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MARIANA GONÇALVES DE OLIVEIRA

ERROR MANAGEMENT: THE DIFFERENT PERCEPTIONS AMONG MANAGERS AND INDIVIDUAL CONTRIBUTORS

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Thesis presented to Escola de Administração de Empresas de São Paulo of Fundação Getulio Vargas, as a requirement to obtain the title of Master in International Management (MPGI).

Knowledge Field: Internacionalização de Empresas

Advisor: Prof. Dr. Antônio Gelis Filho

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Committee members:

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Prof. Dr. Antônio Gelis Filho

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Prof. Dr. Beatriz Braga

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Prof. Dr. Ricardo Rochman

ACKNOWLEDGMENT

ABSTRACT

Considering the constant changes in the market, if a company wants to thrive it is necessary to do something unique, to frequently get inputs to support its innovation. In this sense, the error management approach may be a good strategy to be considered, as it enhances the positive and mitigates the negative aspects of errors, turning mistakes into valuable sources for organizations. However, in order to properly benefit from it, the error management approach needs to become part of the organizational culture, with practices and resources that support it. Moreover, it is important to have a clear understanding about the individual and social components that may influence the employee's experience. With this in mind, this study aims to evaluate the main differences between the understanding of managers and individual contributors regarding the error management approach in a same company, because it may support an effective implementation of the error management. To do this analysis, the qualitative methodological approach was considered, and semi-structured interviews were conducted with managers and individual contributors. The unity of analysis was a multinational consumer goods branch located in Brazil, that had the goal of improving its innovative level. Regarding the research findings, the evidences indicated that the personal preference seems to prevail when an employee needs to adopt the error management mindset, that team leaders and team members have some different perceptions about tolerant and non-tolerant errors, and it seems that both audiences are aware about the same error communication vehicles available in a given context. In addition, the individual contributors had more divergent answers compared to the managers, and that team leaders seem to be more optimistic regarding the error management approach.

KEYWORDS

RESUMO

Considerando as mudanças constantes do mercado, se uma empresa quer ter sucesso, é necessário que ela realize algo único, que obtenha frequentemente insumos para alimentar a sua inovação. Neste ponto, a abordagem de gestão do erro pode ser uma boa estratégia a ser considerada, pois ela potencializa os aspectos positivos e mitiga os aspectos negativos dos erros, tornando equívocos em recursos valiosos para as organizações. Entretanto, para se beneficiar propriamente desta estratégia, a abordagem de gestão do erro precisa se tornar parte da cultura organizacional, com práticas e recursos que lhe sirvam como base. Além disso, é importante ter um entendimento claro dos componentes individual e social que irão influenciar a experiência do colaborador. Com isto em mente, o presente estudo tem como objetivo avaliar as principais diferenças de entendimento de gerentes e de contribuidores individuais em relação à abordagem de gestão do erro em uma empresa, porque isto pode auxiliar em uma implementação efetiva da gestão do erro. Para esta análise, a abordagem metodológica qualitativa foi considerada, e entrevistas semiestruturadas foram conduzidas com gerentes e contribuidores individuais. A unidade de análise considerada foi a filial de uma multinacional de bens de consumo localizada no Brasil, a qual tinha como objetivo melhorar o seu nível de inovação. Em relação aos resultados da pesquisa, as evidências indicam que a preferência pessoal parece prevalecer quando um colaborador precisa adotar uma mentalidade de gestão do erro, que os líderes e membros de equipe tem algumas percepções diferentes sobre erros toleráveis e não toleráveis, e que aparentemente os dois públicos tem consciência dos mesmos veículos de comunicação sobre erros disponíveis em determinado contexto. Outro ponto é que os contribuidores individuais tiveram respostas mais divergentes se comparado com os gerentes, e que os líderes parecem ser mais otimistas em relação à abordagem de gestão do erro.

PALAVRAS-CHAVE

Gestão do erro, cultura de gestão do erro, gestor, contribuidor individual, percepções diferentes

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1. INTRODUCTION

The primary objective of this study is to understand if there are any differences between the perceptions of managers and individual contributors regarding error management in a given context, because in order to create an environment with an effective error management, it is necessary to understand the individual and social components within a company. What do managers think about errors inside the organizations and what do they actually live in a daily basis? On the other hand, how do employees describe the error management approach of the company and what are their perceptions about it? Do employees experience error management in the same way that managers do? Accordingly, these questions were considered as the background for the research question: what are the main differences between the understanding of managers and individual contributors regarding the error management strategy in the same company? Given the rapid changes in the business environment due to the advance of technology, companies should perceive errors as valuable sources of information to do improvements and to get insights for new ideas, becoming more innovative to thrive in the market. For that reason, the error management approach is an important strategy to be implemented in the companies. Building up on that, the literature review brings together content about the definition and types of errors, what error management is, how it can be translated as error management culture and its components, examples of benefits of an error management culture and disadvantages if it is not implemented effectively, the manager's role, details about possible resources and practices, and finally how communication is an essential component in an error management culture.

In order to properly address the research question, the qualitative methodological approach was applied in the present study. The main reason for that relies on the characteristics of its research process and it focus on exploring how a group of individuals perceive a certain topic. However, some quantitative data was also collected to support the analysis, to gather the perception of participants about the existing resources and practices regarding error management in the company. To collect the necessary data, 16 semi-structured interviews were conducted, 8 with individual contributors and the rest with managers. The unity of analysis was a multinational consumer goods branch located in Brazil. The selection of interviewees was based on the author's networking, as it was possible to have access to the employees and managers within this company. Assuming the importance of understanding the moment of this organization to support a better analysis, some information was gathered in official vehicles, such as annual

reports for investors, institutional website, and also based on talks with the Human Resources team, and this content is available in the empirical context section. After the interviews, the data analysis process was based on categorizing the data and doing the analysis primarily by proposition.

Based on the literature review, three propositions were raised to guide this exploratory study, and they were related to the possible disconnection between the personal and professional preferences in adopting the error management mindset, the differences between the perceptions of team leaders and team members about error tolerance, and the distinct awareness level of employees and managers regarding the error communication vehicles available. During the interviews, each question assumed one of these propositions as background, which later was analyzed in the research finding section. Subsequently, some of the findings were that the personal preference of the employees prevails regarding adopting or not the error management mindset, that the individual contributors have particular concerns about assuming an error management mindset, managers were more aligned among their answers compared to team members and that the error communication among the area seems not to exist. Moreover, the managers shared a more optimistic view of the error management mindset compared to the individual contributors. Finally, it is important to consider the main limitations of the study, such as the unity of analysis, not objective results and a possible bias in the researcher's interpretation.

2. THEORETICAL FOUNDATIONS

The present literature review aims to connect multiple studies about error management culture and related topics, starting with the explanation of the concept of error, then describing the different ways to use it in companies, advantages, disadvantages and the role of some people in this context. To guide the reader in this part, a Theoretical Foundations Map was created, and each part of it will be presented as the concepts appear in the review. Moreover, each color in the map corresponds to a specific reference, so it is easy to understand the relation among all of them.

2.1. Definition and Types of Errors

To begin with, the definition of error in dictionaries may usually refer to being wrong in an activity, process or even judgement. However, considering the business environment, some other definitions may apply better than the previous one, such as facing an error as the discrepancy between intentions and consequences (Argyris & Schon, 1996), or even seeing the bright side of it, looking at errors as potential resources and opportunities to build up knowledge (Rami & Gould, 2016). In the present study, the word error may be used interchangeably with mistake and failure.
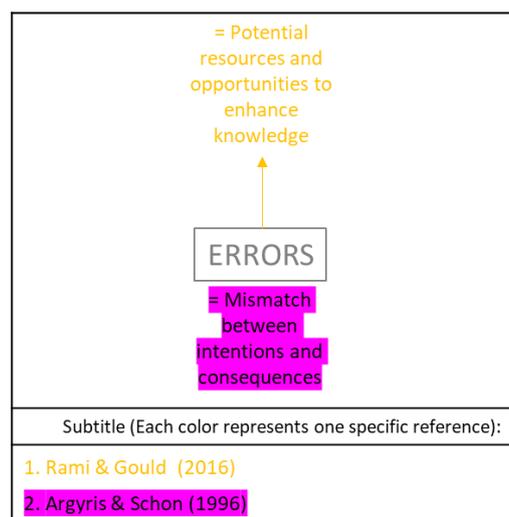
Figure 1 - Theoretical Foundations Map (part 1)

Concerning the business reality inside the organizations, although leaders know the potential value of failures and that mistakes are necessary for organizational improvements (Schoemaker

& Gunther, 2006), they still seem to support anything they can to avoid mistakes (Birkinshaw & Haas, 2016). However, errors will always happen, no matter the qualification of the employee (Frese, 1991), and not all the errors should be treated in the same way considering that it is possible to classify them in three categories: (1) preventable, (2) complexity-related and (3) intelligent, (Edmondson, 2011). The first type of errors is the one that could be avoided, and they are usually a consequence of inattention, lack of knowledge or deviation. The second category of errors happens due to uncertainty, in unpredictable situations. And the last one is focused on providing new and relevant knowledge, as part of experimentation, because answers are needed to make the necessary adjustments as quick as possible. The Figure 2 - Theoretical Foundations Map (part 2) summarizes these concepts.

Categories of mistakes

(1) Preventable
(Ex.: deviation)

(2) Complexity-related
(Ex.: uncertainty, can't be avoided)

(3) Intelligent
(Ex.: answers are needed, generates valuable knowledge)

Subtitle (Each color represents one specific reference):

3. Edmondson (2011)

Figure 2 - Theoretical Foundations Map (part 2)

2.2. Error Management

Accordingly, companies should know better how to use organizational error management to improve its performance, because it enhances the positive and contains the negative consequences of errors, (Maurer, Hartnell, & Lippstreu, 2017; Van Dyck, Frese, Baer, & Sonnentag, 2005). While the error prevention approach is focused on avoiding errors altogether and, therefore, the negative errors consequences, the error management assumes that is not possible to prevent completely the human errors from happening, making it necessary to know how to handle errors when they occur, (Frese, 1991). Instead of an avoidance orientation, the error management is reflective and solution oriented (Rami & Gould, 2016), and stimulates the error acceptance by giving positive responses to mistakes, such as learning from it, (Zhao, Lautsch, & BoyleTodd, 2016). It is a different way to deal with mistakes, that tries to create

value from the unexpected situations, which is contrary to the common behavior presented by managers, as mentioned previously. It does not stimulate the negative reactions towards errors and the prevention becomes a secondary effect, (Fischer, Frese, Mertins, & Hardt-Gawron, 2018). In addition, Frese and Keith (2015) complement the definition of error management, in the sense that this approach not only prevents negative and optimizes positive errors consequences, but also mitigates the occurrence of errors in the future and quickly manage the bad outcomes.
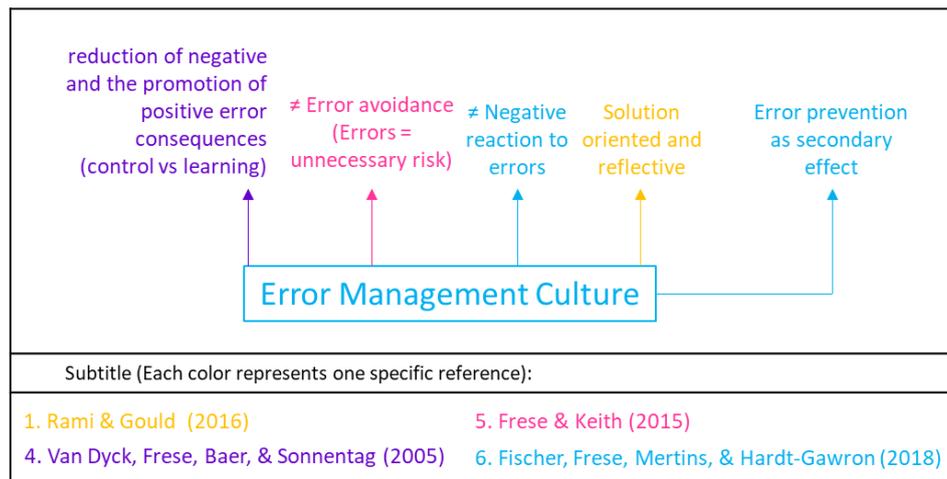
Figure 3 - Theoretical Foundations Map (part 3)

Furthermore, to have an effective error management, it is necessary to take into account its social component, (Fischer et al., 2018). As a matter of fact, anthropological studies propose that the cultural framework is the one that gives meanings to errors, (Douglas, 1992). Inside the workplace, people are constantly interacting with each other and working together, making it almost impossible to manage a mistake alone, as an error may impact the job of someone else. Besides, the error management strategy stimulates behavioral and thinking patterns in the employees attitudes, having a great connection with the culture of the company and its factors (Fischer et al., 2018; Rami & Gould, 2016). Moreover, Edmondson (2011) reinforces that an organization with a culture that allows reporting failures can, and in some contexts must, have high levels of performance. This is related to the way leaders face mistakes in a daily basis, making people comfortable to share it and to do something about it, instead of label errors as unnecessary risks and stimulating the blame game, where people are more worried about the responsible for the error and not with understanding what had happened, (Edmondson, 2011; Rami & Gould, 2016). Based on this, it makes sense to consider the error management as part

of the organizational culture, and it should be in its core for those companies that already aim an error culture, (Van Dyck et al., 2005).

2.3. Error Management Culture and its components

Building up on that, the error management culture translates all the characteristics of error management that were named, however it sums up norms and common practices throughout the whole organization, stimulating patterns of behaviors across all employees, with the primary goal of mitigating the negative and promoting the positive error consequences (Van Dyck et al., 2005). In an error management culture, people know that mistakes will inevitably happen (Guchait, Paşamehmetoğlu, & Madera, 2016), and that is necessary to control the errors damage by quick detection and correction, (Frese, 1991). To make that happen, in an error management culture there are resources and practices available regarding error communication, error analysis, error competency (effective error handling strategies), support in error situations, error sharing knowledge, early error detection and damage control, (Guchait et al., 2016; Van Dyck et al., 2005). By adopting some of these resources and practices, the organization can benefit in different areas and levels, for example, employees would be able to learn not only with their own mistakes, but also with their colleagues' mistakes as well, (Guchait et al., 2016).
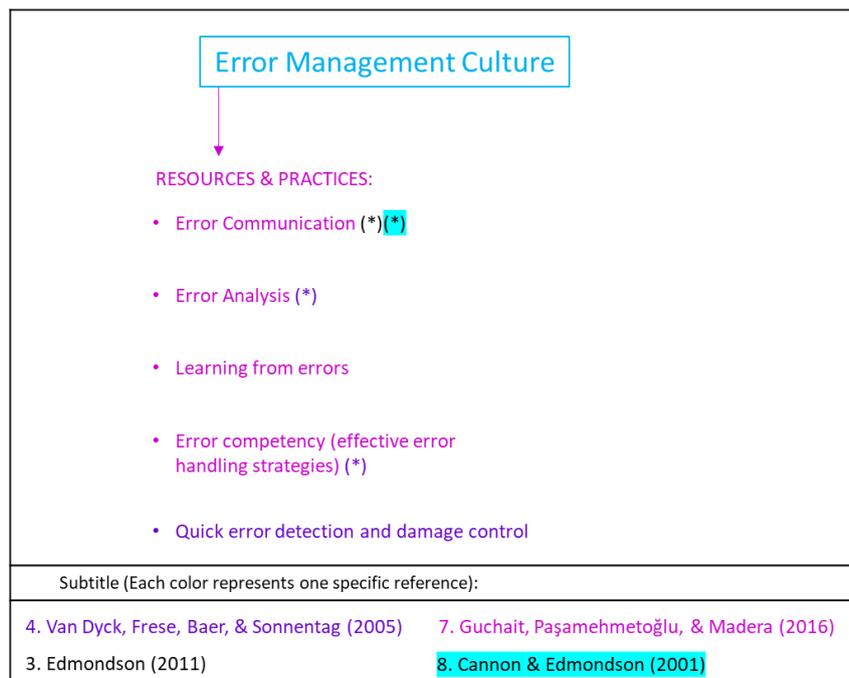
Figure 4 - Theoretical Foundations Map (part 4)

In a broad perspective, Van Dyck et al. (2005) suggest that a high-error management culture leads to a high-firm performance, capable of achieving its goals and with a good return on assets. This is possible considering some intermediary results of the previous resources and practices, such as reduction of negative errors, better quality of processes and products/services, error prevention and learning due to shared knowledge, experimentation and innovativeness. Frese and Keith (2015) also suggest that the error management may improve the performance, long-term learning and innovation of a company as a result of promoting the positive consequences of errors.

Likewise, there are other authors that reinforce the benefits of an error management culture. In the study of Guchait et al. (2016), they found a favorable impact on reducing the turnover intentions of employees by implementing an effective error management culture. The reason for that is a better group cohesion after adopting the resources and practices of an error management culture, which leads to lower levels of stress and consequently impact in lower turnover intentions. People become more open to support each other, deal with problems effectively and improve their own performance. Besides, a culture where errors are effectively managed stimulates the leader development, leadership motivations and general career success, (Maurer et al., 2017).

In addition, Fischer et al. (2018) contribute with another point of view, that the cultural practice of error management may be related to the innovativeness level of a company. It considers the opinion of innovators regarding the interconnection between making errors and innovating, and the serendipity in innovative journeys, which implies trying different ways to reach a goal, until you suddenly discover something new that works perfectly. In other words, it is based on the fact that errors come first, and then innovations happen. Frese and Keith (2015) also suggest that the openness towards errors contribute to the innovation process, Gallo (2010) assumes that mistakes are essential elements in experiments, prerequisites for innovation and, finally, Van Dyck et al (2005) mention that, in this context, companies are more likely to innovate because of the willingness to do experiments and to learn from errors.

Figure 5 - Theoretical Foundations Map (part 5)

On the other hand, considering an organization with a negative error management culture, the environment inhibits innovations because the act of trying something new is seen as risky, there are bad reactions towards errors and, consequently, there is the blame game among the employees, (Fischer et al., 2018). Sometimes companies are seen in a similar situation due to the "paradox of success", as they achieved a successful position, with few errors in their routines, which can make them neglect mistakes and give poor feedback about it, diminishing its future success, (Van Dyck et al., 2005). Moreover, errors can increase the stress level at work, with psychological and economic costs in handling it, that is why the focus should be in reducing the time necessary to deal with errors and not the number of errors per se, (Frese, 1991).

Based on these examples of negative reactions and perceptions about making mistakes, there may be some types of barriers for employees to spontaneously adopt error management practices, which can be related to the workplace conditions, such as the leadership style, historical individual/area performance, psychological safety, economic context, and so on. With respect to these assumptions, one proposition to be evaluated in the present study will be the following one.

Proposition 1 → There is a disconnection between the personal and professional preferences of an employee about considering an error management mindset in the workplace, because the belief that he/she can be put in an unfavorable condition.

In brief, a strong error management culture can improve the individual and organizational performance, refine the innovativeness level of the company, reduce the turnover rates and stimulate the long-term learning. Notwithstanding, the advantages of adopting the error

management culture may differ among companies, based on the sector, economic conditions and level of organizational change, and they can be either associated with control (a quick error detection, for instance), or with learning (experiments, for example), (Van Dyck et al., 2005). There is also the perception that this approach may be more effective in a learning culture compared to a performance-focused culture, as the last one tends to react negatively towards errors, (Gallo, 2010).

2.4. The Manager's Role

Regarding the managers' role in error management, Zhao et al. (2016) state they should be able to identify the different types of errors in each situation, based on its root cause, and respond to it in the more appropriate manner. It should be clear for all employees what are right and wrong attitudes towards errors, based on the expectations of the company and of the leaders. However, to be effective in this initiative, managers would have first to understand what employees perceive as honest mistakes, (unintentional errors involving no harm), which can be a consequence of individual actions and choices, or of factors associated with management control, such as processes and systems. To illustrate the difference, the first could be an employee intentionally not following the guidelines, which requires an attitude towards one individual, while the second type could be the lack of attention of an employee due to workload pressure, and it would demand a broader response of the leader. There are four categories of honest mistakes: (1) chance occurrences, related to events that happen despite the tiny probability; (2) action of others, a mistake that is a consequence of someone's previous action; (3) attention deficit, due to a specific context and situational factors that impact the employee's perception; and (4) well-intentioned mistakes, usually done for a good purpose, such as satisfying the customer even going against the common rule. Apart from the last one, all the others are due to unintentional causes, which usually make people blame others regarding the mistakes that happened.

Although the fact that companies cannot bear with producing imperfect products/services may be a concern for some managers avoid error management, faulty products/services should be considered a defect in error prevention and deficient error management, (Van Dyck et al., 2005). In other words, this is not a good excuse for not adopting the error management approach. Indeed, managers are usually rewarded for efficiency, assertiveness and action, not for a

reflective and solution oriented approach, that is more in line with error management, and to cope with that, the organizational culture may play a decisive role, (Edmondson, 2011). There must be clarity about the common values and behaviors expected across all employees within the organization, and it should relate to error tolerance and error handling strategies. Moreover, managers would have to know how to manage the duality of control and learning, of error as consequence of low performance and error tolerance, so they can reward performance appropriately, (Van Dyck et al., 2005).

Besides, the perceptions of employees are impacted by emotions when taking risky initiatives, and to bear with it in a good manner, the employee needs to consider not only an emotional acceptance in the individual level, but also in the organizational culture, which should provide a safety environment to discuss about the subject, (Catino & Patriotta, 2013). In this perspective, the political and self-awareness are critical factors that translate respectively how people interpret your messages and what messages you are sending, whether you are extrapunitive (blaming others), impunitive (denying failures) or intropunitive (blaming yourself for failures that do not exist), (Dattner & Hogan, 2011). In the individual level, people usually avoid making mistakes or don't see value in it because of overconfidence, risk aversion, search for confirming evidence and assumption of reliable feedback, (Schoemaker & Gunther, 2006). In the collective perspective, the political awareness will guide the correct manner to handle with mistakes within an organization, area or role. As proposed by Catino & Patriotta (2013), the context matters to support a positive attitude of employees regarding errors.

With respect to the perceptions of team leaders and team members, it should be valuable to understand if there is any difference in their perceptions regarding error tolerance in a given organizational culture. Based on the pressure for assertiveness upon leaders, and that they may not do the appropriate analysis to respond in each context, the second proposition to be evaluated in the present study is:

Proposition 2 → Team leaders and team members have different perceptions about the types of errors that can and cannot be tolerated inside the company in a given organizational culture.

Contributing with the analysis, Schoemaker and Gunther (2006) indicate that companies can benefit more by making deliberate mistakes to test assumptions rather than gather data to support them or use a standard method to solve a problem, which can demand more time than necessary. In this sense, organizations should consider the potential cost of a mistake and the

potential benefit of learning from it to decide whether to make or not deliberate mistakes. In general, this type of error is recommended in contexts where: gain is greater than the cost of a mistake, same decisions must be taken constantly, the environment had great changes, there are many solutions to a complex problem, or there is lack of experience in the organization to deal with a problem. The idea here is to create valuable knowledge by learning from deliberate mistakes, as it may contribute with a brand-new way to do things that were not even considered by the competitor yet, for example.

Inside the organizations, managers often assume that learning from errors is a straight-forward thing, that can be achieved by making people reflect on errors to not do the same thing again in the future, or even by distributing a report for all employees with things that went wrong in the company, (Edmondson, 2011). In fact, apart from startups and venture capital companies, the reputation and rewards of senior leaders are based on their successes, not on how they are learning from errors, (Schoemaker & Gunther, 2006). Notwithstanding, to be successful in creating the capability of learning from failures, the organization should first be capable of collecting and analyzing information regarding risks within the business, and it should also consider the cognitive, emotional and cultural factors, (Catino & Patriotta, 2013). The cognitive factor refers to knowledge and comprehension, responsible for one's interpretations and actions regarding something. The emotional part is based on the physiological reaction of a person in a specific situation. Lastly, the cultural factor is the common set of values, beliefs and expectations shared among the employees, that lead to similar interpretations, and that was already mentioned as the political awareness (Dattner & Hogan, 2011). Additionally, some suggestions to reinforce a learning from error culture are: keep taking risks, analyze errors and learn, identify patterns of mistakes, avoid distraction, determine operating procedures, consider customer data, build a purposeful culture and know the economic and legal factors, (Mittelstaedt, 2006).

2.5. Communication as an essential aspect

In the same way, trust and communication are prerequisites to learn from failures, as the first needs to be actively supported and carefully developed in the core of the organizational culture, and the second one needs to be open, no matter the hierarchal level, (Rami & Gould, 2016). Indeed, considering a strong error management culture, open communication helps the

detection and handling process of errors (Guchait et al., 2016), and without it, employees would benefit only from their own mistakes, (Van Dyck et al., 2005). The error communication also presumes a good cognitive competency, as only people aware about errors and capable of analyzing their causes will openly talk about it, (Rami & Gould, 2016). Moreover, the feedback can be considered an option to clarify the political awareness and increase the self-awareness of a person, helping in better emotional reactions of someone when mistakes happen, (Dattner & Hogan, 2011).

In the case of strong error management cultures, the leadership team should create an environment that promotes open discussions about errors, give support when they occur and stimulates no fear of retaliation, (Guchait et al., 2016). As a matter of fact, organizations should create safety areas, where people could feel comfortable to report mistakes. Carmeli and Gittell (2009) illustrate that high-quality relationships, constructed with shared goals, shared knowledge and mutual respect, can stimulate employees to experience the psychological safety to ask questions, discuss about errors, seek for feedback, reflect on results, and so on, that are essential characteristics in the learning from failures process. Lastly, it may increase the information flow among employees, connecting even people from different areas or with distinct roles and functions. Likewise, having a shared belief with colleagues may eliminate the interpersonal costs of one's errors, which could impact its image, career and status, because it contributes with a health social psychology, enabling the learning from errors, (Edmondson, 2003).

Considering the importance of error communication and the creation of spaces to allow the flow of information about the topic, it should be interesting to evaluate if indeed employees and managers are equally aware about the practices and resources available regarding error communication. For that matter, the third proposition to be evaluated in the present study is described below.

Proposition 3 → Employees and managers are not aware about the same error communication vehicles available in the workplace.

Regarding the willingness to report errors, Rami and Gould (2016) identified some common responses in certain situations. For instance, people are more prompt to communicate an error when they are not able to correct it by their own. If the conversation between the team member and the team leader is good, probably errors will not be covered up. The better the perception

of social support, greater the chances of error communication among the employees. Although the pressure due to workload increase error communication, the overload due to low qualification for the job reduces it. Finally, the leadership style is also a variable the may impact the error communication. Edmondson (2011) also illustrates another cause to the difficulty to report errors, based on the disconnection between how managers perceive and treat the error occurrences. According to its "spectrum of reasons for failure", the managers categorized 2-5% of errors as truly blameworthy, but at the same time they recognized that 70-90% of the cases were treated in this category. This spectrum summarizes the reasons of errors in nine categories, from more blameworthy to more praiseworthy, that are respectively: deviance, inattention, lack of ability, process inadequacy, task challenge, process complexity, uncertainty, hypothesis testing and exploratory testing.

In addition, error communication is reinforced by the qualities of openness and learning from errors. Some practices that can be considered by the organization to enable the error communication are anonymous reporting, group discussions, rewards, recognition for exceptional error recovery, support in error situations, alternatives for sharing information about errors and include individual and group error management items in the performance assessment of employees, (Guchait et al., 2016). Another important factor related to learn from errors and error communication is the transparency and availability of complete information between the subsystems that may impact the work of someone. Zhao et al. (2016) reinforce that is because it is easier to judge properly if something may impact the business when you previously know the entire system. In case of errors generated by someone outside of the company, to encourage the report of these situations, employees need to see the positive consequences of previous mistakes in the same conditions that were reported, such as systems improvements, so it is necessary to make it visible for people.

There are some other recommendations regarding how to handle failures, such as be open to adopt new strategies, listen and communicate, think about the people and the situation, reflect before acting and be always open to learn, (Dattner & Hogan, 2011). Additionally, it is necessary to focus on the future, not in the mistake that happened and its consequences in the past, because errors are not sign of ineffectiveness and they should not make someone stop doing experiments; actually, recovering from mistakes is a great way to show resilience and perseverance, (Gallo, 2010).

In summary, there are a great variety of errors, each one demanding a different time to be corrected, and each one with a specific economic consequence, (Frese, 1991). To properly internalize the error management in the organizational culture, it is necessary to have trust and openness in all hierarchal levels, mainly in the c-level, and then propagate it to all the others, (Timm, 2011). Finally, the Figure 6 - Theoretical Foundations Map (complete) were built to connect all the concepts and explanations that were mentioned previously, to support the understanding of the reader.

≠ Managers typically are rewarded for decisiveness, not thoughtful reflection (for successes, not on the depth of learning from failures)

= Potential resources and opportunities to enhance knowledge

reduction of negative and the promotion of positive error consequences (control vs learning)

≠ Error avoidance (Errors = unnecessary risk)

≠ Negative reaction to errors

Solution oriented and reflective

Error prevention as secondary effect

learn from errors, are more apt to experiment, and are more likely to innovate.

Order may differ depending on the perspective

ERRORS

Error Management Culture

Innovativeness (*)

= Mismatch between intentions and consequences

≠ paradox of success

• (+) conversation quality with superior, (-) covering up errors
• Management Style
• Social support
• High level of trustfulness (need to feel safe)

RESOURCES & PRACTICES:

• Error Communication (*)(*)

≠ employee only benefit from his own errors

Reporting failures

≠ corrected by the person himself and kept secret

Team-based discussion with diverse skills and perspectives

Error Analysis (*)

Review your pattern of failure

problem-solving teams or process-improvement initiatives

organization members must be able and willing to take risks

Psychological Safety

• Learning from errors

+ Share the lessons

As mediator, not practice (*)

High Quality Relationships
Shared Goals
Shared Knowledge
Mutual Respect

• Error competency (effective error handling strategies) (*)

Categories of mistakes	Approach to learn
(1) Preventable (Ex.: deviation)	Detection
(2) Complexity-related (Ex.: uncertainty, can't be avoided)	Analysis
(3) Intelligent (Ex.: answers are needed, generates valuable knowledge)	Experimentation

≠ slower to find the solution

Self-awareness

Political awareness (Social component)

Individual-level barriers

Organization-level barriers

• Quick error detection and damage control

trade-off between the potential expense of a mistake and the potential benefits of learning

Cultural components (Cultural frameworks give meanings to errors)

clarity of what is forgivable and what is not

Need to focus primarily on the ways of thinking and behavioral patterns of employees

Subtitle (Each color represents one specific reference):

1. Rami & Gould (2016)
2. Argyris & Schon (1996)
3. Edmondson (2011)
4. Van Dyck, Frese, Baer, & Sonnentag (2005)

5. Frese & Keith (2015)
6. Fischer, Frese, Mertins, & Hardt-Gawron (2018)
7. Guchait, Paşamehmetoğlu, & Madera (2016)
8. Cannon & Edmondson (2001)

9. Zhao, Lautsch, & BoyleTodd (2016)
10. Birkinshaw & Haas (2016)
11. Dattner & Hogan (2011)
12. Catino & Patriotta (2013)

13. Schoemaker & Gunther (2006)
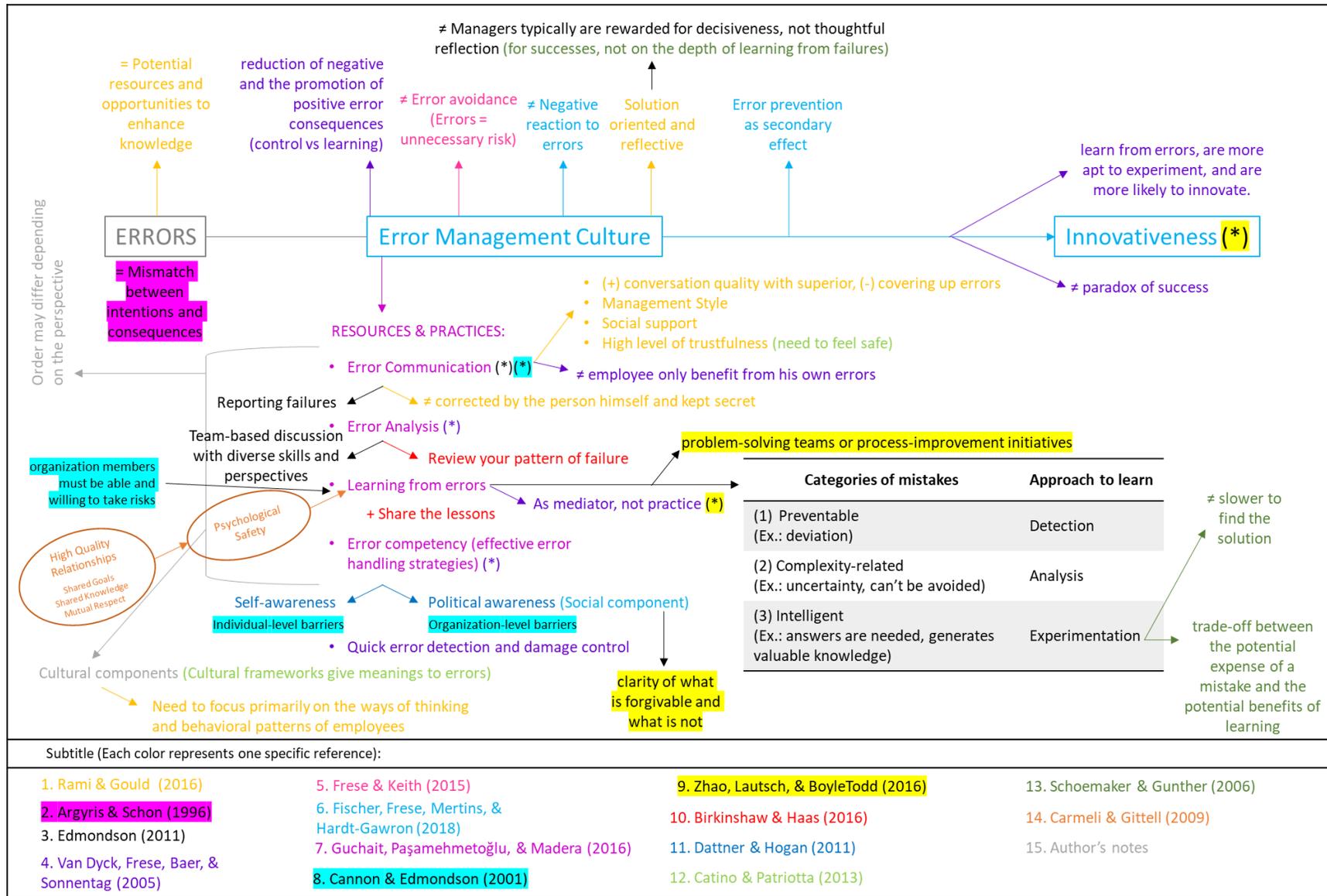14. Carmeli & Gittell (2009)
15. Author's notes

Figure 6 - Theoretical Foundations Map (complete)

3. EMPIRICAL CONTEXT

Considering a more practical contribution to the error management field, the present paper will evaluate the propositions mentioned previously in a real company, so it is important first to set the context in which this organization is in the moment of the research and also clarify its characteristics, because it must be taken into account throughout the analysis.

3.1. The history of the Organization

In the first place, the organization considered is a multinational consumer packaged goods company placed in Brazil. It has more than 3,000 employees with annual revenues around USD 1 billion. In the last years it ranked among the best workplaces for employees in Brazil, according to the Great Place to Work institute. Its headquarters and the majority of the corporation is in the United States, though Brazil is one of the five greatest businesses outside of U.S. in terms of profit and revenues.

Despite the fact of being a multinational company, the decision making of the Brazilian business was centralized in the country level until 2014. The main reasons for that were the leadership style of the Head of Brazil, the financial results of the local operation and a strong shared belief in the corporation. First, the Head of Brazil had been running the business since the corporation acquired two local companies and started the operation in Brazil. He had a large previous experience in the market, and his last position before joining the company was the head of a Brazilian media company. The challenge of merging two different organizational cultures was something specific in the Brazilian operation, so the headquarters gave autonomy to the Head of Brazil to make the decisions he felt were necessary. As a result, during the years he conducted the operation, there were very few interventions of the headquarters in local decisions. Secondly, there were incredible double digit increase in sales year after year, which validated that the decisions made seemed to be indeed the best ones. Finally, there were a strong belief in the corporation that it was not necessary to interfere where there was a winning position, which was the case of the Brazilian operation.

By the time of the retirement of the Head of Brazil, there was a slowdown starting in the Brazilian economy activity, and as the operation was already consolidated due to the effective merger of the two companies, the headquarters named a foreigner to run the operation. Then, it

started a new chapter in the country level, moving from an autonomous operation to indeed a part of a multinational operation. To illustrate the change, most of the employees in Brazil did not speak English and it didn't seem to be a problem to progress in the career, however in the new context, more and more contact with the regional and global teams were necessary, and then knowing the language became imperative for career progress in the Brazilian operation. Moreover, the first global restructure program took place and it had a great impact in Brazil, eliminating almost 10% of the existing white collar positions. Additionally, to cope with the uncertainties regarding the exchange rates and the political environment that have been affecting the results of the company, another corporate strategy implemented was focused on cost savings, setting goals for all the areas, to support a better profitability. Regarding the board of directors, there were also a renewal of executives due to the retirement of some directors. People started to feel the company was going through many changes, and it won't stop in the following years.

After two years, another foreigner was named as the Head of Brazil, with a more informal style but at the same time keeping the strong interdependency with the headquarters that was built in the previous mandate, and there was a new restructure program. Different from the first one that was managed most of the time as classified and had the primary goal of reducing costs, the second global restructure program was initially communicated for the investors, and subsequently shared with the employees, because it was a proactive strategy of changing the way of doing things and consequently reducing some positions, as the savings should provide cash to invest in technology and other types of improvements to the future of the business. At that time there were also a renewal in the board of directors, due to voluntary resignation or termination of directors with low performance, however as there was not a good pipeline and succession planning, all the new directors were hired from the market.

In brief, the history of the Brazilian operation can be divided in three phases, according to the Head of the operation in each period. The first leader was very charismatic and with ownership sense, enabling an informal environment with a familiar atmosphere, and at the same time, passion and independency were aspects very alive. Then the second one had a more formal and result-oriented style, and the environment had been impacted by restructure, transition towards indeed a global company and a multicultural interface. Finally, the third leader and Head of Brazil by the time of this study brought an informal and disruptive style, allowing a dynamic environment, with constant changes and renewals in many levels. Apart from Brazil, it is

important to mention that a new CEO was named for the corporation after more than 20 years without this kind of change.

3.2. The Organizational Design

In order to comprehend the operational model of the Brazilian Business Unit, it may be helpful to understand the corporate organizational design and where the Brazilian operation is placed in it. In the first layer of the organization there is the Chief Executive Officer, and reporting directly to him, there are four heads of commercial operations divided by region (Latin America, Asia, North America and Europe & Africa), five heads for support functions, (HR, General Counsel, Finance, Supply Chain and Global Brands & Innovation), and the head of the B.2.B. unity, that was the smallest business within the corporation. In the case of the head of Brazil, he reports to the Latin America President, but also works with people from the support functions hierarchies.

As a consequence of the restructure programs, there were many changes in the organizational design and most of the functions that previously reported to the head of the local operation, started reporting to a regional or global head of the function, however keeping a dotted line to the head of local operation, reinforcing the matrix structure throughout the whole organization. It increased the complexity in the decision making, because it became necessary the alignment with the regional, product and support functional teams to go ahead with a project, for example. Moreover, the dual authority sometimes generated misunderstandings among the employees and required greater efforts to maintain the power balance, which are some of the weaknesses of this type of structure. Notwithstanding, the matrix structure facilitates the sharing of knowledge and of human resources between areas, a broader skill development and a better coordination of dual demands, (Anand & Daft, 2007).

To illustrate this dual authority, the Figure 7 - Organizational Design with examples of dotted line shows two examples in the Human Resources department. In a daily basis, the HR Brazil Director needs an equal emphasis on the function level (HR – solid line) and on the geography level (Brazil – red dotted line), and the same happens in one layer below, in the case of the Brazil Talent Management Sr Manager. By the way, more and more functions are going through this change of organizational redesign, and they need to adequate to the new operating model. Indeed, the global integration (Bartlett & Ghoshal, 1989) are more evident, and there was even

an adjustment in the internal corporate quote of "adapt & adopt" to "adopt & apply", meaning that if something is already working properly, the idea is to replicate in other regions without changes, in an agile way. However, as the local responsiveness (Bartlett & Ghoshal, 1989) was the rule in the recent years, there is the challenge of preparing people to deal with more centralized decision making and imperfect initiatives for their particularities, as a consequence of standards being set across the globe.
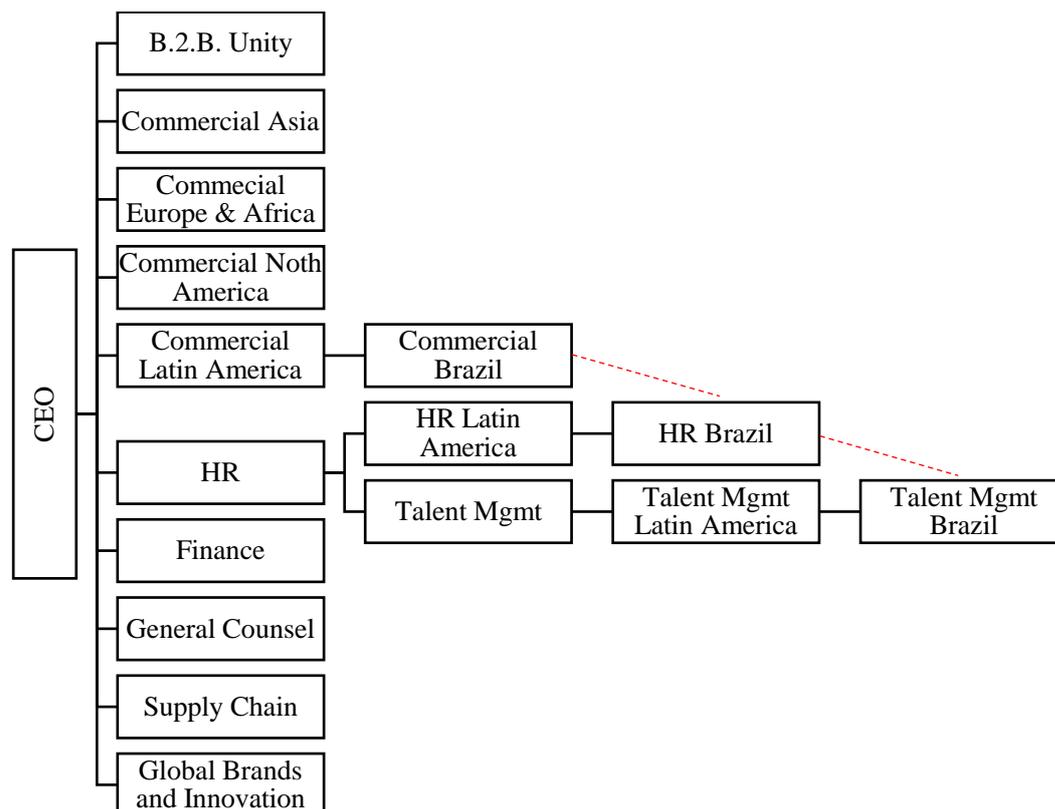
Figure 7 - Organizational Design with examples of dotted line

3.3. The Organizational Culture

Besides the history and the organizational design, it is important to understand what constitutes the culture of this company. In other words, it is important to understand the experiences, beliefs and actions produced in a daily basis by and for the employees, because they will enable people to reach the desired results. These three items make up the culture according to the internal definition adopted in this corporation, which is based on the Result Pyramid by Connors & Smith (2011), illustrated in the Figure 8. The idea is that the experiences are the basis to set

proper beliefs for the employees, and such beliefs will guide the right actions to finally accomplish the expected results.

Figure 8 - Organizational Culture Components
Source: Adapted from Change the Culture, Change the Game: The Breakthrough Strategy for Energizing Your Organization and Creating Accountability for Results (Connors & Smith, 2011)

With regard to the company's beliefs, one very strong aspect in the employees' speech is the accountability, the sense that people sho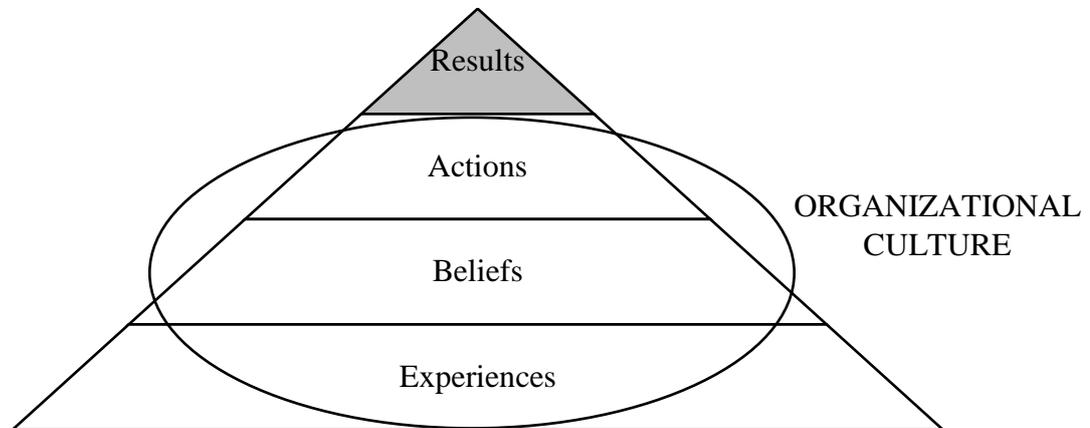uld take responsibility for everything that is done, with an ownership approach. There were even trainings in the past for all the employees in the organization to widespread the so called "culture of accountability", based on the sequence of identifying the problem, owning it, finding the proper solution and make things happen. However, with the turnover of employees in the past years and without a proper sustaining plan, the new employees don't have this concept so internalized as the people with longer tenure.

In addition, another shared belief is related to authenticity, expecting people to do the right things, acting with justice and integrity. Based on this, for example, the company promotes the code of conduct training as a mandatory experience for all employees once a year. There is a compliance team to deal with situations that are not aligned with the principles of ethics, and even though the compliance cases are treated as classified, people know that termination is one of the consequences for someone identified in this situation.

Another two common beliefs are based on breakthrough mindset and respect. The first is related to being innovative in the execution of any project and activity, always trying to create value for the different audiences impacted by the action. The other one considers a respectful and fair

approach in the interaction with people around you, not limited to professional colleagues, but also to customers and the community.

Building up on that, regarding people management, it is expected that all employees could be able to have effective coaching sessions. In order to make that happen, the leaders have a specific training about situational leadership and coaching approaches to be able to improve its leadership practices and apply it with its team members. Moreover, to guarantee the transparency about what is expected from each employee, the company stablished some corporate behaviors, and by level there is a guide available explaining the competencies and key actions related to each one. Some examples of these competencies are communication, customer centric, network, innovation, continuous improvement, coaching, continuous learning, decision making and self-development. For this organization, the "how" is equally important as the "what", so the performance assessment considers not only what the employee delivered compared to what was expected from him in terms of objectives, but it also evaluates if the employee acted according to the behavioral guidelines for his role.

To support the development of the employees, the organization provides resources for constant feedback, so any employee can give and get feedback throughout the whole year in the HR system, and these feedbacks will be taken into account in the performance assessment process. The recommendation is that these feedbacks should be based on at least one of the corporate behaviors, because they already translate what is expected for each role and it makes easier for the comprehension of the employee that receives it.

While the set of corporate beliefs help to stablish the desired mindset, the environment conditions can stimulate them or not. In this particular company, for instance, the employee can indeed experience practices related to the aspects mentioned previously. The office, for example, has an open space, where people can seat wherever they want, and it enables the employees to connect with new people every day, supporting new insights for breakthrough ideas. Another characteristic of the office and other facilities of the company is the corporate images available in the walls, showing the main strategies of the business, its values, vision, the corporate behaviors, and other subjects that support the beliefs that were mentioned.

Regarding a practical example of accountability, inside the mills, there are semi-autonomous teams which is locally known as the GSA ("Gestão Semi-Autônoma"). With this program, the operators are divided in groups and there is a rotating leadership among them from time to time.

This team can make some decisions in a daily basis in the operating process, as they have more knowledge about it and are continuously monitoring it. Some of the outcomes are the increase in the accountability and engagement of the employees, the improvement in the teamwork and faster problem-solving.

With respect to the experience that employees have regarding communication, a good practice adopted in the company is the weekly cascade meeting, in which the director put together all the employees of its area to share the main topics discussed in the board of directors meeting and the financial status of the company. Besides, depending on the area, there can be some extra time for employees to share content with the whole team.

By the way, talking about the board of directors, most of them came recently from other companies and it was necessary to integrate this group and guarantee the cultural alignment despite all the changes. Because of that, the company hired a consulting company to conduct a Cultural Diagnosis, which showed two opposed pairs of behavioral patterns in the Brazilian Business Unit: caring and business focus in the x-axis, stable security and dynamic informality in the y-axis. There was an analysis to identify the position of each area regarding these four characteristics, and if it was considering more the positive or the negative side of it. For instance, considering the caring aspect, if used properly, it would create trustful connections and a familiar environment, but on the other hand, it could lead to protectionism and inactivity. Just to mention one more example, the positive aspects of business focus could be strategic thinking and connection with the market, and on the contrary it could lead to competitiveness and numbers instead of people. This diagnosis helped to align the perceptions regarding the culture built and lived by the employees, and it also clarified what are the characteristics that may support and limit the desired changes for the future of the business.

3.4. The Current State of the Company and its relation to Error management

Considering the constant changes the market is facing due to the faster pace technology is evolving, the organization considered for this study saw the opportunity to prepare itself for the uncertainties ahead, and started some initiatives to build the necessary digital and agile mindset to survive in the upcoming years. On top of that, it also identified innovation as one of the key capabilities to thrive in the environment characterized by volatility, uncertainty, complexity and ambiguity, (Tovar, 2016).

Regarding one of those initiatives, the company implemented a new development strategy for all employees, based on the principles of continuous learning, co-creation, collaborative environment, people as protagonists, better use of internal knowledge, and all of it supported by technology. It enabled the creation of spaces to potentialize the employee's interaction, share of knowledge and exposure. Employees could participate in any event they wanted, there were not mandatory trainings, and all the sessions counted with the virtual option, enabling people from different facilities to have access to the same content. In addition, anyone available and interested in becoming a trainer could conduct sessions, and even invite some external acquaintance to participate as facilitator as well. As a result, this program increased the interaction between all the areas, and the connection of the company with things that were happening in the market, with a faster flow of information compared to the previous scenario. Furthermore, through this new development strategy, twenty-five people that voluntarily applied to a multifunctional project about digital mindset were selected and are participating in a program to develop this digital and agile mindset, and they will be responsible for spreading this mindset for all the other employees in the company.

However, for these initiatives to be successful in terms of enabling the innovative competency in the organization, first it is necessary to clarify the importance of errors in this process, (Fischer et al., 2018; Frese & Keith, 2015; Gallo, 2010; Van Dyck et al., 2005). Employees should feel comfortable to talk about errors and share these situations to support the learning curve and reduce the probability of doing the same mistake again or even making improvements in the following versions of a project, for example. Notwithstanding, in the Cultural Diagnosis it was suggested that possible errors are not treated with an educational approach and do not aim improvements in the learning curve for employees. It also identified that inside the organization there are some conservative environments with hard time to adapt to the new, stuck to the rules and not error-tolerant. Moreover, there is the perception that employees are afraid of being punished in the performance assessment if they make mistake, though the evaluated criteria consider the achievement of objectives and behavioral assessment, not referring to penalties due to errors the employee has made. Another aspect is that it didn't seem to exist a formal space where employees can talk about error or ask for support in the organizational level. Altogether, the organization being studied has many opportunities regarding error management.

4. METHODOLOGY

This section aims to clarify the methodological approach considered for the present study, in order to evaluate the propositions mentioned previously, based in the organization that was described in the empirical context. The four subitems presented in this section are: the research propositions, the research approach, the data collection approach and research setting, and finally the data analysis approach.

4.1 Research Propositions

During the literature review process, some propositions were raised that are connected with the research question of the present study, which is: what are the main differences between the understanding of managers and individual contributors regarding the error management strategy in the same company? In this part of the section, the idea is to give more details regarding each proposition and clarify its connection with the research question.

Proposition 1: There is a disconnection between the personal and professional preferences of an employee about considering an error management mindset in the workplace, because the belief that he/she can be put in an unfavorable condition.

To start with, the first proposition aims to clarify the individual perspective towards error management, trying to understand if the workplace environment modifies his/her preferences, and if there are barriers for adopting this mindset. It was based on the negative perceptions pointed out by Fischer et al. (2018), Van Dyck et al. (2005) and Frese (1991). Moreover, the management style was presented as a possible variable (Rami & Gould, 2016), so considering the different conditions of a manager and an individual contributor, it would be interesting to compare their opinions regarding this topic. Will managers and individual contributors give the same answers? Are there differences in the barriers identified for these two audiences? These are some questions that may support the latter analysis. It will also be relevant to analyze the unfavorable conditions reported by leaders and employees, which can indicate some differences in the internal treatment towards errors. Examples of possible barriers identified in the literature review are the leadership style, historical individual/area performance, psychological safety, economic context, and so on. Altogether, this proposition is important to clarify the possible barriers employees and managers face to indeed adopt the error management mindset, because

this is the basis to effectively implement an error management culture throughout the whole organization.

Proposition 2: Team leaders and team members have different perceptions about the types of errors that can and cannot be tolerated inside the company in a given organizational culture.

Given the same organizational context and that corporate guidelines should be clear for all employees, no matter their functional level, the intention behind this second proposition is to evaluate if the perceptions about error tolerance for managers correspond to the ones individual contributors have. If there is no alignment, it is important to identify where the disconnection is and to build an action plan to adjust it. As mentioned by Edmondson (2011), the leaders have a great pressure for assertiveness, and maybe it can impact their comprehension about what is and is not accepted inside the organization. In addition, the survey applied by the same author showed that the majority of errors are treated as truly blameworthy by leaders when they occur, even if after some reflection they know these errors were not that blameworthy. With this proposition in mind, it is also possible to get examples from both audiences of errors they remember that were and were not tolerated in the same organization. Besides the comparison between the perceptions of managers and individual contributors, it would be also valuable to compare them to what is officially supported by the company, to verify if at least one of both sides is aligned to what is expected, trying to identify why that occurs.

Proposition 3: Employees and managers are not aware about the same error communication vehicles available in the workplace.

Based on the importance of error communication and the creation of spaces to allow the flow of information about the topic that were mentioned in the literature review, this third proposition is intended to evaluate if indeed employees and managers are equally aware about the practices and resources available for error communication. Besides, considering the official vehicles provided by the organization, did the managers and employees refer to them in the same way? Are there differences in the speeches of both audiences? Are there best practices in one of the audiences that could be shared for the other one? The idea is to get examples of what the leaders and individual contributors experience in the company and compare them. Moreover, based on the error management practices and resources identified by Guchait et al. (2016) and Van Dyck et al. (2005), it would be also valuable to compare how leaders and employees perceive not only the level of error communication, but also the level of error analysis, error competency

(effective error handling strategies), support in error situations, error sharing knowledge, early error detection and damage control in themselves, in the area and in the organization. All these items are connected, though the openness to communicate errors is the primary aspect to make the other ones happen.

4.2 Research Approach

In order to evaluate the propositions discriminated in the previous part of the section, it is necessary to determine which is the best research approach to guide an effective data collection and data analysis. According to Creswell (2013), researches approaches are "the plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis". They have three basic components that need to be considered in the following order: the philosophical worldview, the design approach and the research method. These three aspects must be specified assuming the objectives of the study and the researcher preferences.

Regarding the philosophical worldview, as the research question implies the perceptions of managers and employees, the constructivism worldview seems to be the best option. As exposed by Sekaran & Bougie (2016), it assumes that the world is mentally constructed, there is no objectiveness, and as a consequence it is necessary to understand what goes in people's minds because it will impact in their perceptions and interactions with other people in a certain context. Moreover, Creswell (2013) complement that it assumes that individuals give subjective meanings based on his/her previous experiences, and the best way for the researcher to capture it is through open-ended questioning, giving a comfortable space for the participant to share its perceptions. Additionally, the researcher must take into account the participant's context, because in this worldview it is more important to understand the particularities of a case than with the generalization of the findings, (Sekaran & Bougie, 2016). For that reason, the methodological approach considered in this study will take into account the constructivism philosophical worldview.

Moving on to the research design, there are basically three alternatives, which are the qualitative design, the quantitative design and the mixed methods. After analyzing their characteristics, for this research it seems to be more appropriate to consider the qualitative design, however there was the opportunity of matching it with some quantitative design to support the interpretation

of the researcher during the data analysis. Consequently, the mixed methods were considered as the research design, which corresponds to the collection of both qualitative and quantitative data to provide a better basis to analyze the research problem. The idea is to apply the convergent parallel mixed method, which considers the quantitative and qualitative data collection at the same time, (Creswell, 2013). Nonetheless, it is important to reinforce that, though some quantitative data will be collected, the greater data collection will come from the qualitative approach. To give more details, with respect to the qualitative design part, it will consider the phenomenological research, that is based on the description the participant gives about his/her own experience regarding a phenomenon. On the other hand, the quantitative design part, that will be just a complement, will consider the survey research to provide a quantitative opinion of the participants, (Creswell, 2013).

Then, the research methods "involve the forms of data collection, analysis, and interpretation that researchers propose for their studies", (Creswell, 2013). In the present paper, the research method that was chosen will be better described in another part of this section, but just to share some details about it, based on the previous assumptions, the research method applied was the mixed methods, with both open- and closed-ended questions, however the majority of the content considered assumes open questions, interviews and observation data, which are mainly characteristics of the qualitative research method.

All things considered, the primary research approach will be the qualitative one, as it tries to understand the meaning a person or group give to a human problem. Moreover, it considers the data collection in the environment of the participants, through open-ended questions or qualitative case studies, and the data analysis moves inductively from particular views to a general one based on the interpretation of the researcher. As described by Creswell (2013), this type of research considers emerging questions and procedures, data collection in an ordinary environment, data analysis and interpretation. The data must be collected by the researcher and it should apply its own instruments, such as questionnaires developed by the himself. Furthermore, multiple sources of data can be considered and before its analysis, there can be a procedure to categorize the main topics, making it easier for the following step of interpretation. Nevertheless, to provide a better basis to analyze the research problem, there will be the collection of qualitative data and some quantitative data.

4.3 Data Collection and Research Setting

Once the methodological approach is clear, it is important to specify the data collection process. According to Creswell (2013), the data collection assumes the steps of stablishing the limits of the research, gathering information through several sources, such as unstructured or semi-structured interviews, observations, documents, etc., and also specifying protocols to be followed.

In the case of qualitative researchers, usually the approach is to collect data in the place the participants experience the phenomenon being studied, named as the natural setting, considering multiple forms of data rather than relying on a single data source. Another characteristic is that they count on instruments developed by themselves, such as questionnaires, for example. Among the possibilities of collecting data, the researcher can consider qualitative observation, which is taking notes about behaviors and attitudes showed by the individuals at the research site. Another option is the qualitative interviews, that assume the application of some unstructured or open-ended questions with the participant, intended to get its view and opinion about a phenomenon, (Creswell, 2013).

Based on the previous reflections about the methodological approach considered for the present study, Sekaran & Bougie (2016) reinforces unstructured interviews as an effective way to understand the particularities of the phenomenon being studied under the constructivist worldview, and it also allows the collection of rich data. Additionally, for the qualitative design of phenomenological research, Giorgi (2006) suggests that interviews are the typical method considered, because in this context it is necessary for the participant to describe its experiences. Building up on that, Creswell (2013) recommends from three to ten individuals to participate in interviews under the phenomenological approach. Therefore, interviews were considered as the main source for data collection in this study, and also the observations made by the researcher while in the research setting. These are primary data observed and experienced close to the phenomenon through interrogation and participation, (Walliman, 2011).

After being acquainted with the concepts and vocabulary regarding error management, as the result of the literature review, the researcher built a script with questions to conduct qualitative interviews with managers and individual contributors of the organization being studied. Each question was mainly related to one of the three propositions previously described, as illustrated in the Appendix 1 and 2, which show the interview scripts for managers and individual

contributors, respectively, and also exemplifies the interview process. These are semi-structured interviews, with guiding questions developed by the researcher, based on the three propositions, but with space to customized questions during each interview. This is in line with the concept of semi-structured interview presented by Walliman (2011), that is "one that contains structured and unstructured sections with standardized and open type questions".

With respect to the interviewees, at first all the managers and individual contributors that worked in the company described previously were considered. In order to help the researcher to get the best understanding about the research question, the managers and individual contributors were sorted by location, and only those that worked in São Paulo region were taken into account, as the idea was to conduct face-to-face interviews. Besides, this location is the main office of the company in Brazil, and most practices and experiences start there and then are implemented in the other locations, so it is a representative place. Furthermore, as the research question aims to identify the main differences among the managers and individual contributors, during the sampling process these audiences were considered separately.

Accordingly, the interviewees were chosen based on location, the function type and the possibility of conducting a face-to-face interview. Therefore, the population considered was 89 managers and 236 individual contributors, and due to time constraint, it would be possible to do only 16 interviews. With this in mind, 8 managers and 8 individual contributors were randomly selected assuming the previous population. The Table 1 **- Interviewees' Characteristics: Managers** and the Table 2 **- Interviewees' Characteristics: Individual Contributors**summarizes the interviewees' characteristics. By the way, as the primary goal of this study was to compare the perceptions of managers and individual contributors, there was no filter considered for other variables, such as area, gender and age.

Number	Type	Area	Gender	Age	Tenure
1	Manager	HR	Female	35	9.4
2	Manager	B.2.B. B.U.	Female	39	10.3
3	Manager	Legal	Male	38	10.5
4	Manager	Marketing	Male	35	1.2
5	Manager	Procurement	Male	40	13.0
6	Manager	R&D	Male	38	2.6
7	Manager	Trade Marketing	Female	32	7.5
8	Manager	Sales	Male	51	5.5

Table 1 - Interviewees' Characteristics: Managers

Number	Type	Area	Gender	Age	Tenure
1	Individual Contributor	Finance	Female	39	18.5
2	Individual Contributor	HR	Female	35	5.2
3	Individual Contributor	Legal	Male	27	3.2
4	Individual Contributor	Marketing	Female	26	1.9
5	Individual Contributor	R&D	Female	29	6.5
6	Individual Contributor	Supply Chain	Male	30	4.0
7	Individual Contributor	Trade Marketing	Male	28	2.7
8	Individual Contributor	Sales	Female	25	2.1

Table 2 - Interviewees' Characteristics: Individual Contributors

These interviews took place in the company's office by the end of 2018, in the external rooms available in the facility, and as the interviewees allowed, all the conversations were taped to support the data analysis process and even enabling the transcription of some quotes of the participants. By the way, as all the interviewees were Portuguese native speakers, all the interviews were held in Portuguese, so the quotes transcribed in this paper were later translated to English.

After making all the questions and listen to the interviewee's answers, each one of them was invited to answer an online short questionnaire regarding their perceptions about how themselves, their area and the whole organization were using the resources and practices available in the company regarding error management. The Table **3** contains these questions, that should have been answered based on the Likert Scale, a 5-point scale considering the score 5 as Strongly Agree and the score 1 as Strongly Disagree. In the case of the perception about "my team", it was considered just for the participants that were managers.

Sentence	Myself	My Team	My Area	The Company
Have openness to report errors				
Have error analysis competency				
Have competency to effectively handle with errors (know the right thing to be done)				
Have support of others in errors situations				
Have space to share knowledge from error situations				
Have the competency to quickly detect errors				
Have the competency to control the damage from errors situations				

Table 3 - Questionnaire (applied after the interview)

Moreover, while in the research setting, the researcher also took notes of the observations made, for example, based on comments made by the employees that were around that eventually expressed something related to error management process.

4.4 Data Analysis

When it comes to the data analysis process, once all the data is collected through interviews, observations and questionnaires, then it is necessary to organize it in the best way to support a good analysis. To begin, the first step in a qualitative approach is to prepare the data (Creswell, 2013), organizing the information in a way that supports the analysis, for example, adjusting the template so it is easier to visually verify discrepancies. Then, before starting any deep analysis, the researcher needs to read and look at the data, to have an overview of the content and to try to get preliminary answers for questions, such as: "What general ideas are participants saying? What is the tone of the ideas? What is the impression of the overall depth, credibility, and use of the information?" (Creswell, 2013).

The following step consists in categorizing the data. As expressed by Walliman (2011), extended texts cannot be easily comprehended because people's mind are not able to process a great amount of information at the same time, so it is necessary to simplify it by summarizing, coding and clustering data. Additionally, the simplified information can be organized in a diagram or table in order to make it easier to find similarities and discrepancies, and it also would be valuable to consider labels to support it. Therefore, the researcher can begin the interpretation of the collected data.

In brief, based on this theoretical background, in the present study the data analysis will consider the sequence of data reduction, pattern coding, diagrams/tables arrangements and the interpretation of the findings. In other words, the content of the interviews will be organized, relevant quotes will be transcribed, and notes will be taking while hearing the recordings of the interviews. Subsequently, based on the three propositions and on the research question, the data will be arranged in clusters, and some diagram or table will be created with this information to make it visually easier to understand. Finally, the researcher will start the interpretation, trying to evaluate each proposition, and eventually brings other contributions to the research question. Regarding the questionnaire applied, that is the quantitative approach, the univariate analysis

will be considered, because the focus of these questions is just to complement the interview, so it will not be the focus of the analysis.

5. RESEARCH FINDINGS

This session aims to give meaning to the inputs from the data collection process, summarizing and comparing the main perceptions of managers and individual contributors about error management, at the same time that it tries to explain how each proposition was evaluated. In case there was another relevant information gathered during the process, it will be mentioned in the following items. In the first place, all the data collected will be evaluated based on the three propositions, then the quantitative data will be analyzed, and finally this session ends with the limitations of this study.

Notwithstanding, before to start the analysis, it seems interesting to share the results of the last question made during the interviews, because it gives an overview about the perceptions of managers and individual contributors about how they perceive error in the organization. The participant was asked to assess if his/her department's practices were closer to the error management approach or to the error prevention approach, and subsequently the participant should have also to assess the company as a whole under the same criteria. Basically, there was a mismatch between the individual contributors and managers' answers. While the majority of the managers assessed both the department and the organization more in line with the error management approach, the same understanding was not clear among the individual contributors, and there were even two cases in which the participants found it difficult to answer it, and finally concluded that none of the approaches met with the company and area realities. The summary of the results can be seen in the Figure 9 - Error approach perceived in the Department and in the Organization, considering that each ball represents the opinion of one employee about its department or about the company.
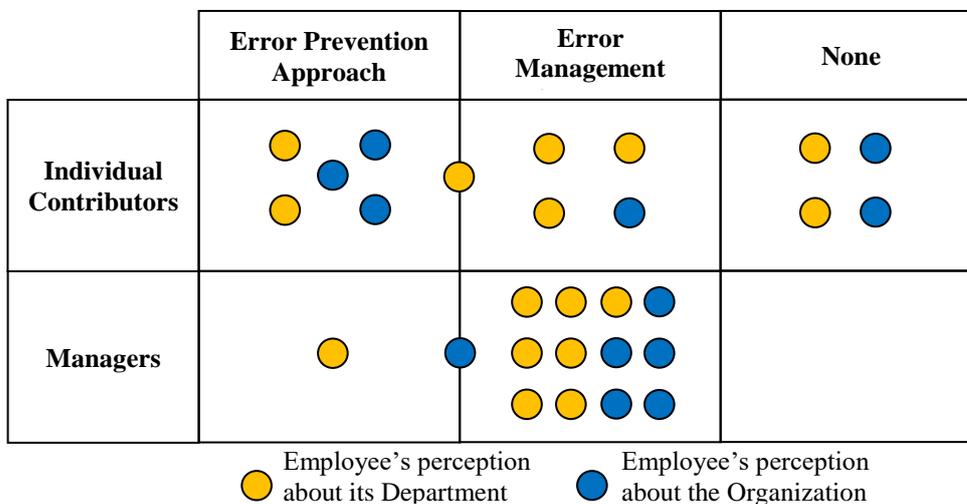

Figure 9 - Error approach perceived in the Department and in the Organization

To give more details, the individual contributors said that the areas don't want to show the other ones that they have committed an error, that people don't share information effectively, then blame others for not knowing it and making a mistake, and that the errors are treated only when they are already very exposed. There is a quote that express very well the overall perception:

> *Indeed we don't avoid errors and we don't identify them quickly; it is just when it already caused some trouble. (Individual Contributor, Trade Marketing, male).*

Moreover, the participants gave some interesting examples of errors, as the frequent delay for paying invoices, leading to the payment of fines and nothing is done about it, that people don't take advantage of learning from mistakes, and that among the departments they will always try to find the one guilty.

On the contrary, from the managers' perspective, there is the shared belief that the company is passing through constant changes, and consequently it is not possible to know all the alternatives to avoid making mistakes. They see errors as part of their daily work, even though some of them aspire the error prevention approach, as expressed in this quote:

> *We don't have the proper maturity to consider the error prevention approach. (Manager, Procurement, male).*

Furthermore, the managers said they perceive different conditions of error approach among the areas, and that the leadership style may also play a role of influence:

> *I think there are some leaders that if someone makes a mistake, that is ok, let's try to improve from it, but there are others that want more control, want to mitigate the errors. (Manager, HR, female).*

In a broad perspective, considering the previous information, it seems there may be indeed differences among the perceptions of managers and individual contributors about the error management approach, and the following analysis based on the propositions will support it, leading to the conclusions of the present study.

5.1 Proposition 1 – Error management mindset

With respect to the first proposition, the idea is to evaluate if there is a disconnection between the personal and professional preferences of an employee about considering an error management mindset in the workplace, because the belief that he/she can be put in an unfavorable condition. The following analysis will consider first this possible disconnection and then what constitutes these unfavorable conditions and the barriers the individual faces to get the error management mindset, making always the comparison between the perceptions of individual contributors and managers.

In order to gather the individual's preference, there was one specific question applied during the interview which asked the participant to pick one out of two scenarios based on its personal preference: (1) to have two years with a consistent performance (average), or (2) to have the first year with a performance below the average and the second year with an exceptional performance as a result of the learnings from the errors of the previous year. In addition, the interviewee needed to explain if the workplace environment impacted in its preference, or even if he/she would change its personal preference because of it.

First, in terms of personal preferences, 3 out of 8 individual contributors picked the second scenario, while 6 out of 8 managers made the same choice. In a preliminary analysis, this shows that the managers are more open to risks than employees, as the scenario 2 is not stable. Then, when asked if they would change the scenario considering the workplace conditions, only 1 individual contributor and 2 managers would change it. The first employee had chosen as a personal preference the scenario 1 and then changed to the scenario 2 because he understands that it brings better results for the business and, as an employee, the feedback received is more constructive in this condition.

> *"I had a consistent performance, and then, what is missing? I think there are no messages about it" (Individual Contributor, Trade Marketing, male).*

Another individual contributor expressed the same concern about receiving a feedback regarding the consistent performance, that it does not help you to improve to have future exceptional performance, for instance. On the other hand, about the two managers that picked another scenario in the second part of the question, one understands the importance of assuming

more risks for the business in the current market context, changing the preference from the scenario 1 to 2.

> *We are living in a moment that we need to learn to do things in a different way or we won't make it. (Manager, B.2.B. B.U., female).*

The other manager had a different situation, changing from the scenario 2 to 1, because he feels his area, in particular, went through many ups and downs in the recent years, and that it would be good to have a more stable scenario. On the whole, people seem to be more likely to stick to their personal preference, not changing it due to the workplace environment influence. In other words, there are some evidence that there is not a disconnection between the personal and the professional preferences. There was just one individual contributor that said his personal preference is impacted first by the organizational context, and not the opposite, but all the other interviewees considered the other way around.

Nevertheless, there was a relevant difference in the scenarios chosen by the individual contributors and managers. Considering that the error management assumes that errors are inevitable, and it is necessary to handle them in the best way to minimize bad outcomes and optimize the positive consequences, such as learning and improvements, the second scenario presented for the interviewees had a closer relation to the error management mindset. It was interesting to see that most of the individual contributors chose the scenario 1, to have two years in a row with consistent performance, contrary to the managers. As a matter of fact, among the reasons shared for these individual contributors that picked the scenario 1, they mentioned that the consistent performance is to deliver what is expected of you, and they concern that the scenario 2 could generate a negative history for the employee that made mistakes, that it would be hard for them to have an inconsistent performance, and that it could impact the financial bonus, the organizational culture or even lead to the reduction in the staff. Moreover, one individual contributor that picked the second scenario shared that she knows there may be some costs in this decision.

> *Even that it costs me something, if I know that these errors will take me to a better place, I prefer it. (Individual Contributor, Sales, female)*

At the same time, the two managers that picked the scenario 1 basically have done it because of a personal preference, that is more in line with what they would naturally search for. However, considering the context of the workplace, one of them had changed the scenario, and

the other one believed the company would accept both scenarios equally, so there would be no reason for changing it. In general, it seems the manager's preference is to experience the scenario 2 considering the personal and professional perspectives, while the individual contributor prefers the scenario 1.

Furthermore, all the people that chose the scenario 2 as a personal preference cited the learning as the benefit that compensates their choices, that they become stronger after this kind of situation. During the interviews, there were two interesting analogies made by managers, one that the scenario 2 happens with everyone from time to time if the person doesn't get updates frequently of what is going on in its area, therefore he probably will make mistakes and then he will have to recover from it. The other comparison was with getting a promotion, because probably you will make a lot of errors in the first year, because your function has changed, and if you properly learn from them, you can be extremely successful in the following year. The Appendix 3 summarizes the main quotes of the interviewees regarding this question.

In summary, going back to the proposition 1, there are some evidence that the personal and professional preferences are not disconnected, indeed it seems the first one prevails. However, it was possible to see that the individual contributors have some concerns about assuming an error management mindset, and the same thing does not happen with the managers. It would be necessary to address these points in order to facilitate the effective implementation of an error management culture in the company, for instance. There are another evidences that appeared in this part of the analysis that must be mentioned: (1) managers seem to give poor feedback for employees with consistent performance, which should be as valuable as for employees in different situations; (2) it looks like managers concern if employees understand that the error must be in the "what" was delivered, not in the "how" (behaviors); (3) that self-awareness seems to help people to notice the importance of errors in their personal and professional lives.

5.2 Proposition 2 – Tolerant and non-tolerant errors

In the case of proposition 2, it states that team leaders and team members have different perceptions about the types of errors that can and cannot be tolerated inside the company in a given organizational culture. To evaluate this proposition, three questions were primarily included in the interview to get inputs. The first one tried to clarify what managers and individual contributors viewed as honest mistakes (Zhao et al., 2016) inside the company and

how usually the leader approached this kind of situation. Then the second question was for them to indicate types of tolerant and non-tolerant errors in the organization, giving real examples and possible penalties they were aware of. Finally, the third one asked the participants to express if they feel any difference in how managers and individual contributors were treated when making mistakes.

To begin, talking about the honest mistakes, both managers and individual contributors gave examples related to doing an incorrect calculation, missing a deadline and inserting or sending a wrong information. However, there were some differences reported by both audiences, for example, the managers mentioned other honest mistakes related to the lack of planning and considering a wrong action, while the individual contributors talked about doing something that is not in the process or trying something new. Regarding the primary causes for the honest mistakes, the inattention and lack of knowledge appeared in both cases, but for the managers there was also the workload, and for the individual contributors there were the tight deadline, the disorganization and the individual's point of view, in the sense that if there is a new person on the position, probably he will find mistakes of the previous incumbent due to his different perspective towards the same things. Moreover, the individual contributors perceived that mistakes made in processes are more tolerant, as you can count on more people that already know the process to support you, contrary to a mistake made in an individual project, because you may have a higher exposure and count with less support. Another thing the individual contributors have said is related to the usual request the team receives of mapping all the possible impacts of the actions and that if it did not happen, it can be seen as an honest mistake:

> *"It is necessary to see all the possibilities in the world to determine if the project will be implemented or not", (Individual Contributor, Supply Chain, male).*

Regarding the leadership approach, the individual contributors shared they feel comfortable to talk to their managers when they make a mistake, though they agree there can be some differences according to the leadership style. There is a good quote that summarizes the leadership approach perceived by both individual contributors and managers:

> *I try to understand why the mistake happened, what the consequences are and what can be done to not do it again. (Manager, B.2.B. B. U., female)*

Besides that, there is also the expectation that the employee brings possible solutions to the manager when reporting a mistake. Notwithstanding, only the managers showed the concern of how the errors may affect the team's credibility to the others, mainly to the higher levels of the organization:

> *This type of mistake puts our credibility in doubt to the corporation. I know the error was not intentional. But as part of our accountability, sometimes is necessary to check even what is obvious. (Manager, Legal, male)*

In addition, they also expressed the concern that their direct reports may not know the whole picture about the impact generated by certain mistakes, and they see it as an opportunity.

Notably, when asked about non-tolerant errors in the organization, both audiences agreed that some examples of it are intentional errors, actions that affect the customer, that are not in line with the code of conduct or are unethical. The primary penalty cited in these cases was the employee's termination. It seems this message was very clear for people because there were communications about the topic, based on past events:

> *There were trainings to all audiences involved, they got to know what had happened in the past, that people were terminated. (Individual Contributor, Legal, male)*

But there were also some non-tolerant examples that did not matched, for example, managers mentioned errors in the daily basis of the employee's function or mistakes that affects safety. On the contrary, the individual contributors also shared as non-tolerant errors the mistakes that may affect the relational component between colleagues, as the company has a relational culture, and the possible penalty for that could be the creation of a label for the employee, and even some impact in the performance assessment and in salary adjustments. Another example of non-tolerant error among the individual contributors had divergent point of views, because while one perceived errors that were not shared (no transparency) as non-tolerant, there was another employee that perceived the opposite, that if no one will be exposed, then the error would be tolerated. In the case of these other types of non-tolerant errors, both managers and direct reports agreed that the company gives a good time for the person to improve before taking any tougher action:

> *As a rule, when there is some recurrence. It is not in the first mistake that the person is terminated. (Individual Contributor, Supply Chain, male)*

> *We can give the chance for people to improve, with a period of time that is much longer compared to other companies. (Manager, Sales, male)*

On the other hand, with respect of tolerant errors, there was a consensus between the managers that the company has a high level of error tolerance, even knowing that the meritocracy of the company may inhibit people to make mistakes:

> *As it may impact the employee's performance assessment, people don't want to make mistakes. But when they do it, the company accepts it, we accept it. It is expected that if someone made a mistake, that he will fix it. (Manager, HR, female)*

Alternatively, the individual contributors didn't state the company was tolerant in the same tone that the managers did, though they agree it has a good error tolerance level. For instance, the situations of tolerant mistakes they shared in this question were very similar to the ones about honest mistakes. However, building up on that, the individual contributors also see the relational component making some influence in errors that are tolerated within the company:

> *I think it depends on the person. Mainly when there is a personal relationship, it helps. (Individual Contributor, HR, female).*

When it comes to the question about possible differences in how managers and individual contributors are treated when making mistakes, the managers' answers can be summarized in two topics: (1) there is no difference of treatment; (2) it is based on the responsibilities and different conditions of each level:

> *I see the approach is the same for everyone. (Manager, Sales, male)*

> *The charge is proportional to the position. (Manager, Legal, male)*

There was just one manager that briefly cited that the relational component sometimes is considered, because some people can be overprotected. Noteworthy, 3 out of 8 individual

contributors mentioned people receive different treatment in error situations based on the relational component:

> *The manager feels more affinity for some people, so he would be more tolerant in their cases. (Individual Contributor, Finance, female)*

Furthermore, among the individual contributors there was a mix of perceptions about this question, contrary to what had happened with the managers. While one employee shared that past errors regarding compliance issues assumed the same approach for people involved no matter their level, another employee mentioned that he usually sees different treatments, for example, when a manager makes a mistake it is not exposed, it is kept only among few people, however if he makes a mistake, people will share what happened with more people than necessary. In addition, there was an interesting quote that sums up to this topic:

> *As an individual contributor, will my team receive well my mistake? In the case of a leader, the team will receive well his mistake. (Individual Contributor, HR, female).*

The other three individual contributors shared the same perception of the managers, that the treatment is based on the function level, for example, there will be a difference between the approach for a junior and a senior analyst.

Even though there are some similarities among errors viewed as tolerant and non-tolerant by managers and individual contributors, it cannot be said there are no differences too. The managers were more aligned among their answers, they understand the company counts with a high level of error tolerance and they are concerned about the impact of errors in their credibility. In the case of the individual contributors, there were not alignment among their answers, there were divergent perceptions. They identified the relational component as an influencer regarding error tolerance and they understood people could be negatively labeled as a possible penalty for their mistake. Indeed, these are perceptions of both audiences. Altogether, coming back to the proposition 2, there are some evidence that the team leaders and team members have different perceptions about the types of errors that can and cannot be tolerated inside the company in a given organizational culture.

5.3 Proposition 3 – Communication Vehicles

With regard to the proposition 3, it states that employees and managers are not aware about the same error communication vehicles available. The intention behind this proposition was to evaluate if managers and individual contributors are equally aware of the existing vehicles and if they refer to them in the same way. To do so, during the interview two questions were applied, focused on understanding the vehicles people use to communicate errors between team leader and team member, and also within the same area, to understand if and how people get informed about mistakes that happened with peers, for example. In addition, people were invited to make recommendations about how potentializing the share of learnings from error situations, in order to not repeat the same mistakes in the department.

In the first place, considering the managers' opinions, they agreed that errors always happen and that the team members feel comfortable to share their mistakes with them. The managers perceive talks in person as the most common way people report errors, and in case the team member is in another location, it would happen by phone. It seems the possibility of having a conversation, with both parties making questions and sharing their point of view at the same time, is seen as the preferred option by the leaders, and that this is mandatory when complex mistakes must be reported to them. They also shared the feeling that the error communication is made as soon as people are aware of it, and if the manager get to know it before the team member, he will promptly talk to them. There was just one manager that mentioned he keeps one-on-one weekly meetings with his team members, and reinforces that what is treated during this meeting stays in it, so his team would report errors in this moment, because he follows the rule of praising in public and correcting in private:

> *I think most of the managers adopt this approach, but still there are some that expose the team members and embarrass people. (Manager, R&D, male).*

Likewise, the individual contributors understand they have a proper space to report errors to their team leaders. However, they face it can be done in a very informal way, in person, but also by instant messages (ex.: Skype and WhatsApp), phone or e-mails. Only one employee mentioned that reports the errors in the weekly meeting with his manager, but as a consequence of the leadership style, because with the previous manager he could count with a more informal way of communicating mistakes. Notably, only one individual contributor expressed she does

not feel comfortable to share her mistakes with the manager, because the belief she can be negatively exposed, but at the same time she thinks her manager's profile is the reason for it, that it could change with other manager:

> *Before reporting any mistake, I already need to show how I fixed it. (Individual Contributor, Sales, female)*

Another point was the perception that the way of communicating an error may vary according to the audience:

> *I think it depends on the hierarchal level. With a director, for example, I believe I would formalize it. (Individual Contributor, Finance, female)*

When it comes to reporting errors within the area, most managers don't see it as a reality, they don't get to know what had happened with another team in the same department.

> *Because I feel there are some areas that like to point out, there are some rivalry, people have their ego. (Manager, B.2.B. B. U., female)*

Eventually, during the leadership meeting, the managers may discuss about some mistakes, and just one manager mentioned the content would be shared with the team members of the department. Among smaller areas sometimes the mistakes are shared in a group meeting, but it is limited to few people. Just when it is a complex problem, there may be a formal communication:

> *When the mistake is visible for other areas, to avoid interference in the communication, people are invited to a forum to receive the same communication. But this rarely happens. (Manager, Procurement, male)*

There was just one leader that mentioned a formal meeting with all the members of the area to share the learnings from the projects in place, but nothing more than that.

Talking about the individual contributor's perception about the sharing of errors among the area, the majority considers it does not happen frequently, that people usually report the errors just to their managers. The team members would be informed about others' mistakes when: the error gets too exposed, when the individual was somehow involved in the situation, when it

leads to a compliance problem, or if people informally talk about it. However, there were two employees that said they know formal sessions in their areas for sharing error situations, but it keeps in a small group of people, just the ones involved in the situation.

Furthermore, both managers and individual contributors perceive people don't feel comfortable of exposing their mistakes, because everybody tries to be perfect:

> *I have doubts about the maturity people have to face others' mistakes with a constructive approach, or if they will blame them, pointing out to the error. I have a hard time sharing my mistakes and being genuinely heard. (Individual Contributor, HR, female)*

When asked about suggestions to provide a better sharing experience among the area, most of the individual contributors recommended a formal monthly forum, however people may not be prepared for this kind of session, as expressed in the previous quote. The fear of being exposed is bigger than the positive consequences of sharing the learnings. Among the managers, they agreed with this point and their recommendations also included: to adopt the agile methodology, to keep a good history of things (knowledge management) and to focus on the mistake and not on the one guilty. They understand the sharing is important, however they don't know how to work the negative side of the error:

> *If you share, you help people to avoid making mistakes. The sharing is relevant, but it is weird, there is this error bad connotation. But is necessary to face it, because for a culture of innovation, it is important to assume you made a mistake, to learn from it and not to be punished. (Manager, HR, female)*

In particular, there was just one manager that shared a different practice he adopted, that he had learned in a previous professional experience. He didn't know the Procurement process very well, he made a mistake and when he got to know it, he asked for the policy and shared it with all the team by e-mail, and at the same time he organized a training for all the members of his area as an action plan for others not to make the same mistake, a preventive action, but it was an isolated case. Moreover, one individual contributor that was part of the digital mindset project in place during the data collection, shared she participated of some error sharing dynamics with the project team, where each one should share a really bad professional mistake they had made, and actually she said it helped to strength the group trust and empathy:

If you have difficulty in a topic and you share it with your team, all the others will know you may deliver less in it. It allows to create quick solutions, and by the time the leader delegate a task, he will know a contingency plan may be considered. (Individual Contributor, Sales, female)

In summary, considering the error communication between the team leader and team member, both managers and individual contributors showed a similar perception about it, citing the same communication vehicles, though informality appeared more in the individual contributors' speech. On the other hand, when talking about the error communication among the area, the main perception among both audiences was it does not exist, that rarely people share the mistakes with the whole team, so there are not proper vehicles for it. For that reason, considering that proposition 3 talks about differences in the error communication vehicles known by individual contributors and managers, based on the previous comments, it seems there are not enough differences in the communication vehicles identified by both audiences.

5.4 Error Management Practices and Resources – Managers vs Individual Contributors

Related to the error management practices and resources perceived by managers and individual contributors, by the end of each interview, a short questionnaire was applied, which asked the participant to indicate its degree of agreement (Likert Scale) with seven sentences, assuming different perspectives: myself, my team (only for the managers), my area and the company. The sentences took into account the resources and practices available in an error management culture according to Guchait et al. (2016) and Van Dyck et al. (2005). To support the analysis, the answers were consolidated in a table, indicating the percentage of respondents with a Favorable perception (Strongly Agree or Agree), Neutral perception and Unfavorable perception (Disagree or Strongly Disagree). This is available in the Figure 10 - Summary of managers and individual contributors answers about the error management practices and resources, with the first table based on the managers' opinion, and the second one for the individual contributors. As the questionnaire was applied after the interview, it is important to consider that some concepts were already explained to the participant, so the analysis should consider this possible interference. The best alternative should be to apply the same questionnaire before and after the interview, however this was not possible. Nevertheless, the

following answers complement the perceptions of managers and individual contributors that were described previously.

MANAGERS	Myself			My Team			My Area			The Company		
Sentence	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable
Have openness to report errors	0	0	8	0	0	8	2	0	6	1	0	7
Have error analysis competency	0	0	8	0	2	6	0	0	8	2	0	6
Have competency to effectively handle with errors (know the right thing to be done)	0	0	8	0	2	6	0	3	5	0	1	7
Have support of others in errors situations	0	1	7	0	1	7	1	0	7	0	1	7
Have space to share knowledge from error situations	2	2	4	3	0	5	3	0	5	3	1	4
Have the competency to quickly detect errors	0	1	7	0	2	6	0	2	6	0	2	6
Have the competency to control the damage from errors situations	0	2	5	0	3	5	0	2	6	0	2	6

INDIVIDUAL CONTRIBUTORS	Myself			My Team			My Area			The Company		
Sentence	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable	Unfavorable	Neutral	Favorable
Have openness to report errors	1	0	7				2	1	5	2	1	5
Have error analysis competency	0	0	8				1	3	4	1	2	5
Have competency to effectively handle with errors (know the right thing to be done)	0	0	8				1	1	6	1	2	5
Have support of others in errors situations	1	2	5				2	3	3	2	2	4
Have space to share knowledge from error situations	4	0	4				5	0	3	6	1	1
Have the competency to quickly detect errors	0	6	2				2	3	3	2	4	2
Have the competency to control the damage from errors situations	0	1	7				0	3	5	3	1	3

Note: Unf = Unfavorable; Neu = Neutral; Fav = Favorable

Figure 10 - Summary of managers and individual contributors answers about the error management practices and resources

Considering the most relevant differences in their answers, while all the managers assume their teams have openness to report errors, there was one individual contributor that does not feel comfortable with it. Then, considering the openness to report errors in the company as a whole, the managers are more optimistic about it (7 out of 8 perceive as favorable), compared to the individual contributors (2 out of 8 perceive as unfavorable). Furthermore, 6 managers perceive that their teams are able to quickly detect errors, at the same time only 2 individual contributors shared a favorable perception of this competency in themselves.

No matter the perspective being assess, 7 out of 8 managers consider there is a favorable support in error situations, and more than half of them believe there are space to share about error situations in all the four views assessed. On the contrary, more than half of the individual contributors perceived as unfavorable the existence of space for sharing knowledge about mistakes in the perspective of themselves, their area and the company. Regarding their perception about support of others in error situations, it is not as optimistic as for the managers, and the main opportunity is in the area level (3 out of 8 perceived as favorable).

Besides, both managers and individual contributors perceived themselves as good in controlling the damage from error situations, (respectively 5 team leaders and 7 team members evaluated as favorable). However, when it comes for assessing it in the company's perspective, there is a great difference, as 6 out of 8 managers perceive as favorable, while 3 out of 7 individual contributors perceive as unfavorable. Even though the individual contributors have a better perception about their own error analysis competency (all of them have a favorable perception about it), compared to the managers' perceptions (6 out of 8 as favorable), in a broader perspective, regarding the area and the company, the managers have a more positive view about it.

In general, comparing the answers from both audiences, the manager seemed to have a more optimistic view about the resources and practices available regarding error management, mainly assuming the area and the company point of views.

5.5 Limitations

When it comes to the results of any study, it is important to keep in mind there will always be some limitations that may impact the quality of the findings or the ability to effectively address

the research question and/or to evaluate the propositions. In the case of the present study, the main limitations were the unity of analysis, not being able to verify some results objectively and the researcher's interpretation.

First, the study was based on the analysis of a multinational consumer goods branch located in Brazil. The company was selected based on its openness in supporting the study, as it should be necessary to schedule one hour of interview with 16 employees. Moreover, to allow face-to-face interviews, the sample considered only employees that worked in São Paulo, as the researcher believed it would help people to feel more comfortable to share their opinion. Secondly, considering a qualitative study, it was not possible to validate the results objectively and to make general statements based on the collected data. For example, the question about picking the scenario 1 or 2, to evaluate the proposition 1 about the disconnection between personal and professional preferences towards error management, was analyzed based on 16 open-ended answers, which is more difficult to analyze compared to the result of a closed question, because the interviewee may not be so clear in its open response. However, as it was also necessary to capture the potential barriers behind the interviewee's decision, the qualitative approach seemed to be the best one. Finally, the third limitation is related to the researcher's interpretation, which considers the influence of its past experiences, knowledge and personal characteristics in the observations and conclusions. This may be the tougher limitation to cope with, but in order to minimize it, the present study counted with the empirical context section to give the reader a previous knowledge about the unity of analysis, as it was already available to the researcher. In the case of the proposition 2, for example, the data showed either similarities and differences in the non-tolerant errors perceived by managers and individual contributors, so the evaluation of each proposition was a consequence of the researcher's interpretation.

Altogether, some suggestions to overcome these limitations in future research would be to consider a different unity of analysis, as probably there are companies in other stage of error management, which could eventually lead to different results, making it interesting a comparison with the present study. In addition, a similar study could be considered but with a quantitative methodological approach, for example, based on the outputs of the present research findings, such as the barriers mentioned by the employees, to apply a quantitative questionnaire with a larger audience and compare the findings.

6. CONCLUSION AND RECOMMENDATION

The focus of the present study, expressed by its research question, was to identify the main differences between the understanding of managers and individual contributors regarding the error management strategy within a company. Keeping this in mind, the propositions supported somehow the analysis of it in different perspectives, for instance, validating the possible barriers faced by the employees to adopt the error management mindset, or clarifying what people knew about the communication vehicles available in the company, always comparing the sides of the managers and the individual contributors.

In general, the data showed there are some evidence of differences among the errors perceived as tolerant and non-tolerant by managers and individual contributors. Regarding the first proposition, it seems there is not a disconnection between the person and professional preferences about considering an error management mindset, as the personal preference prevails. In addition, in the second part of the proposition some differences among managers and individual contributors were found with respect to the unfavorable conditions they face as barriers to adopt the error management mindset. Considering the third proposition about differences in error communication between team leader and team members, the managers and the individual contributors seems to have the same perceptions about the communication vehicles available, and regarding the error communication among employees of the same area, actually there is some evidence that this is not a reality.

While evaluating the propositions, some evidence about differences among managers and individual contributors became evident. When the team members make mistakes, for instance, they are much more concerned about being negatively labeled, with a negative exposure and keeping it in his history. Besides, they perceive the relational component with a strong influencer role in the interactions when it comes to error management. They don't feel comfortable to share the mistakes with a group, and they see less space for sharing errors and less support if compared to the managers' perceptions. On the contrary, team leaders seem not to express to be worry about the same consequences of making mistakes such as the individual contributors. They only cited the concern in how the errors may impact the team's credibility, and that team members may not understand the real consequences of some mistakes. By the way, managers had a more aligned perception, with convergent answers during the interviews and in the questionnaire. The managers expressed they face errors as part of the daily work, and

in general, they are more open to take risks and to consider the error management mindset compared to the individual contributors.

Furthermore, both audiences know the potential positive value the mistakes may have if managed properly, but still people don't feel comfortable to talk about it. Besides its impact in the performance assessment, the error is perceived with a bad connotation by the employees, mainly among the individual contributors, who are less likely to take risks in the course of their work. People pay more attention to the negative side of the error (blame game) than the positive side of it (learnings and improvements). Even though there is a good openness between team leader and team members to talk about errors, the same does not happen with other teams or areas, the sharing in these cases is limited. Moreover, they feel the leadership style may influence in error situations, and that the personal preference is the main guide considered to adopt or not the error management mindset, so first the person needs to be open for it, because the company would fail if it forces it. In case someone makes a mistake, they know the company may give a fair period of time for the person to improve before taking any tougher action. Another thing that seemed to be very clear for both audiences is that unethical actions that go against the code of conduct are non-tolerant mistakes. With respect to the error communication, just when there is a really complex problem, that rarely happens, they've seen a formal communication for the employees. They don't feel people are prepared to properly hear about others' mistakes, there is a lack of maturity for this, and the challenge is to work the negative perception people have about errors. There was a quote that properly summarizes it:

> *This does not mean that as a company we know how to use the mistakes. I think the team do not show this behavior of learning. But we handle with errors very well and we are able to solve the problems. If it went wrong, let's solve it, but afterwards we may do the same mistake again. (Manager, Marketing, male)*

In addition, regarding some differences between the managers and individual contributors' answers, the error tolerance level perceived by both audiences were not the same, as the managers seems to be more optimistic about it, and there was also some divergence when giving examples about tolerant and non-tolerant errors.

Coming back to the empirical context, as the organization considered in the present study wants to cope with the pace of transformations in the market, adopting the agile and digital mindset,

the error management approach may be appropriate to help these changes, so the company can reinforce its value of innovation. Notwithstanding, to properly adopt the error management mindset, it is important to connect it with the culture, and people seems to have some barriers to adopt it, so first people need to belief it is worthy. Adapting the organizational culture "is a key to the successful implementation of a major improvement strategies as well as adaptation to the increasing turbulent environment faced by modern organizations" (Cameron & Quinn, 2011).

For that reason, in order to implement the error management culture based on the perceptions of the managers and the individual contributors described previously, the first step would be to share it with the leadership team, as it is important for them to be able to conduct the following actions with the team and also to be an example to engage people in adopting this new type of mindset. As perceived during the interviews, the leadership style can influence the way errors are approached in a daily basis by the team members. Subsequently, the suggestion would be to prepare the individual, trying to change the negative connotation the error may have in people's mind. To do so, trainings about self-awareness could be conducted with the employees, because they should realize how valuable their past mistakes were in order to achieve their current professional level, so they can start changing the way they face the present mistakes, eliminating the negative connotation of errors.

After this action, all the employees should participate in a dynamic with a diversified group, in which people share anonymously a mistake they've made, but at the end some people get to know who made it. To conduct the session, the idea would be to have one leader, and that he shared one professional bad mistake he made to inspire people to do the same. The goal of this interaction is to clarify that everyone makes mistakes and people should not feel afraid of talking about it, no matter how uncomfortable it may be, because the most important thing is what you have done or changed after this mistake happened. This activity also allows to reinforce the trust and empathy among the group. This could be done from time to time, to keep it alive, and other routine events could be created for each area adapt it to its reality. For example, in the case of areas that have the weekly meeting, similar to the already existing praise moment, there could be the space for people to share an experience about some error situation. The storytelling should consider the context, what happened, target audience, possible impacts and finally what the person will do or change after it (preventable action). These are just some

ideas in order to enable people to adopt the error management mindset, because first you need to make people's mind to believe the value of errors for then creating spaces of sharing.

After all, the present study aims to contribute with more data about the error management, primarily focused on the differences among managers and individual contributors, and these last recommendations would have to be validated in further studies.

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7. APPENDIX

Appendix 1: Interview Script for Managers

<table>
<tr><td colspan="2" align="center">INTERVIEW SCRIPT – MANAGERS</td></tr>
<tr><td>Interviewee: _____</td><td>Date: _____</td></tr>
<tr><td>Position: _____</td><td>Place: _____</td></tr>
<tr><td>E-mail: _____</td><td>Allowed recording? ( ) Y ( ) N</td></tr>
<tr><td>Telephone: _____</td><td></td></tr>
<tr><td colspan="2">INTRODUCTION</td></tr>
<tr><td colspan="2">

- Present yourself as student and your research project
- Briefly comment about the subject of the study
- Reinforce the contributions of this interview to the study
- Ask if the interviewee allows recording

</td></tr>
</table>

GUIDING QUESTIONS	PROPOSITION
1. Thinking about how your team deals with error situations, how would you describe its profile in this context? How do they react?	3
2. Assuming an "honest mistake" as an unintentional error made by a person without bad consequences, were you able to give examples of "honest mistakes" that already happened with someone of your team? • If yes, what was your approach as a manager in this situation? • If not, what other types of errors already happened in your team? What was your approach as a manager?	2
3. In your opinion, what types of error are usually tolerant and non-tolerant in your company?	2
4. Could you share any real example of an error situation that was not tolerated? What had happened?	2

5. Do you feel there are differences between the tolerant errors for a manager and for an individual contributor? If so, could you explain more about it?	2
6. If someone in your team makes a mistake, do you believe he/she feels comfortable to share it with you? • If so, how does this communication take place? Could you give an example? • If not, how do you handle this situation?	3
7. What are the more common types of errors reported in your area? How do people get to know about them? What are the communication vehicles available for that?	3
8. What would you change in practices and resources in your company to build an environment more favorable for sharing errors situations and learning from them?	3
9. Which one of the following scenarios do you prefer? Why? 1) To have two year with consistent results 2) To have one year below the average, and the second year with exceptional performance as a consequence of the learnings from the previous year	1
10. Thinking about two opposite concepts, one of error management, which considers quickly identifying the errors, minimizing the bad outcomes and potentializing the positive consequences, and the second one of error prevention, that tries to eliminate any error occurrence, would you say your area is closer to which one of these two concepts? Why?	1

Appendix 2: Interview Script for Individual Contributors

INTERVIEW SCRIPT – INDIVIDUAL CONTRIBUTORS	
Interviewee: _____ **Date:** _____	
Position: _____ **Place:** _____	
E-mail: _____ **Allowed recording?** ( ) Y ( ) N	
Telephone: _____	

INTRODUCTION
• Present yourself as student and your research project • Briefly comment about the subject of the study • Reinforce the contributions of this interview to the study • Ask if the interviewee allows recording

GUIDING QUESTIONS	PROPOSITION
1. Assuming an "honest mistake" as an unintentional error made by a person without bad consequences, were you able to give examples of "honest mistakes" that already happened with you or with someone in your team? • If yes, what was the leadership approach in this situation? • If not, what other types of errors do you notice in the company?	2
2. In your opinion, what types of error are usually tolerant and non-tolerant in your company?	2
3. Could you share any real example of an error situation that was not tolerated? What had happened?	2
4. Do you feel there are differences between the tolerant errors for a manager and for an individual contributor? If so, could you explain more about it?	2
5. If you make a mistake, do you feel comfortable to share it with your team leader?	3

• If so, how does this communication take place? Could you share a personal experience? • If not, how do you handle this situation? Could you share a personal experience?	
6. Considering your manager's approach in daily error situations, how would you describe his/her leadership style?	3
7. What are the more common types of errors reported in your area? How do people get to know about them? What are the communication vehicles available for that?	3
8. What would you change in practices and resources in your company to build an environment more favorable for sharing errors situations and learning from them?	3
9. Which one of the following scenarios do you prefer? Why? (1) To have two year with consistent results (2) To have one year below the average, and the second year with exceptional performance as a consequence of the learnings from the previous year	1
10. Thinking about two opposite concepts, one of error management, which considers quickly identifying the errors, minimizing the bad outcomes and potentializing the positive consequences, and the second one of error prevention, that tries to eliminate any error occurrence, would you say your area is closer to which one of these two concepts? Why?|	1

Appendix 3: Interviewees' quotes regarding proposition 1

Employee Type	Preference – Scenario 1: Two years with a consistent performance	Preference – Scenario 2: First year below and second year with exceptional performance, as a consequence of learning from errors
Individual Contributors	• *I didn't do more than it was expected of me* (Finance, female); • *It would hurt a lot to be below the expectations* (HR, female); • *First for the business sustainability, and second because one bad year may cause a big impact for the company* (Legal, male); • *I think it gives you a negative history. You don't need to hit rock bottom to go up* (R&D, female); • *I think it would be very hard to have a below average assessment* (Trade Marketing, male).	• *Because I think that when we make mistakes, we learn much more from it* (Marketing, female); • *The average is always forgotten* (Supply Chain, male); • *Even it cost me something, if I know these mistakes will take me to a better place, I prefer it* (Sales, female).
Managers	• *Because it is more in line with the way I prefer to do the things* (Legal, male).	• *Because I think it empowers more the person, because he was more challenged* (HR, female); • *I can manage my losses to latter reap the rewards from it* (Marketing, male); • *Mainly due to the learnings* (Procurement, male);

		• *When you see a challenge, your learning level is greater* (Trade Marketing, female).