felgueiras of the Polytechnic Institute of Porto.

B. ***Goal of the investigation:*** understand how emotions and conflicts are created and managed through emotional intelligence and the extent to which they can influence the performance and engagement of Agile software development teams.

C. ***Objective of the interview:*** identification of the Performance Metrics / Indicators used by Agile Software Development Teams and if any metrics/performance indicators which allow the anticipation of conflicting situations, both positive or negative, in the teams and/or with their respective stakeholders.

Questions

1. *Name:* _____
2. *Age:* _____
3. *Gender:* _____
4. *Nationality:* _____
5. *Role + Seniority Level:* _____
6. *Total Years of Experience:* _____
7. *Total Years of Experience in the current Role:* _____

ii. ***Interviewees' team characteristics***

1. Size of the team
2. Level of cultural diversity (low, medium, high)

iii. Interviewees' teams Metrics/Performance Indicators

3. What are the metrics/performance indicators you currently use, as well as your team?
4. What is, in your opinion, the TOP5 of metrics/performance indicators, in what concerns their value to you and your team?
5. What are the metrics/performance indicators you miss and believe would be advantageous to your current role for decision-making and/or individual feedback?
    a. What would its name be?
    b. How would it be used?
    c. What would be the golden source of information of this metric/performance indicator?
6. Are there, in your opinion, any metrics/performance indicators which allow the anticipation of conflicting situations, both positive or negative, in your team and/or with the stakeholders?