

# Instituto Tecnológico y de Estudios Superiores de Occidente

Reconocimiento de validez oficial de estudios de nivel superior según acuerdo  
secretarial 15018, publicado en el Diario Oficial de la Federación del 29 de  
noviembre de 1976.

Departamento de Economía, Administración y  
Mercadología  
**Maestría en Administración**



## **The Impact of Transformational Leadership on Team Performance**

---

**TRABAJO RECEPCIONAL** que para obtener el **GRADO** de  
**MAESTRO EN ADMINISTRACIÓN**

Presenta: **OTAVIO DE ANDRADE OLIVEIRA**  
Tutor **FRANCISCO JAVIER VÁZQUEZ JR. PH.D.**

Tlaquepaque, Jalisco. 14 de diciembre de 2022.



## **Abstract**

This study was developed to increase the understanding of the extent to which the transformational leadership construct can contribute or determine team-level performance by observing the characteristics of a real work environment in a research and development (R&D) department of a company from the automotive industry in Mexico. This was done by counterposing the assessment of the presence of transformational leadership behaviors demonstrated by the leaders from the point of view of their own team and the team-level performance as a subjective measurement from the leaders' point of view and checking for a potential causality relation between both.

Transformational leadership was assessed from the scope of its five constitutive elements – 1) inspirational motivation, 2) idealized influence – attributes, 3) idealized influence – behaviors, 4) individual consideration, and 5) intellectual stimulation – and was used to quantitatively measure the level of transformational leadership perceived by team members associated with their leader. Team performance was measured under a subjective perception by the leader of the collective achievements of his/her teams.

The research covered a sampling universe of 64 teams composed of at least one leader and four team members, having reached the participation of 477 individuals among leaders and team members from the same company. The data collected was statistically analyzed in order to check for the adherence of the proposed causal model taken as the initial premise.

Finally, the outcomes of this study aim to provide insights about the predictors influencing the performance of the teams in the automotive industry in Mexico and serve as a reference for driving the efforts of companies on measures to maintain or improve outcomes from teamwork under the influence of leadership behaviors.

### **Keywords**

Transformational leadership, team performance, automotive industry, Research & Development, R&D, team, leader.

## Dedication

To God and the combination of the plethora of uncontrolled circumstances in life that brought me here and made this work possible to materialize.

To my mother, Salete, my first teacher in life and my first example of resilience and self-purpose, no matter the circumstances.

To my father, Geraldo, for teaching me the values and importance of our humble origins as the basis of our integrity and honesty, the main elements to form a good human being.

To my wife, Patrícia, for her loyal complicity, tremendous patience, understanding, and loving support even in the most difficult moments.

To my sons, Arthur and Enzo, for lending me, without judgment, a huge part of our time together in the last years for me to focus on the completion of this work.

To my brothers, Roberta and César, who are always in my thoughts despite the distance.

To my beloved aunt, Marlene, for having taught me my first written words.

To my beloved aunt, Helena, for adopting me as her own son in the most difficult period of my life, and to my cousins Cláudio (in memoriam), Clóvis, Cibeles, and Claudemir, for having accepted sharing her care and love with me.

To my grandparents, Nair, Rosa (in memoriam), Domingos (in memoriam), and Firmino (in memoriam), for all the love and valuable wisdom shared, especially when I knew almost nothing about life.

## **Acknowledgments**

The last two years have been time for hard work, focus, and privation of some day-to-day privileges of a normal lifestyle, including time with family, hangouts with friends, parties, sports, social events, and a good movie on the weekend. However, if I could travel in time to that specific moment in which I joined this journey and would be given a chance to decide once more whether to start or discard it, I would make the exact same decision I have made before. The best development opportunities come along with challenging situations. Those in which you are not sure about what will happen next, nor can you predict how it will be ended up.

I joined this journey with a hanger to better understand the environment in which I have been living professionally for my last 16 years, the desire to taste the process of academic research, and, if possible, to contribute somehow with a small piece of knowledge in the area of leadership. Looking back, I can see that the result is extraordinarily satisfying, not to say more, as the study of leadership theories helped me to increase substantially my awareness of certain conditions I lived in real life, but, at that time, without being conscious about aspects of it which I know now. Undoubtedly the road to knowledge in this area has just started for me, but it was an amazing start, I would say.

This said, it is fundamental to recognize that no one can travel this road of knowledge development without a guide, a map, and additional tools to help you achieve your checkpoints on your way to the final destination. I was really fortunate to

be able to count on the support of several persons in my journey, to whom I will try to do a minimum level of justice by recognizing them in the following paragraphs.

First, I would like to express all my gratitude for the partnership, good advice, and valuable guidance that Professor Francisco Javier Vazquez Jr., Ph.D. provided me in this research. Having achieved his acceptance of the role of academically coordinating me, a first-time student researcher, in this work was, for sure, my first great achievement. His patience in joining my study proposal when I practically had just an idea of a study research topic, and to guide me over the whole process of well structuring a research study, giving me good references to follow, instructing me on the best approaches during the execution and helping me with good insights during the analysis and interpretation of the results.

I also need to thank Xochilt, who unconditionally supported me during the execution process, removing all the obstacles so that I could access the data I needed, and Alejandro, David, and Edu for seeing the value of this study and supporting it. This work would not have been done without their commitment to my ideas.

Also, I cannot miss a special thanks to the academic community of ITESO for providing me with the proper intellectual and physical surrounding structure I needed to develop this work. Especially, I have to thank Dr. Martha Leticia Silva Flores for all her support in several specific needs I had during the execution of this study related to the operationalization of processes from the university, besides her motivational words in all personal interactions we had, to Dr. Itzel Palomares Aguirre, for her valuable contributions on the methodological aspects of my work, to Dr. Carlos Reynoso Nuñez,

for accompanying me since the first presentation of semestral advances of this study and his contributions with ideas from his perspective as leader and professor of leadership, and to Dr. José de Jesus De La Cerda Gastelum, for sharing his motivational thoughts about the topic and the results obtained, constructed based on his vast experience in the academy and with the subject.

Additionally, I cannot close this section without recognizing the efforts of my beloved wife, Patrícia, and my sons, Arthur and Enzo, for understanding the challenging and time-consuming effort I have been making during this MBA program, especially in the execution of this study research, and generously allowed me to be a “presential absent” in most of the family time in the last 2.5 years, knowing that it would help me, in the first level, to grow as a person, professional and member of the academic community and, indirectly, would bring additional opportunities to us as a family in the near future, hopefully.

Finally, I thank God once more for allowing me to be healthy in these difficult times we have been through in the last years of pandemic, so that I could take advantage of this blessed opportunity to receive additional education and knowledge.



## Table of Contents

Chapter 1: Introduction .....	1
Personal Interests .....	3
Business and Social Relevance .....	4
Research Goal and Purpose .....	4
Chapter 2: Literature Review .....	6
Introduction .....	6
Importance of leadership .....	7
About Leadership Types and Styles, and Related Concepts .....	8
Authentic leadership .....	10
Autocratic leadership .....	10
Charismatic leadership .....	11
Ethical leadership .....	11
Humble leadership .....	12
Laissez-faire leadership .....	14
Servant leadership .....	15
Transactional leadership .....	15
Transformational leadership .....	16
Leader-Member Exchange (LMX) theory .....	20
Leadership Styles' Singularity vs. Intersectionality .....	23
Research Proposed Focus on Transformational Leadership .....	26
Teams and Team Performance .....	31
Research Question and Model Proposal .....	33
Chapter 3: Methods .....	35
Introduction .....	35
Research Viability and Feasibility .....	36
Proposed Scope .....	37
Subject of study .....	37
Object of study .....	38
Proposed Causal Model .....	38
Overview of Research Design and Procedures .....	39
Recruitment of Research Sample .....	45
Survey sample .....	45
Procedure for the Development of Study Survey .....	49
Team Level Variables .....	51
Operationalization of Variables, Scales Relation, and Factors .....	52
Operationalization of variables .....	54
Research Precautions .....	58
Data Analysis Plan .....	60
Analyzing at the individual response level .....	60
Descriptive statistics and intercorrelations .....	62

Creation of team-level variables .....	63
Heterogeneity and validity of team data .....	64
Path and regression analyses.....	64
Summary .....	65
Chapter 4: Findings and Results .....	66
Introduction.....	66
Quantitative survey results.....	66
Reliability and unidimensionality assessments.....	67
Impossibility to run ANOVA validation at the item scale level.....	69
Analysis at the Team Level.....	69
Descriptive statistics .....	70
Scales intercorrelation and factor analysis.....	72
Independent variable definition from factor analysis .....	77
Linear regression and predictors of team performance.....	78
Summary .....	81
Chapter 5: Discussion .....	83
Introduction.....	83
Implications for research.....	83
Findings that support the existing theory.....	84
Findings that extend or do not support the existing theory.....	85
Study strengths.....	86
Study limitations .....	88
Recommendations based on the research results .....	89
Chapter 6: Conclusion.....	91
References.....	95
Appendix A: Survey with Question Background .....	102
Participant Data.....	102
Independent Variable .....	103
Outcome Variables.....	105
Appendix B: Employer Acknowledgment Form .....	106
Appendix C: Consent Form for Survey Research.....	108
Appendix D: Intercorrelation between study variables and control variables.....	110
Appendix E: Example of team climate regular evaluation by Company “AutoParts” .....	115

## List of Figures

Figure 1 - <i>Proposed research model</i> .....	34
Figure 2 - <i>Proposed causal model</i> .....	39

## List of Tables

Table 1 – Leadership styles and similarities with transformational leadership .....	29
Table 2 – Invited participants and valid participants distributed by Business Area ...	43
Table 3 – Survey Questions .....	49
Table 4 - Reliability reference values for Idealized Influence.....	54
Table 5 - Reliability reference values for Inspirational Motivation .....	55
Table 6 - Reliability reference values for Intellectual Stimulation.....	56
Table 7 - Reliability reference values for Individualized Consideration Stimulation	57
Table 8 - Scales Reliability and Unidimensionality Test (n = 413 responses) .....	68
Table 9 - Descriptive Statistics (n = 64) .....	70
Table 10 – Normality check – Kolmogorov-Smirnov <sup>a</sup> test .....	72
Table 11 - Intercorrelation between study variables (Spearman’s rho).....	73
Table 12 – Communalities found from factor analysis.....	75
Table 13 – Total variance explained.....	76
Table 14 – Component matrix .....	77
Table 15 - Intercorrelation between final study variables (Spearman’s rho).....	77
Table 16 - Linear Regression Model Summary – step-wise approach .....	79
Table 17 - Excluded Variables <sup>a</sup> from the Regression Models – step-wise approach .	80
Table 18 - Intercorrelation between study variables and control variables .....	110
Table 19 - Control variables descriptions .....	111

# Chapter 1: Introduction

The world is in constant change and so are businesses. In the era of knowledge, potentialized by the increasing connectivity and related technology evolution, and revolution, disruptive changes happen all the time. There are positive ones, such as the new solutions and revolutionary products and services, but also negative ones, such as the COVID-19 pandemic. Both of them are forcing businesses to find new ways and solutions at a fast pace. This VUCA – Volatile, Uncertain, Complex, and Ambiguous – world imposes new challenges on the leaders to adapt to these high-pressure and unstable environments and to still be able to deliver the best possible results – the traditional linear leadership approaches are no longer effective in a non-linear world (Rimita, Hoon, & Levasseur, 2020).

In this context of a continuously transforming world, businesses and organizations are expected to adapt, as well as the relationship between leaders and followers. In line with this concept, transformational leadership raises as one of the most promising approaches as a response to the described environment, recognized as the leadership approach that fosters promoting inspirational motivation on followers to challenge the status quo and develop themselves as an “extra mile”, not only to fulfill organizational goals and targets but also to become the best version of themselves as individuals (Dóci & Hofmanns, 2015). These outcomes are achieved via four main pillars:

*Individual consideration* is shown when the leader attends to each subordinate's needs individually, cares about their well-being, gives them emotional support, and helps them to develop their skills and potentials. *Intellectual stimulation* is shown when the leader challenges the widely held, habitual assumptions and beliefs that subordinates rely on and encourages them to think for themselves. *Inspirational motivation* is shown when the leader articulates a vision that is appealing and inspiring for the subordinates and provides them with high but achievable challenges. *Idealized influence* is shown when the leader is driven by values and a concern for what is best for the subordinates, the organization and society, acts with integrity and beyond self-interest. (Barling et al., 2011; Bass, 1999 as cited in Dóci & Hofmanns, 2015, p. 5)

As Ewest described, transformational leadership is referred to as one of the best fitting leadership theories with the concept of the citizen leader, because of its congruences with the characteristics pointed out as the pluricultural and most relevant ones to promote the changes needed in the world - i.e., helpfulness, social justice, equity, freedom, etc (Ewest, 2015). From my perspective, this concept of citizenship behavior by the leader is one of the essential characteristics to serve as a trigger of empathy between followers and leader, being it a primary element to enable transformational evolution of followers in the first level and organizations in the final level.

Dóci and Hofmans (2015) also conclude that highly complex environments with constant pressure to overcome challenging tasks and situations may deplete the transformational capabilities of the leader, inhibiting its behaviors from being put into practice. However, based on their highlight of the limitations of the samples' universe studied, I challenge their conclusion that transformational leadership is inhibited under

complex and challenging scenarios because it is not what I can observe in my work environment. I dedicate myself to leading teams to develop complex multi-disciplinary engineering projects and products for the automotive industry, one of the most demanding in terms of quality of deliveries and pressure for shorter development timings. Having played the roles of team member and project team leader in my sixteen years working in engineering project teams for this industry, one of the most dynamic and strict in the market, I do, indeed, see in transformational leadership the potential as the non-linear approach to empower the achievement of excellent results in our current disruptive world.

### ***Personal Interests***

As a professional from the project management area for the automotive industry of auto parts, it does concern me to keep myself the most updated as possible regarding the aspects which influence the possible results from working in teams and our capacity to generate the maximum optimal value for the industry, being leadership theories a determinant factor. By better understanding the influence of the different possible manners of conducting projects and teams, I can identify potential personal improvement opportunities, as well as optimized ways to play my role, to interact with the environment in which the projects are developed and, therefore, to adjust myself to these factors, and being able to propose more suitable ways to organize my partners and collaborators as a team and potentialize the chances of succeeding.

## ***Business and Social Relevance***

While being part of the mentioned industry in times of a fast-paced constant transformation, the better we can understand how the players interact in key processes, the more we can anticipate eventual weaknesses and adjust the factors to maximize the success opportunities. Such conditions would lead to reaching or exceeding the expected project and product profitability goals, achieving shorter development times, and developing and delivering the best-fitting solutions to the customers and market.

By focusing on the leadership aspects and its results, this research proposal contributes to the business goals of improving project results' predictability by mapping the determinant effects of transformational leadership on team performance from a subjective perception by the leader. It also represents a significant social contribution, as it gives margin to a potential labor environment improvement by promoting more fluid interactions and contributions within the project teams and towards the customers through the catalyzing effects of a proper leadership approach.

## ***Research Goal and Purpose***

Considering environments of project development, the catalyzing effect from leadership on the individual and collective efforts toward the common set of goals as one idea very present in the literature review detailed in the next chapter, and also



following the idea from McManus (2006), who emphasizes the fundamental role played by leadership by steering teams' efforts in the right direction, this study will focus on the influence of transformational leadership in the perceived outcomes of the development teams assessed from the leader's perspective.

For this, it will focus on the main specific goals of looking for causalities between intrinsic elements from transformational leadership style, for instance, individual consideration, intellectual stimulation, inspirational motivation, and idealized influence, with the perceived performance by the leader. The idea is to adopt this specific type of leadership as the best matching to the environment in which the study will be conducted, and cross assess the perceived transformational leadership characteristics by the followers versus the perceived team's performance by the leader.

Considering all the above, this study aims to contribute to the academic body of knowledge about how transformational leadership can potentially impact the perceived team performance assessed from the leader's point of view with the use of an already available validated research instrument.

## **Chapter 2: Literature Review**

### ***Introduction***

In the previous chapter, I described the characteristics of the current disruptive world and its reflection on organizations, detailing the logical thinking that led me to focus this research on the potential effects of transformational leadership on the team's perceived performance and its contribution to organizational success.

As a continuation, I will now explore the current literature on diverse leadership theories to consolidate a general view of the most relevant leadership theories in order to map the essential characteristics of each one of them and to be able to identify similarities and main differences between them, focusing on a comparison with transformational leadership. Furthermore, the mentioned comparison will help to construct, based on the analysis of previous theories and studies' results, a more consistent view of the real potential of transformational leadership on team performance of teams related to a company belonging to the automotive industry.

At the end of this chapter, I will summarize the distinctive characteristics of several leadership theories for comparison purposes and close it with the research question and causal model to be studied.

## ***Importance of leadership***

Although there has been a recent increase in the interest and research on leadership in the past decade (Yuan-Duen Lee, Pi-Ching Chen, & Chin-Lai Su, 2020), the importance of leadership is not new. It has been a subject of study since it revealed itself as an essential success factor for organizations because of its catalyzing effects on collective social efforts coordinated towards common entrepreneurial goals. Recently, Reis Neto et al. (2019) contributed to this idea by stating that “leadership occurs when a member of the group modifies the skills of others in the group towards a common goal.” (p. 151). Nevertheless, this is not an exclusive concept from the new approach to leadership, as we can observe by what was said in the early '80s by Bass (1985), who detailed that “Leadership, in other words, can become an inspiration to make extraordinary efforts.” (p. 39), a concept which is in line with the contribution from Williams et al. (2010), who said that “(...) leadership has been argued to be the most important contextual factor that influences team performance” (as cited in Owens & Hekman, 2016, p. 1089).

Constructing on the role leadership plays as a differentiation factor in the market, Jelača et al. (2016) contribute by mentioning that it can represent a competitive advantage of modern organizations and that only companies whose leaders are aware of the importance of the continuous acquisition of new knowledge and improvements towards constant innovation will maintain themselves competitive in the market. This aspect is interesting from one crucial point of view: organizations expect leaders to be

a solid foundation base, but, at the same time, that they can be flexible enough to represent and promote the dynamism of continuous improvement, which needs to be reflected not only on themselves but especially on their followers, the directly responsible persons to materialize the competitive advantage of the company. This influence by the leaders was also capitalized in terms of its mediatory importance on the relationship and guidance of followers and described by Reis Neto et al. (2019) when citing and mentioning that “Zebal (2017) identified that leadership influences more individual performance than payment.” (p. 150).

In this context and considering the well-known competitive market characteristics illustrated by the Volatile, Uncertain, Complex, and Ambiguous meanings of the acronym VUCA, Reis Neto et al. also mentioned that, so far, “The leadership biggest challenges were: motivating employees, giving sustainability to the organization’s reputation, creating collaborative environments to increase organizational performance and retain human capital.” (Reis Neto, Nélia de Araújo, & Avelar Ferreira, 2019).

### ***About Leadership Types and Styles, and Related Concepts***

As stated by Jelača et al. (2016), “There is no universal style of leadership appropriate in all situations.” (p. 559). This statement brings to light one additional challenge to leaders and organizations. In the first level, leaders are expected to be flexible enough to adapt to the most different scenarios and contexts that can be

presented in the course of their journey together with their followers. Organizations, ultimately, need to ensure that their leaders are appropriately skilled to navigate through the different leadership options and exert the best fit for the plethora of possible scenarios which can be present. On the other hand, that there are proper tools available to the leaders to help them on steering and to adjust their adopted approaches, as long as required.

Consequently, the ideal way of operating from a leadership perspective would be making use of the different leadership styles according to the context, culture, follower maturity, and goals set, similarly to the approach proposed by Blanchard and Hersey with their Life Cycle Theory of Leadership (Blanchard & Hersey, 1970), which was later popularized and spread as situational leadership. For this, knowing several leadership approaches and their main characteristics is unavoidable. Therefore, I explored some of the most popular and relevant leadership constructs, including, but not limited to, authentic leadership, autocratic leadership, charismatic leadership, ethical leadership, humble leadership, laissez-faire leadership, servant leadership, transactional leadership, and transformational leadership. I will provide in the following sections more referential information and concepts on them, as well as related aspects. At the end of the chapter, I will explain how the proposed research considers these leadership constructs.

## **Authentic leadership**

Brown et al. (2020) define the effectiveness of an authentic leader as due to his image of someone to be trustable and predictable, as behaving with integrity and based on his values. By doing so, they demonstrate consistency, although they can be eventually vulnerable. It is important to mention that its negative aspect is that authentic leaders do not necessarily develop others by caring. The authors also explain the four dimensions of authentic leadership: self-awareness, balanced processing, internalized moral perspective, and rational transparency.

## **Autocratic leadership**

The autocratic leader concentrates the power of directiveness and decision-making process, dictating the strategies and goals to his followers. The development of their followers is not part of his priorities or plans. The low level of empowerment and participation of the team in the decision-making process are the main characterizers of this leadership construct, which leads to the generalized aversion to it by scholars, professionals, and consultants, as it may lead to perceptions of inequity, undervaluation, and lack of consideration of the team and its members (Schoel et al., 2011; De Hoogh et al., 2015).

Although it may seem improbable that someone may prefer being part of a team led by an autocratic leader, Schoel et al. (2011) highlighted one fascinating aspect when they link followers perceptions and expectations from a leader with scenarios of

uncertainty and followers self-esteem conditions: unstable and low self-esteem individuals would prefer assuming a passive behavior and being directed by someone else – an autocratic leader, for example – regarding the course of action to reach uncertainty reduction, because they lack self-confidence on overcoming obstacles and uncertainty by themselves (Schoel et al., 2011).

### **Charismatic leadership**

The influence of the main element of charismatic leadership – charisma – was defined by Brown et al. (2020) as the element which stimulates positive attitudes and inspires followers to pursue the goals. They continue by mentioning Shao et al. (2016), saying that team members are compromised with charismatic leaders as a consequence of the strong belief that they can achieve the organizational targets (House et al., 1991; Wang et al., 2005; Choi, 2006; as cited in Brown, Marinan, & Partridge, 2020).

### **Ethical leadership**

The ethical leadership construct is based on the demonstration by the leader of broadly accepted values present as a common sense in the cultural characteristics of the followers' community, which serve as idealized convergence for the followers to see in the leader a role model to be adopted and reproduced. This process includes, as an example, noble behaviors like respect to others, trust, care, and justice. Nevertheless, this list is not static nor universal: it can be presented in a culturally adjustable way to

reflect the community's traditional relevant values. In addition, ethical leaders spread these values by acting according to them, speaking about them with followers, and giving followers a voice to close the communication loop with their feedback. This way of behaving is part of the so-called *moral manager* dimension, in which leaders ensure that the message of expectations about ethical and unethical behaviors is well spread in the organization and clearly understood by the followers. Furthermore, this kind of leader advocates for ethical values, rewarding those who put them into practice and imposing disciplinary sanctions on those who disobey the values (Brown et al., 2005; Treviño et al., 2000, 2003 as cited in Brown & Treviño, 2006). Finally, ethical leaders consider that the consequences of their actions also reflect the ethical principles, serving as an example to follow. Brown et al. (2005) summarize ethical leadership in one sentence: "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making." (p. 120).

### **Humble leadership**

The central concept of humble leadership is related to the virtue of humility in the leader who disseminates it to the team and, via a shared sense of the mission of expanding the team's capabilities and potential, they reach their goals. The influence from the humble leader comes from the point in which he gives away part of a leader's usual power by being openly self-aware of his weaknesses, mistakes and, especially,



limitations, and, besides, drawing attention to the knowledge, expertise, and contributions from followers, being open to new ideas and points of view, and learning from them (Owens & Hekman, 2016). These behaviors “are equally imitable by team members and are relevant to the core team processes of constructive interrelating, task allocation effectiveness, information exchange, constant updating and monitoring, and self-correction (Burke et al., 2006; Johnson, Hollenbeck, DeRue, Barnes, & Jundt, 2013; Zaccaro, Rittman, & Marks, 2002).” (as cited in Owens & Hekman, 2016, p. 1089). Thus, it conduces the team to a virtuous spiral of gradual performance improvement towards excellence. The central concept here is that the “leader displays of humble behavior will be emulated by members of their team, reflecting a behavioral social contagion process.” (Owens & Hekman, 2016, p. 1092) and the openness to new ideas will promote an environment of constant challenges and changes to the status quo.

However, one vital moderator to consider when talking about humble leadership is the team power distance, which is the team’s perception of its own “voice” power in the organization against the formal hierarchy levels. According to Hofstede (2011), societies that present a high power distance level – as the case of Mexico, which is rated with 81 points in the power distance scale – are naturally susceptible to accept hierarchical organization and setup without much questioning. In this case, individuals tend to accept impositions readily and that their course of actions is defined by someone else (as cited in Vazquez Jr., 2020). Vazquez Jr. (2020) adds that the “diverse levels of power distance in a team culture could limit or facilitate the effectiveness of humble

leadership. In addition, if people expect a leader to be directive, they may perceive humble leadership as a weakness instead of a strength.” (pp. 22-23) and, therefore, “it makes conceptual sense to see teams with high power distance levels to lessen the contagion effect of leader-expressed humility on collective humility” (p. 131). In this line, he hypothesized that “(...) humble leadership does not positively influence team performance in a population (e.g., Mexican) usually found with elevated levels of power distance” (p. 136). So, in other words, depending on the general cultural characteristics of the team, it can be faced with a natural rejection of this construct.

### **Laissez-faire leadership**

Jelača et al. (2016) present the laissez-faire leadership construct as the “least present in the current business environment and increasingly losing importance, because it represents a passive and ineffective style. It is often referred to as non-leadership, because there is no transaction, nor agreement with the followers.” (p. 551). In summary, it is represented by a passive leader who avoids involvement at maximum and is mainly related to the “firefighting mode”, dealing with problems which could be avoided with an earlier involvement and guidance of followers. Although alone it is less and less observable, it may be of value when combined with different leadership approaches, as we will see in the following conceptualization and discussion.

## **Servant leadership**

Servant leadership, by its time, “places a leader in the passenger seat such that resources and support are provided to followers without expectation of acknowledgment (Smith et al., 2004).” (as cited in Brown, Marinan, & Partridge, 2020, p. 68). In other words, the servant leader is in charge of removing all obstacles and ensuring the availability of all needed resources to the followers to freely focus on creating the expected value towards the organizational goals.

## **Transactional leadership**

A transactional leader is defined by Bass (1997) as “a person who motivates people to perform the task, achieve the goal, and provide precise feedback” (as cited in Jelača, Bjekić, & Leković, 2016, p. 551). He does this based on a target accomplishment/reward approach in which the leader has to identify the individual needs and aspirations to offer a proper reward capable of motivating the team member to achieve the goals. Nevertheless, a collateral effect of this approach is that individuals lack a vision of higher-level outcomes, as they usually work limited to the short-term goals and their rewards, resulting in a limited contribution by them. Howell et al. (2005) reinforce this concept by stating that “transactional leadership shows negative correlations to objective outcomes” (as cited in Jelača, Bjekić, & Leković, 2016, p. 554). Jelača et al. also mention that this kind of leadership approach can be suitable for stable business with well-established routines and in which the main focus is

responding to the gap between planned versus accomplished (Jelača, Bjekić, & Leković, 2016).

### **Transformational leadership**

Transformational leadership is the one in which the leaders “emphasize the importance of each individual’s contribution to the group or unit, getting followers to internalize and prioritize a larger collective cause over focusing just on self-interests (van Knippenberg et al., 2004).” (as cited in Walumbwa, Avolio, & Zhu, 2008, p. 797). This is achieved through four main behaviors named as individual consideration, intellectual stimulation, inspirational motivation, and idealized influence (Barling et al., 2011; Bass, 1999 as cited in Dóci & Hofmanns, 2015).

Bass (1985) describes this kind of leader as being someone who has a special view on the potential of followers not only for current tasks, but also for more demanding challenges. He is also able to balance the assignation of tasks in a way to fulfill both dimensions: current business needs and individual development of followers, in a way that they “may arouse their followers emotionally and inspire them to extra effort and greater accomplishment.” (p. 39). Walumbwa et al. (2008) defend that, by comprehending how followers see themselves, the transformational leader can help transform their self-concepts by challenging them to establish and pursue a high-level outcome that they would never do their own. Similarly, Jelača et al. replicate the speech from Bass, who says that transformational leaders are the ones “who

emphasise[*sic*] motivation as a very important factor and consequently cause the motivation of followers through the creation and presentation of informative vision of the future (Bass, 1997)” (as cited in Jelača, Bjekić, & Leković, 2016, p. 551).

Extending the context to the environment in which transformational leadership is developed, Bass (1985) “suggested that organizational environments that were more organic, challenging, or require rapid change may facilitate transformational leadership and its emergence” (as cited in Walumbwa, Avolio, & Zhu, 2008, p. 815). Eden (2001), by its time, defended that one important influencing element of transformational leadership is the confidence level the team members place in the available means – equipment, processes, procedures, people (including the leader and teammates) – as powerful enough to support the achievement of the goals. Additionally, he considered that it plays a vital role in followers’ motivation, which was somehow ignored in previous leadership and performance constructs (as cited in Walumbwa, Avolio, & Zhu, 2008). Walumbwa et al. (2008) complement this idea by pointing it out as an essential element for the identification of the follower with the working organization to which he belongs. The same authors complete the idea under the perspective of performance by stating that they:

found that supervisor-rated task performance was higher when individuals identify with their work unit, when employee’s confidence about their ability was higher, when employees’ perceptions of resources or tools provided to them to do their work are higher, and when leaders demonstrate transformational leadership behaviors more frequently as evaluated by their respective followers (Walumbwa, Avolio, & Zhu, 2008, p. 815).

Furthermore, still speaking about the environmental characteristic in which transformational leadership is developed, Jelača et al. (2016) contribute that it is characterized by an environment in which it is usual “changing everyday scope of work through identifying new business activities and implementation of new business concepts based on a more flexible business process.” (p. 551).

In transformational leadership, similarly to what was already mentioned for the humble leadership, we also have the presence of the effects of a contagion process, as described by some authors mentioned by Owens & Hekman when sharing that “transformational leaders, through their powerful analogies, inspiring visions, and uplifting stated values (Schein, 1990), produce a ‘transformational culture,’ which then in turn influences team performance behavior (i.e., Bass & Avolio, 1993: 119; Parry & Proctor-Thomson, 2003).” (as cited in Owens & Hekman, 2016, p. 1090). This was also described by Reis Neto et al. (2019), who summarized that “Transformational leadership takes place when both, leader and follower, increase the motivation of each other.” (p. 152).

It is also important to understand the importance of transformational leadership regarding its effects in the performance on the organizations in which it is applied, against which, Jelača et al. mention other authors who converged on the idea that “there is a strong empirical evidence that transformational leadership, more than any other leadership style, is highly effective (Judge & Piccolo, 2004; Lowe et al., 1996 Wang et al., 2011).” (as cited in Jelača, Bjekić, & Leković, 2016, p. 553). In addition to that, “As Schaubroeck, Lam, and Peng (2011: 869) summarized, ‘To date, transformational

leadership is arguably the most reliable and potent mainstream leadership behavior variable for predicting team performance.” (as cited in Owens & Hekman, 2016, p. 1100) and the same authors bring additionally that “(...) transformational leadership dimensions “collectively inspire followers to achieve more than was thought possible [by] encourag[ing] followers to question assumptions and think about new ways of doing tasks” (Williams et al., 2010: 306)” (as cited in Owens & Hekman, 2016, p. 1100). This collective inspiration on followers was further developed by Deinert et al. (2015), who “analysed the relationship between personality traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) and components of transformational leadership style, and it was found that the Big 5 personality traits are directly linked to transformational leadership sub-dimensions.” (as cited in Jelača, Bjekić, & Leković, 2016, p. 554). This finding reinforces the need to further evolve in the exploration of leadership from the perspective of psychological exchanges between leaders and followers, especially in the case of transformational leadership.

Although there are some similarities in comparison with humble leadership, Owens and Hekman detected from one of their experiments that the mechanisms through which transformational leaders and humble leaders impact team performance are different. They explain the difference as follows:

Perhaps one reason why transformational leadership did not predict performance as strongly in this context is that the performance circumstance did not warrant a new compelling vision or was not one of “extreme challenge, stress, and uncertainty,” which are situations when

transformational leadership is theorized to be most important (Bass, 1985: 815). In contrast, qualitative evidence suggests that leader humility is less effective in times marked by extreme threat or time pressure (Owens & Hekman, 2012). (as cited in Owens & Hekman, 2016, pp. 1103-1104)

I summarize it by stating that transformational leadership is more recommendable than humble leadership for constantly changing environments, where the VUCA concept is more noticeable.

Additionally, checking the academic relevance of the different leadership styles, Yuan-Duen Lee et al. mention transformational leadership had a particular increase in citations over the last decade, representing 33.6% of the academic research and publications from 2013 to 2017 (Yuan-Duen Lee, Pi-Ching Chen, & Chin-Lai Su, 2020). This number reveals the growing academic interest in this leadership construct, which, in turn, may also indirectly indicate the relevance and presence of this style in organizations, reflected by researchers' interests.

### ***Leader-Member Exchange (LMX) theory***

One important complementary concept on leadership constructs is the LMX theory. The central point of this theory bases on the importance of the relationship between leader and followers to come to a stage in which they evolve. First, from the “stranger” phase, in which interactions occur in a more formal and limited way, mainly based on a more contractual and economic exchange like “supervisor-subordinate”. Then, passing through an “acquaintance” phase, in which there is an “offer” to social



partnership towards mutual development, which leads to a still limited but broader cooperation model than in the previously mentioned phase. Finally, getting to a “mature partnership” stage, in which leaders and followers become partners and can benefit, both themselves and the organization, at the higher potential level from their partnership and cooperation (Graen, G. B., & Uhl-Bien, M., 1995).

Martin et al. (2016) mention that there are different ways for leaders to exchange with their followers, which lead to different quality relationships between them (leader and followers). In this context, they define performance as a three-dimensional construct:

- *task performance*: correlates to the accomplishment of tasks resulting in the delivery of goods or services in adequate quantity and quality.
- *citizenship performance*: the behavioral set of characteristics that are not directly related to tasks but positively supports the accomplishment of organizational goals, and
- *counterproductive performance*: the opposite of citizenship performance, from which followers assume no task-related behaviors which jeopardize the accomplishment of organizational goals.

Although being a negative symptom, the analysis of the exchange in the light of counterproductive performance is also of great importance. Counterproductive behaviors are perceived by the leaders more significantly than positive behaviors and can play a more determinant role in the perception of low performance by the leader,

with higher weight than an eventual positive performance from the same follower(s). Therefore, the main focus here is to ensure less engagement on negative behaviors as possible.

LMX extreme levels, high and low, are directly linked to the presence or absence of counterproductive behaviors. High LMX levels make followers feel in debt with the leader and correspond with good performance in a virtuous cycle. Low LMX levels, on the opposite, lead followers to feel depreciated, and they tend not to contribute to the goals in a vicious cycle mode. At this point, it is valid calling attention to the fact that, in LMX, reciprocity is an essential element, as actions from one of the parties lead to the expectation to receive a compatible counteraction in exchange. This effect also acts motivationally, making followers tend to meet (or overcome) the leader's demands.

Consequently, it is possible to observe that low LMX relationships can be compared with transactional leadership as it is based mainly on economic exchanges conditioned to tasks completion. High LMX relationships, however, can be compared with transformational leadership as both foster to explore the potential of followers to outperform and to elevate themselves to a higher level of skills and motivation. In this context, exchanges are more social and bring an implicit mutual sense of obligation with the other part (Graen, G. B., & Uhl-Bien, M., 1995; Martin et al., 2016).

## ***Leadership Styles' Singularity vs. Intersectionality***

My impression from the research on the various leadership theories taken as support for this study is that, although the several leadership theories present specific differentiators, some of the characteristics of each leadership construct are influenced by other(s). These characteristics may positively influence and suit those other approaches they apply as contributors.

Brown et al., for example, studied the “Moderating effect of Servant Leadership on Transformational, Transactional, Authentic and Charismatic leadership” (Brown, Marinan, & Partridge, 2020) and found statistical relevance in the interaction between servant leadership and the other leadership styles, especially for transactional leadership, by exploring and finding how low, medium or high levels of servant leadership adoption would interact with these four other leadership constructs based on ten individual attitudes and behaviors:

    affective commitment, normative commitment (Drury, 2004), leader-member exchange (Barbutto & Hayden, 2011), supervisory trust (Joseph & Winston, 2005), perceived organizational support (Yildiz & Yildiz, 2015), turnover intentions (Babakus et al., 2010), promotion regulatory focus, prevention regulatory focus (Neubert et al., 2008), job satisfaction (Drury, 2004), and work-life balance (Zhang et al., 2012). (as cited in Brown, Marinan & Partridge, 2020, p. 68)

Mcshane and Glinow (2013) highlighted the difficulties in distinguishing charismatic and transformational leadership, which led some researchers to mention both constructs as if they were the same or part of the same theory (as cited in Reis Neto, Nélia de Araújo, & Avelar Ferreira, 2019). This effect perfectly matches the

findings from Bass (1985), who, when studying leadership in military and industrial environments, observed various elements of charisma in the transformational leaders' descriptions by their followers.

Another particular interesting relationship is observable between transformational and transactional leadership styles: both are seen as complementary styles towards performance. We can see this relationship from Rowold and Heinitz, who described that "(...) transformational leadership augmented the impact of transactional leadership on subjective performance (Rowold & Heinitz, 2007, p. 121)" (as cited in Jelača, Bjekić, & Leković, 2016, pp. 553-554). Nevertheless, they also mention that "transformational leadership had an impact on profit, over and above transactional leadership (Rowold & Heinitz, 2007, p. 121)" (as cited in Jelača, Bjekić, & Leković, 2016, p. 554). Jelača et al. (2016) defend, after all, that an appropriate combination of both styles, Transformational and Transactional, depending on the situation, may be the most effective way to lead to effective leadership. Going one step further on comparing the interconnection between transactional and transformational leadership, Martin et al. contribute with a correlational factor between them by pointing out that:

"LMX is both transactional and transformational. It is a dyadic social exchange process that begins with more limited social 'transactions' (e.g., transactional leadership), but for those who are able to generate the most effective LMX relationships, the type of leadership that results is transformational." (Martin et al., 2016, p. 239).

Additionally, as situational guidance on how to implement one leadership construct rather than the other, Jelača et al. (2016) propose that, based on factors as the levels of uncertainty and demand for innovative initiatives, companies can target more transactional leadership behaviors for less uncertain environments – the ones which present less demand for innovations – and, as the opposite, to target more transformational leadership behaviors for more uncertain and innovative demanding environments. This proposal reveals the critical consideration of the environment in which leadership is applied and its influence on choosing a given style over others or even how to combine elements from those different styles.

When exploring in more detail the phenomena of the commonalities between different leadership styles, there are important distinctions between them that bring crucial highlights to be taken into consideration to avoid just mixing them up as if they were all coming from the same essence. This need is pointed out by Owens and Hekman (2016) when they compare the mechanisms and path based on which leader humility present in humble leadership influences team performance distinctly than the process which links transformational leadership to team performance. While leader humility reaches team performance through collective humility and collective promotion focus, both aspects are not observable in the path from transformational leadership to team performance. Their comparison reveals us that, although both constructs reach team performance as the common outcome element, they do it from different bases, mechanisms, and paths, and this is expected to bring some differentiation not only on the level of results achieved but also in surrounding elements and effects depending on

each approach. Similarly, although the different constructs converge in some aspects, there are essential limiting factors that make leadership tend predominantly to one construct rather than the others as are, for example, the uncertainty level of the environment, its innovative requirements, and cultural characteristics as the previously mentioned team power distance.

### ***Research Proposed Focus on Transformational Leadership***

Considering all the explored and mentioned aspects of the different leadership constructs as summarized in Table 1, as well as the environmental context in which this study is proposed to be developed, of a dynamic, high-pressure, results-oriented in a fast pace mode environment as described in Chapter 1: Introduction, I see transformational leadership as the most recommendable leadership construct for the presented scenario. I will, therefore, base this research's efforts on validating the effects of transformational leadership on the perceived team's performance by the leader.

Furthermore, special attention is needed to the definition of the sampling population to be observed in the study by considering the contextual elements that can exert resistance or support to the adoption of certain leadership styles – transformational leadership, in our case.

The level at which an organization is more susceptible to embracing transformational leadership can be evaluated in several ways. First, by its emphasis on efficiency (less susceptible to embrace changes and, therefore, to the transformational

approach as well) or adaptation and flexibility orientation (more open to adopting the transformational approach and changes in general). Also, by its way of interacting and adapting to environmental contingencies (isolation of its core to external disturbances or usage of boundary-spanning units). Another way is looking how the company is organizationally structured (e.g., machine bureaucracy, professional bureaucracy, divisional structure, simple structure, adhocracy) and the modes of governance, based on which the balance of individual's self-interests and collective interests is managed (Pawar & Eastman, 1997).

As a member of the automotive industry, the company adopted as the object of analysis of this study is mainly characterized by focusing on efficiency and attaining consolidated and validated processes and procedures (e.g., Just-in-time, Total Quality Management, Total Productive Maintenance). Therefore, there is limited openness to adaptability and experimentation of new ways of doing things. This situation could result in an organizational rejection to the adoption of transformational behaviors.

Despite that, one exception to this rule is observable in companies' Research and Development departments from this same industry, as they focus on innovation and new solutions. Therefore, while they have to obey certain established standards and rules in their work, the nature of their work requires them to keep open and willing to embrace constant change needs.

Based on this fact, this study proposes to focus on the area of Research and Development of the company, where transformational leadership behaviors are most likely to be observed. At the same time, it is not intended to cover manufacturing and

production teams, as the manifestation of transformational behaviors will be naturally less present, if not absent at all.



**Table 1 – Leadership styles and similarities with transformational leadership**

<b>Leadership style</b>	<b>Main characteristics</b>	<b>Negative aspects</b>	<b>Similarities with transformational leadership</b>	<b>Reference authors</b>
Authentic	authenticity, transparency leading to trust, predictability	not necessarily means caring about the development of others	authenticity, transparency, trust	Brown et al. (2020) Avolio BJ & Gardner WL (2005)
Autocratic	centralized decision-making power	no concerns about team development; perception of inequity, and lack of consideration by the team	coordinated focus on goals	Schoel et al. (2011) De Hoogh et al. (2015)
Charismatic	charisma, inspirational following, positive attitudes, emotional involvement with the leader	not necessarily leads to an individual or organizational development	inspirational following, positive attitudes, emotional involvement with the leader	Brown et al. (2020) Shao et al. (2016)
Ethical	values-based, leader as a role model, interpersonal relationships	may present conflicts when integrating different cultures at the same team	trustworthy environment, idealized influence	Brown et al. (2005) Brown & Treviño (2006)
Humble	leader humility, self-awareness of own weaknesses, appreciation of others' contributions, and openness to learning from others	it can be seen as a weakness by the followers in environments with a high level of power distance	a certain level of humility, appreciation of others' contributions, and openness to learning from others	Owens & Hekman (2016) Schein & Schein (2018) Vázquez Jr. (2020)

<b>Leadership style</b>	<b>Main characteristics</b>	<b>Negative aspects</b>	<b>Similarities with transformational leadership</b>	<b>Reference authors</b>
Laissez-faire	referred as non-leadership, as the leader assumes a passive and reactionary “firefighting mode”	losing importance as it is a passive and ineffective style, no transactions nor agreements with followers	a certain level of autonomy to followers	Jelača et al. (2016) Yang (2015)
Servant	autonomy is given to followers, and the leader acts as a remover of obstacles only	it depends on the maturity of the followers to succeed	a certain level of autonomy to followers, leader removing obstacles	Liden RC et al. (2008) Smith et al. (2004)
Transactional	target accomplishment/reward approach, suitable for stable business with well-established routines	individuals lack a vision of higher-level outcomes, limited individual and organizational development	a certain level of reward to followers	Bass (1997) Howell et al. (2005)
Transformational	leader orientation toward followers’ individual development, shared vision of future, individual focus on the collective cause, extra effort, increased motivation, significant accomplishments	can generate narcissistic tendencies in leaders and dependency on followers	-	Bass (1985) Walumbwa et al. (2008)

## ***Teams and Team Performance***

In order to map team performance, we must define a team first. Based on the concept from Brannick et al. (1997), we have that a team is composed of two or more persons who perform a set of tasks to achieve common goals. Their interaction is supposed to be done under a certain level of coordination, which means that the team makes adjustments and arrangements to reach the goals despite unexpected jeopardizing events. Such interactions between team members can be of three types. One is simultaneous, with different tasks being done in parallel by different team members. Alternatively, they can be sequential, when one team member depends on the deliveries from another team member(s) to add his contribution. Finally, there is also the possibility to have a combination of both. Teams distinguish themselves from the general definition of group because they tend to have a history and a future. Teams' setup is usually done considering team members who exert distinct specific functions and have specific knowledge and skills. However, there are also teams whose members are selected from the perspective of presenting a broad spectrum of skills or trained to develop to this condition and can act in the different functions in the team indistinctively, as an attempt to better support the target achievements without the bottleneck effects due to the limited specialized resources.

With these definitions in mind, we can now advance to the definitions of team performance and the proposed approach in this study. Team performance can be assessed under some different approaches. For example, the proposed tridimensional

approach by Brannick et al. (1997) takes into consideration individual performance, team performance, and organizational performance. Considering the surrounding conditions of the teams in question – including, but not limited to the characteristics of the company, characteristics of the market, new disruptive technologies being introduced, and other external factors –, constraints and general purpose of this study of mapping business results from teams performing under the influence of transformational leadership, I will focus only on the dimension of team performance and assess it under the subjective point of view of the leader, who is primarily responsible for the targeted results to the organization. Objective measurements were discarded because it would represent one additional challenge to make them comparable between the different identified teams with different focuses and because efficacy is commonly agreed to be a more subjective perception. This approach is in line with the one proposed by Walumbwa et al. (2008), in which subjective measures of team performance were adopted as the best evaluation method to avoid specificities of each organization, which would have made inviable the proper setup, collection, and comparison of data, also because, in general, performance evaluation is got from managerial rating. Just as a reference, the Cronbach's Alpha reliability score for this method was calculated as 0.96 in the study from Walumbwa et al. (Owens & Hekman, 2016).

## ***Research Question and Model Proposal***

Based on the described goal of demonstrating how transformational leadership can potentially impact the perceived team performance assessed from the point of view of the leader and considering the points explored in the conceptual development of the elements related to this study proposal, the proposed research question is:

- What is the impact of transformational leadership on team performance?

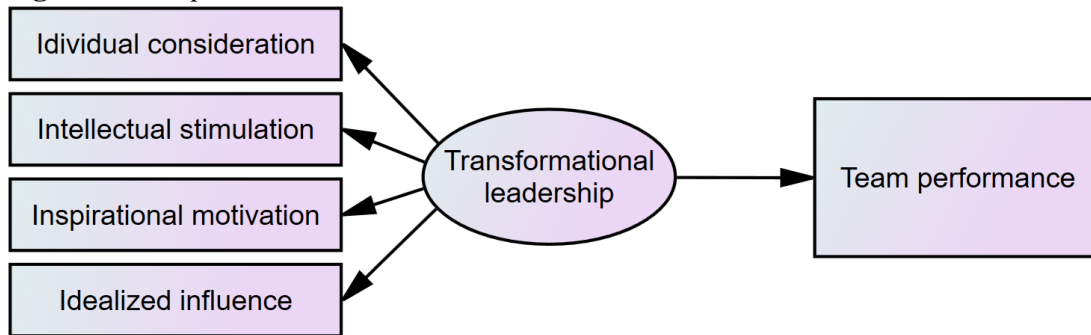
As this study intends to be exploratory research on the relationship between transformational leadership and team performance and map to which degree the first can drive the second, the subjective measure of team performance as the perceived team's performance by the leader was chosen as the dependent variable. It was proven to be the best approach to avoid the non-desirable effects of common method bias, as highlighted by Vazquez Jr. when mentioning the methodology used by Owens and Hekman (2016) (as cited in Vazquez Jr., 2020). In addition, the independent variable in consideration will be transformational leadership, assessed from its four main behaviors: 1) individual consideration, 2) intellectual stimulation, 3) inspirational motivation, and 4) idealized influence (Barling et al., 2011; Bass, 1999 as cited in Dóci & Hofmanns, 2015). These will be cross-checked against the perceived team's performance. The idea is to determine to which degree the team's perceived elements

of transformational leadership influence their outcomes as results, measured as perceived team's performance under the leader's point of view.

In line with the above, the proposed model for the research is as follows in

Figure 1:

**Figure 1 - Proposed research model**



# Chapter 3: Methods

## *Introduction*

In the previous chapter, I had explored various leadership styles based on the mentioned literature, identifying their main characteristics, similarities, and differences. I also described the concept of team performance as the basis for the definition of one of the most important parameters to be treated in this research – it is needed to highlight the subjective proposed measurement of this element based on the perception and assessment of the leader, which will support the quantitative research method to be detailed along with this chapter.

The literature review led to a reflection on the recommendable applicability of different leadership styles based on the context in which this research is proposed, the relationship of interconnection or differences with other leadership constructs, and its academic relevance. This reflection led me to converge to transformational leadership as a focus of this research as a more holistic style because of its characteristics and congruence with the environment of the study, its shared elements in comparison with other constructs, and its increasing academic relevance in the last years. A summary of the representativeness of transformational leadership compared to the other described leadership approaches is detailed in Table 1.

The literature review chapter was concluded with the proposed research question and model, illustrating the guidelines to be followed in this dissertation, and having as the main focus measuring the influence of transformational leadership, via

its main behaviors, for instance, individual consideration, intellectual stimulation, inspirational motivation, and idealized influence, on team performance measured subjectively from the perspective of the leader.

In the following sections, I will detail the methods applied in this research, providing the master guidelines based on which the data collection and processing were managed at the organization selected to conduct this study.

### ***Research Viability and Feasibility***

The feasibility of the herein proposed study is based on the availability of vast material about the different leadership types and styles, their characteristics, and consequences, in addition to the possibility of accessing leaders and team members from the different sub-organizations belonging to the Research and Development structure from company “AutoParts”<sup>1</sup> in Mexico.

This study adopted scientifically validated instruments already developed and proved in studies about leadership and perceived team performance.

---

<sup>1</sup> At this point and in the entire document the company is identified as “AutoParts” due to confidentiality reasons.



## ***Proposed Scope***

This study considered the interactions between leaders and teams from the different sub-organizations belonging to the Research and Development structure from company “AutoParts” in Mexico, as mentioned previously. In parallel to the departmental hierarchical organizational setup (including indirect functional reporting lines), company “AutoParts” also has the presence of matrixial leadership set up in projects. Nevertheless, it is important to highlight that this study considered its unity of analysis – team level – focused only on the departmental hierarchical organizational setup.

The proposed research had not foreseen specific interventions or changes in how company “AutoParts” deals with leadership. Instead, it intended to provide insights based on the research results, especially on promoting specific behavioral aspects related to transformational leadership values from leaders and, consequently, improving team performance accordingly.

## **Subject of study**

The subjects of this study were, from one side, the team members, who assessed the transformation leadership level of the team's leader, and, on another side, the leaders, who assessed the team performance.

Although team members can be seen from an individual dimension perspective, for this study, their individual contributions – for both performance outcomes and

perception of the level of transformational leadership demonstrated by the leader – were aggregated according to the smallest organizational structure they belong to, at least composed of one leader and four team members, and evaluated as a collective contribution. It is important to highlight that, due to the regulations from the company which supported this research, teams with less than four team members were not taken into consideration.

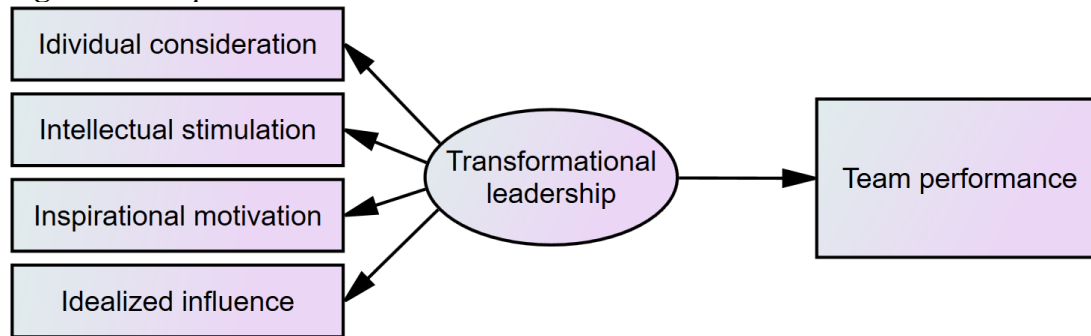
### **Object of study**

The object of the study was the perceived team's performance by the leader, considering its relation with the level of elements from transformational leadership recognized by the team in the leader, well described in Appendix A: Survey with Question Background.

### ***Proposed Causal Model***

Based on the previously described conclusions from the literature review chapter, I came to the following proposed causal model, which suggests that transformational leadership, via its four main behaviors, influences team performance as a subjective perception from the respective leader:

**Figure 2 - Proposed causal model**



The design of this research implied exploring the levels through which the model related to transformational leadership and its elements (individual consideration, intellectual stimulation, inspirational motivation, and idealized influence) conduce to team performance outcomes. The development of this model was influenced by the transformational leadership concepts from Barling et al. (2011) and Bass (1999) (as cited in Dóci & Hofmanns, 2015) and the need to understand better the influence of transformational leadership on team performance in the environment of engineering development of products for the automotive industry.

## ***Overview of Research Design and Procedures***

The quantitative research method adopted employed a survey design using available validated scales. This research focused on the Mexican subsidiary of a global automotive company, specifically on its division dedicated to developing electronic modules for the automotive industry in the Research and Development sub-

organization. It reached a sampling universe of 75 teams from various departments in the organization mentioned above, containing, at minimum, one leader and four team members each. A formal approval by the organization to allow the study to be applied to their leaders and respective team members was obtained (please refer to Appendix B: Employer Acknowledgment Form and Appendix C: Consent Form for Survey Research for further details).

It was used an electronic survey composed of the questions from:

- 1) the instrument MLQ-5X (Bass & Avolio, 1990 as cited in Owens & Hekman, 2016) for measuring transformational leadership characteristics of the leader, and
- 2) a subjective measure of team performance, adapted from the leader rating questions used in Owens and Hekman (2016), as adapted from Malumbwa et al. (2008) (as cited in Vazquez Jr., 2020)

The unit of analysis is at the team level, whereas a team is defined as a “group of personnel who (1) formed the smallest functional unit in the organization, (2) reported directly to the same supervisor, and (3) worked together on a permanent basis” (Van der Vegt & Janssen, 2003, p. 736 as cited in Vazquez Jr., p. 53). Therefore, it is important to highlight again that this study considered the smallest functional unit composed of at least one leader and four team members in the scope of this research.

In this context, the leader is defined as a person who exerts influence, provides direction, guidance, and shared vision, and is overall responsible for the results

expected from the respective team. Depending on the hierarchical type of organization, and in the light of the proposed focus of this study, which considered its unity of analysis – team level – focused on the direct reporting line structure setup, the leader can be referred to as, from a *direct reporting line* structure perspective, a group leader, team leader, lean-agile leader, director, manager, coordinator, supervisor.

To ensure consistency with previous reference studies, I adopted and used the questions related to transformational leadership from the MLQ-5X instrument (Bass and Avolio, 1990 as cited in Owens & Hekman, 2016) and the ones related to team performance exactly as adapted from the leader rating questions used in Owens and Hekman, adapted by its time from Malumbwa et al. (Owens & Hekman, 2016; Malumbwa, F. O., Avolio, B. J., & Zhu, W., 2008 as cited in Vazquez Jr., 2020). These questions were complemented only with a set of initial queries about demographic and organizational data. In the end, it was run based on an electronic survey system (mySurvey, an internal tool of company “AutoParts” similar to SurveyMonkey), designed based on a standard Likert (1932) scale.

The survey was performed as per the following steps:

- Survey design: the MLQ-5X survey questions were taken from the licensed distributor in the English language; the survey questions related to the subjective measurement of team performance were taken in English, as adapted by Vazquez Jr. (2020) from leader rating questions used by Owens and Hekman (2016), adapted from Walumbwa et al. (2018). After that, all questions were set up in an electronic survey

tool (mySurvey, an internal tool of company “AutoParts” similar to SurveyMonkey) for pilot testing.

- Pilot survey questions: In the same way as proposed by Vazquez Jr. (2020), who ran five pilot surveys, eight surveys were administered to test subjects to ensure the survey questions and directions were clear and understandable. The respondents to the pilot survey were selected from the HR department of company “AutoParts” in Mexico (five members), the Research and Development department of a sub-organization and location not covered by this research (one member), the Project Management department from a location not covered by this research (one member) and by my Thesis Director in this research, Ph.D., Francisco Javier Vázquez Jr. Its validation process considered meetings with the respondents to confirm if the questions appropriately reflected the intent of the item. Finally, the surveyors’ feedback was considered to improve the comprehensibility of the questions and to ensure the mitigation of potential risks to the integrity of the required data collection. It is important to highlight that the questions from the reused validated instruments were not changed in any way – only the instructions for a proper survey process and the logic behind the transition of the questions were adjusted based on the collected feedback.

- Identification and recruitment of survey respondents: the directors of the R&D organization in Mexico of company “AutoParts” were approached and consulted about their willingness to have their sub-organizations participate in the survey. Upon welcoming their formal approval, the proper Human Resources (HR) department manager was involved for further authorization and moderation in the process. With

this, 1779 employees (including leaders) from Mexico’s regional R&D organization were eligible as potential participants. However, the final selection of participating teams was made in line with the strategy of HR for the team climate and performance evaluation for the year 2022, which focused on leadership behaviors. A sampling universe of 75 teams from various organization departments from internal R&D organization was considered, containing, at minimum, one leader and four team members each – please see the details of selected teams in Table 2 below. Nevertheless, the approached team members were free to individually decide whether to be or not to be part of the study at any time during the process (at the survey level, they were explicitly explained this). In addition, the survey system blocked their identity, so there was no possibility of individual identification. Although this is in line with the strategy of this research of adopting teams as the unit of analysis, it also prevents the researcher from accessing the individual raw data, making it impossible to perform some within-group analysis focused on individual responses.

**Table 2 – Invited participants and valid participants distributed by Business Area**

<i>Business Area</i>	<i>Quantity of teams invited</i>	<i>Quantity of valid teams</i>	<i>Quantity of team members invited</i>	<i>Quantity of leaders invited</i>	<i>Quantity of valid team members</i>	<i>Quantity of valid leaders</i>
<i>E*</i>	10	10	190	10	69	10
<i>G*</i>	5	3	30	5	16	3
<i>ES*</i>	3	3	25	3	18	3
<i>D*</i>	8	5	78	8	26	5
<i>S*</i>	18	15	169	18	101	15
<i>Y*</i>	16	16	165	16	104	16
<i>X*</i>	15	12	191	15	79	12

<i>Business Area</i>	<i>Quantity of teams invited</i>	<i>Quantity of valid teams</i>	<i>Quantity of team members invited</i>	<i>Quantity of leaders invited</i>	<i>Quantity of valid team members</i>	<i>Quantity of valid leaders</i>
<i>Total</i>	75	64	848	75	413	64

\* For confidentiality, pseudonyms were used.

- Questionnaire administration: final surveys were applied to the recruited personnel via an electronic survey tool (mySurvey, an internal company “AutoParts” tool similar to SurveyMonkey). I kept tracking the advances of the response rates twice a week, at least, to properly follow up with the leaders, in case it was needed, to ensure completion of data collection with the minimum required of five responses for each team. This approach helped ensure low desertion rates and a high level of achievement of the minimum required responses from the teams onboard on the initiative (85.3% of the invited teams were converted to valid teams for the study).

Details on the measures and scales are described in Appendix A:

It is important to consider the findings from Vazquez Jr. (2020) that:

An added limitation could be related to the high percentage of respondents (40.56%) dropping from the study upon starting the survey process—55% of the 215 respondents started the survey and did not conclude the process. They interrupted the process when they were requested to supply their organization, leader, or team name. This situation happened despite the confidentiality statements given in the email invitation and survey introductory information. (pp. 127-128)

Following his recommendation that “Future research should consider other invitation processes that could ensure individuals feel safer when supplying such identification details during the survey process.” (p. 128), the invitation process was adapted. It was defined, in cooperation with the HR department, the preliminary



identification of the elected teams, so the invitation for the survey was created and distributed to the already defined teams as pre-defined groups in the survey tool in a way that the respondents were not requested to provide any information that may make them feel unsafe about confidentiality. Additionally, a meeting with the leaders of teams joining the initiative explained the research, the targets, and how the survey would be run.

### ***Recruitment of Research Sample***

In the following sections, I will detail the sample which was part of the study, how sub-organizations were invited to join the study, and the recruiting processes of the respondents.

### **Survey sample**

#### Participants' contact and consent

As previously mentioned, the potential teams and leaders were recruited based on my company network connections in Mexico's regional R&D organization and facilitation by the HR department. The matching process between leaders and their respective teams was created based on the predefined participant teams, moderated with company "AutoParts"'s HR department, and the survey distribution was done based on the previously identified team unit level. By doing so, the correspondent leader and team members are known by the moment the survey is distributed, and each team was part of its single survey module in the survey system, with no need to ask

respondents to answer questions about their team and leaders' names, cost centers, nor unique project identifiers (DG-number). Additionally, it is important to mention that no reward was offered to the participants.

#### Inclusion criteria

Eligible teams and departments which belong to the Research and Development internal structure of the company "AutoParts" in Mexico were considered for this study.

As the leadership set up in projects of organization "AutoParts" is matrixial, in which the projects are led by a project manager who receives temporarily "borrowed" resources during the needed time to have the resulting product developed and validated at all levels, this study considered its unity of analysis – team level – focused on the departmental hierarchical organizational setup, and not the matrixial setup.

The seven sub-organizational units which decided to participate in the study had their names encoded to preserve the confidentiality of the data obtained. They were named based on the acronyms E, G, ES, D, S, Y, and X. From those different sub-organizational units, 75 teams were elected to join the study, in agreement with the correspondent line management and HR department from the company "AutoParts".

#### Exclusion criteria

In principle, this study did not consider teams outside of company "AutoParts" in Mexico, and the teams and departments considered are no other than the ones belonging to the Research and Development internal structure.

Out of the 75 invited teams, 11 were discarded from the study during the execution phase due to their inability to attend to certain required data integrity criteria described in detail in the subsequent section Data preparation and cleansing. Therefore, 64 teams remained valid for the scope of this study and are further considered for the analysis in the following chapters.

Finally, this study is not conceptualized to result in any practical implementation of changes or improvements, but instead to provide insights that can help the organization develop an awareness of the transformation leadership value for team performance.

#### Data preparation and cleansing

Although there is a differentiation in the questions in the survey applied to leaders and team members, all the survey responses were integrated into the dataset at the team-level unit of analysis from the survey tool itself. So each report from the team unit level extracted from the survey tool provided one single set of responses evaluating the team's performance and as many responses evaluating the leader's transformational leadership behaviors as the number of participating team members.

As summarized in Table 2, 848 team members and the corresponding 75 leaders were invited to the study, from which 413 individuals (including the 64 leaders from the valid teams which remained at the end of the survey period) effectively and completely answered the survey. Of those, 48 (11.62%) individuals were female, 363 (87.89%) were male, and two (0.48%) declared themselves as belonging to another sexual orientation or preferred not to answer. Regarding the self-ethnic classification,

398 (96.37%) individuals declared themselves as Hispanic or Latino, 18 (4.36%) declared themselves as White or Caucasian, and eight (1.94%) individuals preferred not to answer. The age ranges were distributed mainly between 25-34 years old (241 individuals representing 58.35%), followed by the range 35-44 years old (123 individuals representing 29.78%), having the range of 18-24 years old in third place (25 individuals representing 6.05%), the range of 45-54 years old in fourth place (21 individuals representing 5.08%) and finally the age range of 55 plus being represented by three individuals (0.73%).

Some of the invited teams or team members were discarded from the study during the survey execution phase due to different reasons, detailed below:

- One (1) whole team data was discarded from Business Area D due to a mistaken response by its leader as a team member – it was not possible to fix it in the tool, as it would endanger the integrity of confidentiality of the responses, and this is not technically feasible from the survey tool.
- Two (2) whole team data were discarded from Business Areas G due to a mistaken response by at least one team member from each of the teams who responded as the leader – there were two answers as leader of the team, and it was not possible to fix it in the tool, as it would endanger the integrity of confidentiality of the responses, and this is not technically feasible from the survey tool.

- One (1) whole team data was discarded from Business Area S because the leader went on maternity leave before answering the survey, so the team data is no valid without the answers from the leader.
- One (1) whole team data was discarded from Business Area D because there was a technical issue in the launch of the survey specifically for that team which made that the logic behind the sequence of the questions was not present in the distributed surveys, and all team members answered all questions in the survey, including the ones specific to the leader.
- Six (6) whole team data were discarded from Business Areas D (1), S (2), and X (3) because they failed to fulfill the minimum requirement from the survey system to achieve five (5) responses.

### ***Procedure for the Development of Study Survey***

A quantitative survey was developed to operationalize study variables at the team level, as directed by the proposed model in Figure 2. As shown in Table 3, all the questions were sourced from previously validated instruments, well documented in Appendix A: Survey with Question Background, and reassessed in the scope of the current study, with results presented in the Chapter 4: Findings and Results.

**Table 3 – Survey Questions**

<b>Question Numbers</b>	<b>Description</b>
ID-1 to ID-8	Demographic and team background
SMTP-1 to SMTP-4	Subjective measure of team performance, from Owens and Hekman (2016) as adapted from Walumbwa et al. (2008) (as cited in Owens & Hekman, 2016)
II-A-1 to II-A-4	Idealized influence attributed from Bass and Avolio (1990) (as cited in Owens & Hekman, 2016)
II-B-1 to II-B-4	Idealized influence behavior from Bass and Avolio (1990) (as cited in Owens & Hekman, 2016)
IM-1 to IM-4	Inspirational motivation from Bass and Avolio (1990) (as cited in Owens & Hekman, 2016)
IS-1 to IS-4	Intellectual stimulation from Bass and Avolio (1990) (as cited in Owens & Hekman, 2016)
IC-1 to IC-4	Individual consideration from Bass and Avolio (1990) (as cited in Owens & Hekman, 2016)
F-1	Request for questionnaire feedback

Considering the demographic, team background information, and survey feedback questions, eight scales containing thirty-three questions were included in the survey. Team members were requested to answer twenty-nine questions (ID-1 to ID8, II-A-1 to II-A-4, II-B-1 to II-B-4, IM-1 to IM-4, IS-1 to IS-4, IC-1 to IC-4, and F-1), and team leaders were requested to answer thirteen questions (ID-1 to ID8, SMTP-1 to SMTP-4, and F-1). Team members exclusively answered the sections related to their leaders' assessment of transformational leadership behaviors. Finally, the team leader exclusively answered the questions related to team performance assessment.

All the questions from the already validated scales from previous studies were available in English and were used in their original form without translations. Finally,

a survey version showing the entire set of questions with complete text can be viewed in Appendix A: Survey with Question Background.

### ***Team Level Variables***

The procedure to calculate team-level variables was adapted from Norcross (Norcross, 2018 as cited in Vazquez Jr., 2020). This study employed a systematic process to calculate team-level data for all variables. First, a relationship between respondents and their leaders was obtained directly from the internal survey tool from company “AutoParts” in the design of different invitation modules<sup>2</sup>. One invitation module based on the same survey was set up for every team, composing teams containing at minimum one leader and four team members, as per the requirements of minimum team size from the internal survey tool from company “AutoParts” to allow data reporting. Second, a composite scale score was created within the survey tool for each item on the survey by computing the average of the individual responses for that scale. Third, a team score was created for each item in the study. Finally, the survey tool calculated the average of the different answers for that composite scale from the individuals on the designated team in the previous step, and this was the output from the tool in its reporting modules for each invitation module (team). Besides, all the sub-organizations, teams, and leaders’ names are inaccessible from the tool, ensuring

---

<sup>2</sup> One invitation module was created for every team joining the study in a way that, at the time of the invitation, all individuals being part of one specific team are identified as team members, including its leader, even if their individual identity is kept in secret. Then, an invitation process was done directed to that team, with specific instructions for the leader and team members on their expected path in the survey as leader or team member. The responses from survey were consolidated at team level directly from the survey tool by the usage of these separate invitation modules for each team as main mechanism.

confidentiality but, at the same time, preventing access by the student researcher to the raw data from each individual.

A one-way ANOVA analysis would be required in this study to check for the proper variance and, therefore, statistical robustness and representativeness from the data obtained from the survey responses. However, it is not possible to have this analysis performed as the survey system from company “AutoParts” do not give access to the individual raw data from all the respondents of the survey. Its outcomes are based on the team level, composed by, at least, one leader and four team members. Thus, it is impossible to check within groups variance, the respective  $F$  value, and the statistical significance. The consequence is that the analyses and conclusions from the rest of this study are relevant and reflect the reality of the participating teams from company “AutoParts”, but cannot be generalized to other teams, even in the same company. The outcomes, however, can bring light to some other interesting highlights which can serve as input for a continuation of this research or future research related to transformational leadership and its direct or indirect influences on the performance of teams.

### ***Operationalization of Variables, Scales Relation, and Factors***

I describe the procedures for operationalizing all study variables in the following sections. First, it is important to mention that, due to the observable similarities between the current study and the one from Vazquez Jr. (2020), although considering different leadership constructs as focus, the following methodological definitions are mostly reused and adapted from Vazquez Jr. (2020).



As a first step, there is the need to perform the unidimensionality assessment to check if a single scale dimension can represent the four items from every single original scale. The procedure followed by Vazquez Jr. (2020) is reproduced here by using the verification that the eigenvalues of one dimension representing all the scale items are higher than one. This verification was done for all the scales related to transformational leadership and the scale measuring team performance through a factor analysis considering the method of Principal Component Analysis. The results confirmed the unidimensionality of each scale. It is important to mention that this verification was done based on the consolidated data at the team level unit of analysis, as individual responses were unavailable from the company “AutoParts” survey system, as previously described.

Then, a Cronbach’s alpha test was performed to check for consistency and reliability, in the same way as proposed by Vazquez Jr. (2020). However, a one-way ANOVA analysis was impossible due to data available only at the team unit level (raw individual responses are unavailable). Further implications of it will be detailed in the next chapter, dedicated to the findings and results of the present study.

The details and results of the verification of dimensionality based on Eigenvalues and Cronbach’s alpha test are presented in Chapter 4: Findings and Results.

Finally, an intercorrelation verification was done to check for multicollinearity issues, and the alternative solution of adopting a single factor composed of elements from the different elements of transformational leadership is proposed to handle the

highly correlated levels found between the five elements of it as per the MLQ 5X instrument.

## **Operationalization of variables**

### Transformational leadership scales

#### Idealized influence

Idealized influence was defined with eight items by Bass and Avolio (1990, as cited in Owens & Hekman, 2016), split between idealized attributes and idealized behaviors (four questions each). Measures were scaled to a 5-point Likert scale (Frequently, If not always=4, Fairly often=3, Sometimes=2, Once in a while=1, Not at all=0) and calculated by composing the variables by computing the average of the scales and then computing the mean value at the team level for aggregation purposes for each item. Idealized attributes and idealized behaviors were kept as individual scales as per the design of the MLQ-5X instrument (Avolio & Bass, 2004). Avolio and Bass' (2004) comparison reported reliability scores for Idealized Influence for the US, Europe, Oceania, and Singapore from its international normative samples ran in multiple countries and groups (Avolio & Bass, 2004). The reliability obtained from this study is summarized in the table below:

**Table 4 - Reliability reference values for Idealized Influence**

<b>Idealized Influence type</b>	<b>US</b>	<b>Europe</b>	<b>Oceania</b>	<b>Singapore</b>	<b>This study</b>
Attributes	.75	.72	.73	.75	.883

<b>Idealized Influence type</b>	<b>US</b>	<b>Europe</b>	<b>Oceania</b>	<b>Singapore</b>	<b>This study</b>
Behaviors	.70	.67	.73	.73	.851

#### Inspirational motivation

Inspirational motivation was defined with four items by Bass and Avolio (1990, as cited in Owens & Hekman, 2016). Measures were scaled to a 5-point Likert scale (Frequently, If not always=4, Fairly often=3, Sometimes=2, Once in a while=1, Not at all=0) and calculated by composing the variables by computing the average of the scales and then computing the mean value at the team level for aggregation purposes for each item. The comparison of Avolio and Bass' (2004) reported reliability scores for Inspirational Motivation for the US, Europe, Oceania, and Singapore from its international normative samples ran in multiple countries and groups (Avolio & Bass, 2004), with the reliability obtained from this study is summarized in the table below:

**Table 5 - Reliability reference values for Inspirational Motivation**

<b>US</b>	<b>Europe</b>	<b>Oceania</b>	<b>Singapore</b>	<b>This study</b>
.83	.82	.83	.79	.903

#### Intellectual stimulation

Intellectual stimulation was defined with four items by Bass and Avolio (1990, as cited in Owens & Hekman, 2016). Measures were scaled to a 5-point Likert scale (Frequently, If not always=4, Fairly often=3, Sometimes=2, Once in a while=1, Not at all=0) and calculated by composing the variables by computing the average of the

scales and then computing the mean value at the team level for aggregation purposes for each item. The comparison of Avolio and Bass' (2004) reported reliability scores for Inspirational Motivation for the US, Europe, Oceania, and Singapore from its international normative samples ran in multiple countries and groups (Avolio & Bass, 2004), with the reliability obtained from this study is summarized in the table below:

**Table 6 - Reliability reference values for Intellectual Stimulation**

US	Europe	Oceania	Singapore	This study
.75	.75	.78	.72	.915

#### Individualized consideration

Individualized consideration was defined with four items by Bass and Avolio (1990, as cited in Owens & Hekman, 2016). Measures were scaled to a 5-point Likert scale (Frequently, If not always=4, Fairly often=3, Sometimes=2, Once in a while=1, Not at all=0) and calculated by composing the variables by computing the average of the scales and then computing the mean value at the team level for aggregation purposes for each item. The comparison of Avolio and Bass' (2004) reported reliability scores for Inspirational Motivation for the US, Europe, Oceania, and Singapore from its international normative samples ran in multiple countries and groups (Avolio & Bass, 2004), with the reliability obtained from this study is summarized in the table below:

**Table 7 - Reliability reference values for Individualized Consideration Stimulation**

US	Europe	Oceania	Singapore	This study
.77	.70	.76	.78	.838

Outcome variables

Team performance

A measure of team performance was operationalized with four items of a scale used by Owens and Hekman (2016), as adapted from Walumbwa et al. (2008) (as cited in Owens & Hekman, 2016). Each team leader was required to assess their respective team performance objectively. Measures were scaled to a 5-point Likert scale (5 = “Consistently performs way beyond expectations”; 1 = “Consistently performs way below expectations”) and calculated by composing the variables by computing the average of the scales and then computing the mean value at the team level for aggregation purposes for each item. As per Vazquez Jr. (2020) when citing Owens and Hekman (2016), asking the leader reduces the issues of common method bias (Vazquez Jr., 2020). The Cronbach’s alpha for this scale is 0.96 and was calculated as 0.591 based on the dataset of this present study – the value found in this study would represent poor reliability in general, but the usage of the scale is endorsed by the previous studies in which it was used, as the one from Walumbwa et al. (2018), Owens and Hekman (2016) and Vazquez Jr. (2020).

### Control variables

I followed a similar strategy for control variables from Vazquez Jr. (2020), who adopted control variables from studies taken as a reference. I only excluded the organization, as this study was performed in a single company. Nevertheless, gender was kept being asked in the survey to monitor if any influence could be observable on the study results.

Therefore, the control variables were average team size, team member age, and gender. These control variables were operationalized as self-report items on the survey. Controlling for average team size is important because, in earlier studies, it has been found to influence team processes and functions (Cummings, Huber, & Arendt, 1974; Hackman & Vidmar, 1970; Menon & Phillips, 2011 as cited in Vazquez Jr., 2020). Controlling for average team gender (female percentage) in teams is important because previous studies from Eagly, Johannesen-Schmidt, and Van Engen (2003) found that female leaders are more inclined to transformational leadership behaviors than male leaders. Furthermore, although previous findings suggest no correlation between team member age and MLQ results, I monitored it in the proposed research (Eagly, Johannesen-Schmidt & Van Engen, 2003; Bass, Avolio & Atwater, 1996; as cited in Avolio & Bass, 2004).

### ***Research Precautions***

The research precautions discussed below were reused and adapted from Vazquez Jr. (2020), based on Norcross (2018). Although the potential risks of participation are minimal and the organization's top management was invited to assess

and approve the study to be executed under the supervision of the company's human resources (HR) department, every invitation letter indicated that participation was free, confidential, and people could decide to quit the process at any time without any jeopardies to their employment relations. Also, the front page of the survey requested respondents to choose whether to participate freely and reinforced the "no penalty" message for quitting the process. For the ones who decided to participate, care was taken to protect individuals and the confidentiality of their responses, including the freedom to drop out of the study and refuse to answer any questions they may not be comfortable with. Proper care was taken to protect the confidentiality of all employees taking part in the survey. In addition, the organization will only receive reports of the general findings at the team level that cannot be attributed to any particular individual (Norcross, 2018 as cited in Vazquez Jr., 2020).

A central survey system distributed the survey, and the communication with the participating teams was moderated by the HR department instead of by one or several leaders because, although it can increase participation from team members, results can be influenced and inflated (Avolio & Bass, 2004), as participants tend to over evaluate its leaders if invited by them to answer the survey. Avolio and Bass shared that this scenario would inflate MLQ scores by one whole unit as compared to norms (Avolio & Bass, 2004). In addition, the same central survey system allowed for the implementation of some logic running behind the survey, and this feature was used to prevent any response from being kept blank by the respondents, which would affect the completeness of the final assessment of the results.

The survey asked for basic demographic data (age, gender, and ethnicity), and the correlation between individuals, teams, and leaders was done previously to the survey application, during the invitation modules set up in the survey system, in coordination with the HR department of company “AutoParts”. However, as the survey system does not allow access to the raw answers, in absolutely no case is it possible to identify participant information to any party, including the research student.

All the records collected during the study are kept in password-protected, encrypted storage during and after the study. After completing the project, all the data will be transferred to Ph.D. Francisco Javier Vázquez Jr., Professor at the Instituto Tecnológico y de Estudios Superiores de Occidente in Guadalajara, for secure and ultimate disposal after seven years. See the employer acknowledgment form and informed consent documents in Appendix B: Employer Acknowledgment Form and Appendix C: Consent Form for Survey Research for details.

### ***Data Analysis Plan***

This section describes the statistical analysis procedures that will be executed in this study. In Chapter 4: Findings and Results, I will present the results of the causal model under examination. The statistical procedures executed in the chapter are listed below.

#### **Analyzing at the individual response level**

Ensuring that each scale consistently measures a construct requires a test of reliability or internal consistency. The Cronbach’s alpha (1951) test was used to



confirm the scale's reliability because the resulting alpha per group of item scales should deliver a single reliability indicator. A factor analysis was also executed to validate the unidimensionality on each scale toward ensuring that a single variable could be represented by a set of composed and aggregated dimensions (e.g., the aggregated value resulting from the average of several items of a scale). As mentioned previously, an ANOVA test would be required to confirm that the variance per item for each component scale is not close to zero on the between-group level and that similar responses are captured at the within-group level, but it is not possible in this study, as the survey system used do not provide raw individual responses data – it only provides team level responses data if the team reaches a minimum of one leader and four team members. The reliability of each of the six scales was examined by the creators of the related instruments and referred to by the authors in Table 3.

Besides the reliability estimates, it is valuable to compute the measurement error based on the alpha coefficient. As per Tavakol and Dennick, while it is critical to assess that all the values in a test measure the same concept or construct (internal consistency), it is also essential to assess the level of measurement error on a scale. To compute the measurement error, it is only a matter of squaring the alpha of each scale and subtracting the result from 1 to produce the required indicator (Tavakol and Dennick, 2011 as cited in Vazquez Jr., 2020).

## **Descriptive statistics and intercorrelations**

Similarly to the procedures taken by Vazquez Jr. (2020), I calculated descriptive statistics for each scale (standard deviation, standard error, significance). Nevertheless, the main difference in the treatment of the data for these procedures in this study in comparison with the procedures from Vazquez Jr. (2020) is that, here, the raw data of all the individual responses from each survey respondent is not available, as the survey tool from company “AutoParts” only delivers results at team level. The result is that the data used for analysis is, since its origins, already representing the composite data processed, which was one of the steps Vazquez Jr. (2020) performed in his research. On the other hand, not having the individual raw data prevents me from running the analysis of variance within the team considered in the study and prevents the results from being generalized to other teams, even from the same company. One possible alternative to overcome this constraint was generating artificial individual raw data by referencing the number of individuals in each team, the means for each scale from each team, and the corresponding standard deviation. However, it was considered a too artificial process which, although technically valid from a statistical point of view, would compromise the study's credibility by not grounding in real data from the individual respondents.

Besides the above, estimates of internal consistency (coefficient of alpha) for each scale were also computed. Following this, a unidimensionality assessment was done based on each scale to confirm that a single dimension can represent the group of scales of a single variable. Finally, the normality of the data was verified to enable the

selection of a proper method for verifying the correlation between the data under study, whether Pearson, a parametric method usually applied to normal distributed data, or Spearman's Rho, a non-parametric method, usually adopted if there are no presumptions about the data being analyzed (e.g., non-normal distribution, free distribution). As the sample size is larger than fifty, the method used for checking for distribution normality was the Kolmogorov-Smirnov, taking as reference for the verification the p-value threshold value of 0.05 (Rivera, 2019).

### **Creation of team-level variables**

Each participant team, elected in coordination with the HR department from company "AutoParts", comprised a leader and related team members reporting to him. As mentioned before, the teams were defined previously to the application of the survey and grouped in different invitation modules in the survey system so that the teams' inputs could be easily identified at a team unit level right after the survey application process directly in the report section from the survey system. While the respondents assessed the leader's characteristics related to transformational leadership, all the team members evaluated the team-level variables except for the team performance, which was answered only by the team leader. This design feature was defined to help in minimizing the effects of common method variance. As detailed above, the primary statistical analysis was conducted at the team level with aggregated team scores on each variable. In addition to this statistical process, a correlation test was performed for all study variables as a preliminary step in finding potential positive or negative relationships among these variables.

### **Heterogeneity and validity of team data**

The control variables (team size, participant age, and percentage of females in a team) were declared as covariates in each regression process that followed the study. They were taken into account to control and get a clearer view of the predictor variables' role in explaining the outcome variables by reducing the variance attributable to the control variables from the path under analysis. Initially, it was done by considering the combination of the control variables and the aggregated score TL (composed of the average of the scores from the individual components of transformational leadership), then breaking down the analysis to evaluate the contribution of each of the elements from transformational leadership individually. This step was conducted using regression analyses with a step-wise approach.

### **Path and regression analyses**

Path analysis is not the main focus of this research study since the model in use focuses on a single path from transformational leadership behaviors to team performance. Although the best fit definition of the scales in use to measure the elements of transformational leadership was already addressed by Avolio and Bass (2004), as well detailed in their manual for the MLQ instrument, multicollinearity issues found between those elements required some proceedings for defining a new scale as a result of the combination of the five elements. The results of the above-described points are detailed in Chapter 4: Findings and Results.

## **Summary**

In this chapter, a summary of the study methods was detailed. The sampling method's rationale was described, the team level was selected as the analysis unit, and it was also addressed the reasoning behind the recruitment of the research sample. Moreover, it also discussed the process of identifying how the scales will be assessed for reliability, validity, and unidimensionality. The intention was to check and confirm that it was acceptable to create aggregated variables without sacrificing much of the scales' reliability and validity.

The chapter also presented the collected dataset's structure, numbers, and statistics. Finally, it introduced the steps to validate the aggregated variables. Finally, in the next chapter, the findings and results are presented.

# Chapter 4: Findings and Results

## ***Introduction***

In the previous chapter, the description of the methodology and methodological references adopted by this study research was presented as a plan to reach the goals set for this study. In this chapter, we will observe more in detail the results of several analyses of the data collected from the responses of the 64 valid teams considered in this research, well described in Table 2. Finally, it will present the scale reliabilities, descriptive statistics for each variable, dimensionality verifications, and regression analysis.

## ***Quantitative survey results***

In this section, I will describe the reliability tests performed at the level of individual scales in support of the composite and aggregation process performed automatically by the company “AutoParts” survey tool. It is important to highlight again that all the described procedures were done based on data at the team level unit of analysis, as the survey tool from company “AutoParts” does not provide individual raw data.

Secondly, I will describe the descriptive statistics, including a check for normality, and reliability at the team level. Then, the covariates and aggregated predictor variables will be used to check the proposed causality between

transformational leadership and team performance, as illustrated in the model in Figure 2.

### **Reliability and unidimensionality assessments**

Table 8 below lists the number of items per scale. Additionally, Cronbach's alpha estimates of reliability for each scale (including measurement error) and the eigenvalues per scale (expressed as a percentage of variance and extracted via a factor analysis conducted under the principal component analysis scope) are also reported and related to the dimensionality assessment, which shows the percentage of variance explained based on an aggregated single indicator composed by the different individual items per scale. Furthermore, all scales reported in Table 8 resulted in eigenvalues for a single dimension higher than 2.722, fulfilling the Kaiser-Guttman criteria defined as a minimum eigenvalue of 1 (Zopluoglu & Davenport, 2017 as cited in Vazquez Jr., 2020).

While checking for internal consistency, the reported alpha values are in a really good stand, with values varying in ranges higher than .838, indicating that the items in the group are closely related. Remarkably, the alpha values from this study presented stronger reliability than the reference study from which the scales and items were reused, possibly due to the relatively low sampling universe from this study compared to the research from Avolio and Bass (2004).

Finally, when checking the associated measurement errors depicted in Table 8 - Scales Reliability and Unidimensionality Test (n = 413 responses), which for sure do impact the reliability of the data under analysis, we can see that it is in a relatively low

significance range, varying from 0.163 (Intellectual Stimulation) to 0.298 (Individualized Consideration), which do not bring any risk of compromising the results and conclusions of this exploratory research study.

In conclusion, no issues were found related to the reliability and dimensionality of the items and scales in the study, so the subsequent processes can take place with no special concerns.

**Table 8 - Scales Reliability and Unidimensionality Test (n = 413 responses)**

	Items per scale	Study Alpha	Measurement error	Eigenvalues (% of variance)
1. Idealized Influence - Attributes	4	.883	.220	75.438
2. Idealized Influence - Behaviors	4	.851	.276	69.327
3. Inspirational Motivation	4	.903	.185	77.506
4. Intellectual Stimulation	4	.915	.163	80.156
5. Individualized Consideration	4	.838	.298	68.060



### **Impossibility to run ANOVA validation at the item scale level**

An ANOVA test would be required to check that the level of variance per item for each component scale is not close to zero on the between-group level and that similar responses are captured at the within-group level, confirming the presence of variability, which may support the generalization of statistical findings. However, it is impossible to have the within-groups variance verification by not counting on the availability of the raw individual survey responses. Therefore, it is also impossible to perform this step in the study nor to check the respective  $F$  value and the statistical significance.

Despite this, although it is not possible to generalize the results from this study as they reflect only the reality of the participating teams from company “AutoParts”, the outcomes of it can bring to light some other interesting highlights which can serve as input for future research related to transformational leadership and its direct or indirect influences on the performance of teams.

### ***Analysis at the Team Level***

The previously presented data in this section serves us to conclude that the information collected from the 64 different teams, represented by 413 team members and 64 leaders, is complete and reliable enough to serve the purpose of this exploratory research study, especially on the validity of the aggregated presentation of items and scales, as per the possible outputs from the company “AutoParts” survey tool. Based

on this setup, the data will be processed to demonstrate the analyses made at the team level.

In the following subsections, I will detail the outcomes of the descriptive statistics, correlations, and analysis of the aggregated variables.

### Descriptive statistics

Descriptive statistics are developed based on the team-level scores and aggregated scales and are detailed in Table 9 below, considering all the variables used in the survey.

When analyzing the skewness of the data, we can observe a slight inclination to highly skewed behavior of Idealized Influence Attributes to the right side of the score, with a lower value than -1. The remaining variables representing the components of transformational leadership presented themselves as moderately skewed (skewness values between -1 and -.5). Finally, the Subjective Measurement of Team Performance behaved as a symmetric distribution (skewness values between -.5 and .5).

**Table 9 - Descriptive Statistics (n = 64)**

	Scale	Mean	Std. Deviation	Range	Skewness
Idealized Influence - Attributes	1-5	4.0944	.47452	2.22-4.90	<b>-1.042</b>
Idealized Influence - Behaviors	1-5	3.9160	.42934	2.78-4.70	-.541
Inspirational Motivation	1-5	4.0766	.44958	2.44-4.75	-.959
Intellectual Stimulation	1-5	3.9511	.46619	2.44-4.69	-.805

	<b>Likert</b>				
	<b>Scale</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Range</b>	<b>Skewness</b>
Individualized Consideration	1-5	3.9690	.43271	2.34-4.90	<b>-.775</b>
Subjective Measurement of Team Performance	1-5	3.5781	.37500	3.00-4.75	.287

Note: Skewness less than -1 is highlighted in bold font.

Except for the Idealized Influence – Behaviors and Subjective Measure of Team Performance (dependent variable) scales, the other independent variables represent a normally distributed behavior, as shown in Table 10. The method used for the normality check was the Kolmogorov-Smirnov, as the sample size is larger than fifty (Rivera, 2019). The decision criteria for accepting or rejecting the null hypothesis (normal data distribution) was based on the p-value reference threshold of 0.05. The null hypothesis is accepted for p-values higher than 0.05, which means the data are normally distributed. As a result, the fact that there is non-normally distributed data involved in the analysis, especially the dependent variable, will make the student researcher focus on descriptive and non-parametrical analysis rather than inferential and parametric analysis of the data under study.

Besides that, the observable distribution of each variable among the range of possible values leads to an acceptable variance to enable the analysis towards the proposed goal of this study research of presenting the potential causality from transformational leadership to team performance.

**Table 10 – Normality check – Kolmogorov-Smirnov<sup>a</sup> test**

Variables	Statistic	df	Sig.
Idealized Influence - Attributes	0.093	64	<b>0.200*</b>
Idealized Influence - Behaviors	0.121	64	0.021
Inspirational Motivation	0.091	64	<b>0.200*</b>
Intellectual Stimulation	0.083	64	<b>0.200*</b>
Individualized Consideration	0.080	64	<b>0.200*</b>
Aggregated TL (average of TL components)	0.091	64	<b>0.200*</b>
Subjective Measurement of Team Performance	0.161	64	<.001

Notes: \*. This is a lower bound of true significance

a. Lilliefors Significance Correction

Normally distributed items are presented with their significance highlighted in bold font.

## **Scales intercorrelation and factor analysis**

### Intercorrelation between study variables

In Table 11, I share a correlation analysis between the relevant variables from this study. Spearman's rho method was adopted as some of the factors under analysis, for instance, Idealized Influence-Behaviors and Subjective Measure of Team Performance, presented themselves in a non-normal distribution, in addition to the Idealized Influence-Attributes, which was observed in a skewed condition (please refer to the skewness information in Table 9).

The main findings from it are that, although there are very strong direct correlations between the components of transformational leadership (all of them presented positive correlations with Spearman's rho values higher than .75 and statistical significances at the .01 level), it is detectable just weak correlations between

any of these components with the variable measuring team performance. This finding will be better explored in Chapter 5: Discussion and Chapter 6: Conclusion.

**Table 11 - Intercorrelation between study variables (Spearman's rho)**

Variable name	1	2	3	4	5
1. Idealized Influence - Attributes	-	-	-	-	-
2. Idealized Influence - Behaviors	.844**	-	-	-	-
3. Inspirational Motivation	.868**	.859**	-	-	-
4. Intellectual Stimulation	.788**	.820**	.780**	-	-
5. Individualized Consideration	.810**	.793**	.769**	.842**	-
6. Subjective Measurement of Team Performance	0.182	0.140	0.250*	0.156	0.118

n=64. \*\*p<0.01, \*p<0.05 (1-tailed)

Table 18 in Appendix D: Intercorrelation between study variables and control variables shows the correlation between the study and control variables using Spearman's rho method (as skewness was reported for one of the involved scales). It is important to highlight that some control variables were omitted due to the inexistence of responses scoring them. All the available variables will allow us to check the existent correlation and its level compared to the independent and dependent variables.

From the correlation analysis between the study's dependent and independent variables and the control variables, we cannot find moderately strong, strong, or perfect correlations between them. Only some moderated correlation was found, from which I mention due to the relatively high significance achieved, for example, between:

- Female percentage of team members (including the leader) and Subjective Measure of Team Performance (0.336 with  $p < 0.01$ );
- Members who declared themselves as belonging to another sexual orientation (not male or female) and negatively correlated to Inspirational Motivation (-0.301 with  $p < 0.01$ ) and Intellectual Stimulation (-0.291 with  $p < 0.01$ );
- Members within the age range 18-24 years and Individualized Consideration (0.303 with  $p < 0.01$ );
- Members within the age range 45-54 years and negatively correlated to Inspirational Motivation (-0.354 with  $p < 0.01$ ) and Subjective Measure of Team Performance (-0.294 with  $p < 0.01$ );
- Members belonging to the team from 1-3 years and Idealized Influence – Attributes (0.301 with  $p < 0.01$ );
- Members working 50% to 75% of their time for the time under analysis and negatively correlated to the Subjective Measure of Team Performance (-0.328 with  $p < 0.01$ );
- Teams whose more than 90% of their members work in the same facilities and Intellectual Stimulation (0.309 with  $p < 0.01$ ).

### Multicollinearity and factor analysis

As expected, some multicollinearity issues were found between the elements of transformational leadership used in different scales in this study. This behavior was

mentioned by Bass and Avolio (2004) and addressed by researchers by adopting a single factor as an overall indicator of transformational leadership, as in the case of Radi et al. (2022). In order to confirm the feasibility of the same approach, I ran a factor analysis adopting the principal component analysis method with extraction based on Eigenvalues higher than one, combined with a Varimax method adopted to produce uncorrelated factors (DeCoster, 1998, as cited by Vazquez Jr., 2020). This proceeding supported me in confirming the feasibility of using the same approach of an individual composite scale for transformational leadership for the present study.

Table 12 shows us that all the elements of transformational leadership present a high level of correlation with the extracted factor from the factor analysis, ranging from 0.854 (Intellectual Stimulation) to 0.884 (Idealized Influence – Behaviors), supporting the idea that the emergent factor from the procedure is representative of the individual components.

**Table 12 – Communalities found from factor analysis**

<b>Variable name</b>	<b>Initial</b>	<b>Extraction</b>
1. Idealized Influence - Attributes	1.000	0.863
2. Idealized Influence - Behaviors	1.000	0.884
3. Inspirational Motivation	1.000	0.880
4. Intellectual Stimulation	1.000	0.854
5. Individualized Consideration	1.000	0.862

Extraction method: principal component analysis

As a single factor came out from the factor analysis, linear regression procedures and additional multicollinearity checks were evaluated as not necessary. Table 13 shows us the results of the total variance details from the factor analysis with the indication of a single component with an Eigenvalue properly being attributable for 86.875% of the variance of the data from the individual scales used as input for the factor analysis.

**Table 13 – Total variance explained**

Component	Initial Eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.344	86.875	86.875	4.344	86.875	86.875
2	0.243	4.870	91.745	-	-	-
3	0.184	3.676	95.421	-	-	-
4	0.120	2.407	97.828	-	-	-
5	0.109	2.172	100.000	-	-	-

Extraction method: principal component analysis

Finally, we have the loading analysis for each of the original components from the dataset related to the single factor defined from the proceeding presented in Table 14, showing that all components are highly loaded in the resulting factor “Component 1”, ranging from 0.924 (Intellectual Stimulation) to 0.940 (Idealized Influence – Behaviors).



**Table 14 – Component matrix**

Variable name	Component 1
1. Idealized Influence - Attributes	0.929
2. Idealized Influence - Behaviors	0.940
3. Inspirational Motivation	0.938
4. Intellectual Stimulation	0.924
5. Individualized Consideration	0.928

Extraction method: principal component analysis

### **Independent variable definition from factor analysis**

After all the procedures described in the previous sections in this chapter, a final independent variable was defined to represent transformational leadership as a whole, as the average of the individual scales from its constituting elements. This new variable was named “MeanTL”.

A correlation analysis was done with the resulting new general independent variable and the subjective measures of team performance, but no correlation was found between the variables at a statistically significant p-value of 0.05 – the results can be seen in Table 15.

**Table 15 - Intercorrelation between final study variables (Spearman’s rho)**

Variable name	1	2
1. MeanTL	-	-
2. Subjective Measurement of Team Performance	0.185	-

n=64. p=0.071 (1-tailed)

Although the observed p-value of 0.071 is not in the range of the broadly accepted statistically significant level, it cannot be ignored due to its closeness to it. The interpretation of it would be that there is a 92.9% statistical significance supporting the finding that the average behaviors of transformational leadership demonstrated by the leaders of the sixty-four teams participating in the study contributes at a level of 18.5% as a predictor of the performance of the teams. A potential way to improve the statistical significance and relevance of the findings herein presented would be increasing the sampling to include more heterogeneous leadership patterns, be it from other departments from the same company, teams from the same company but in different countries, or eventually, considering teams from other companies.

### **Linear regression and predictors of team performance**

As a final verification, the individual components of transformational leadership were used in a linear regression analysis to review from this method the possible influence of any of the specific dimensions as predictors of team performance rather than the aggregated variable created based on the combination of them. I used linear regression with a step-wise approach using seven different blocks.

The first block contained the control variables of team size (including the leader), the number of female members in each team, and the age range factor, created as the weighted average of the number of team members on each of the age ranges, multiplied by a factor representing the average of the age range (21, 29.5, 39.5, 49.5 and 59.5, respectively). Following this, each new block considered one of the aggregated scales of the individual components of transformational leadership in the

following order: Inspirational Motivation, Idealized Influence-Attributes, Idealized Influence-Behaviors, Intellectual Stimulation, Individualized Consideration, and the aggregated variable for transformational leadership. However, the results found just reinforced what was shown in the correlation verification, that none of the elements of transformational leadership, whether individually considered or combined in the aggregated single scale for transformational leadership, are seen as a predictor of team performance in the teams evaluated in this study. The only two factors confirmed as predictors for team performance were the number of female members in each team, to which a weight of 33.6% may be attributed as a predictor of team performance, and the age ranges of the team members in a reverse proportionality, to which additional weight of 10% is attributed as a predictor of team performance. The details can be seen in Table 16:

**Table 16 - Linear Regression Model Summary – step-wise approach**

Model	R	R Square	Adj. R Square	Std. Error of the Estimate
1	0.336 <sup>a</sup>	0.113	0.099	0.35602
2	0.436 <sup>b</sup>	0.190	0.164	0.34293

Note: a. Predictors: (Constant), FemaleMembers  
b. Predictors: (Constant), FemaleMembers, AgeRange

In the Table 17, we can observe the excluded variables from each model:

**Table 17 - Excluded Variables<sup>a</sup> from the Regression Models – step-wise approach**

Model	Variables	Beta In	t	Sig.	Partial Correlation	Collinearity
						Statistics Tolerance
1	Resp	-0.236 <sup>b</sup>	-1.986	0.051	-0.246	0.969
	AgeRangeFactor	-0.280 <sup>b</sup>	-2.412	0.019	-0.295	0.987
	IM_AGGR	0.131 <sup>b</sup>	1.085	0.282	0.138	0.983
	IIA_AGGR	0.106 <sup>b</sup>	0.879	0.383	0.112	0.992
	IIB_AGGR	0.094 <sup>b</sup>	0.780	0.439	0.099	0.994
	IS_AGGR	0.072 <sup>b</sup>	0.601	0.550	0.077	0.994
	IC_AGGR	0.030 <sup>b</sup>	0.248	0.805	0.032	0.996
	TL_AGGR	0.093 <sup>b</sup>	0.774	0.442	0.099	0.991
2	Resp	0.131 <sup>c</sup>	0.454	0.651	0.059	0.162
	IM_AGGR	0.092 <sup>c</sup>	0.777	0.440	0.100	0.962
	IIA_AGGR	0.074 <sup>c</sup>	0.630	0.531	0.081	0.978
	IIB_AGGR	0.080 <sup>c</sup>	0.687	0.495	0.088	0.991
	IS_AGGR	0.063 <sup>c</sup>	0.544	0.589	0.070	0.993
	IC_AGGR	-0.003 <sup>c</sup>	-0.029	0.977	-0.004	0.981
	TL_AGGR	0.066 <sup>c</sup>	0.563	0.575	0.073	0.981

Note: a. Dependent Variable: SMTP\_AGGR

b. Predictors in the Model: (Constant), FemaleQty

c. Predictors in the Model: (Constant), FemaleQty, AgeRangeFactor

The influence of female leaders was reported by Avolio and Bass (2004) as more correlated to transformational leadership than observed by male leaders, but this was not observable in this study – the correlation check of female leaders and transformational leadership aggregated variable resulted in a Spearman's rho coefficient of -0.112 (significance of 0.188 – single-tailed). This may be due to the low presence of female leaders in the teams studied, as only seven out of the sixty-four teams are led by females (10.93%).

In addition to that, the finding of the number of female members in the team being correlated with the team performance contrasted with the finding from Avolio and Bass (2004) that there was no differentiation found in the perception of transformational leadership between male and female team members (Avolio & Bass, 2004) brings more evidence that there are other factors not being taken in consideration as predictors of team performance as the ones in the research model from this study.

## ***Summary***

In this chapter, I detailed the quantitative procedures taken for verifying and validating the reliability of the data acquired from the survey implementation and some early findings related to the initial impressions from these data and analysis.

It was possible to observe that no correlation was found between the predictors of transformational leadership and the subjective measure of team performance, our dependent variable. Also, we detected a high level of correlation between those predictors, initially defined as our independent variables, which raised concern about

multicollinearity issues and led to the execution of factor analysis under the scope of the principal component analysis method. This additional procedure revealed that all the aggregated scales based on the elements from transformational leadership could be combined and represented by one single factor, which is in line with the proposition by existing literature, as mentioned by Avolio and Bass (2004). Nevertheless, as observed in the individual components, no correlation was observed between the single factor of transformational leadership and team performance. However, two correlated factors were observed in the control variables – the number of female team members in each team and the age range of team members (inversely proportional to team performance). Further details and analysis of these findings will be better explored and documented in the next chapter.

# Chapter 5: Discussion

## ***Introduction***

This study focused on the practical application of the concepts from the literature review in applying research in a real company seeking to map the influence of transformational leadership behaviors in the performance of R&D teams of a company from the automotive industry.

The approach was based on the broadly recognized MLQ-5X instrument (Bass & Avolio, 1990 as cited in Owens & Hekman, 2016), and a survey was run in the company mentioned above. In the survey, data from 64 randomly selected teams were collected, mainly related to the team evaluation of the transformational leadership components demonstrated by the leader, the leader's evaluation of his team's performance, and some additional data collected to serve as control variables.

In the following sections, we analyze the procedures' outcomes based on the survey results and the data extracted from them.

## ***Implications for research***

In the following sections, I describe the main findings from this research study which can be of interest and value to new studies and scholars interested in this type of leadership construct.

They mainly describe how the outcomes from this study can reaffirm findings from previous studies and which results are new or unexpected. Also, some strengths will be detailed, as well as improvement opportunities that future researchers interested in the subject can explore.

### **Findings that support the existing theory**

The main finding from this study's research supporting the theory of transformational leadership is the high correlation observed between its individual components. As we can see in Table 11, the found correlation between the five elements of this leadership construct is presented at an even higher level than the ones found and reported by the creators of the instrument MLQ-5X in the manual of it (Avolio & Bass, 2004). At first glance, some concerns can arise regarding the multicollinearity of the dependent variables coming from these elements; nevertheless, as Avolio and Bass explained, the resulting scales composing transformational leadership were defined as a result of confirmatory factor analysis and, therefore, is natural that the elements present some level of correlation (Avolio & Bass, 2004). This fact, besides the evidence from other studies, reinforces the idea that this leadership construct can be represented in future research by a single aggregated variable composed by the average of its individual components – Inspirational Motivation, Idealized Influence-Attributes, Idealized Influence-Behaviors, Intellectual Stimulation, and Individualized Consideration.



## **Findings that extend or do not support the existing theory**

From this study, the correlation between transformational leadership behaviors and team performance was not observed as a direct prediction relationship between the first and the latter, as the found correlation in this study was low at a coefficient of 0.185 and a p-value of 0.071, slightly deviating from the  $p < 0.05$  declared by previous studies and taken as the borderline to consider the statistical significance of the correlations observed. This may have been a consequence of the characteristics of homogeneity from the sampling used in the present study, as the teams are from a same company, share a common leadership philosophy based on transformational leadership and supposedly follow a same organizational culture, nevertheless it results in that the relation proposed in Figure 2 was not proven by the study outcomes. Investigating further the literature, the study from Dionne et al. (2004) brings insights about why this happens – as observed in the results of this study, there may be other constructs that run in parallel or complimentary to the influence of a transformational leader alone or supporting it, which may be more representative on the impacts to team performance. Examples of such constructs can be elements of team maturity like the team shared vision, team commitment, level of empowerment of the team, presence/absence of functional team conflicts, and the team's abilities to manage those conflicts.

A second finding which does not support the existing theory from the creators of the MLQ-5X instrument is that no correlation was found between female leaders and the elements of transformational leadership. This may be caused by a low number of female leaders in the sample to enable such conclusions.

Additionally, Company “AutoParts” regularly performs climate evaluations at the team level and provided the student researcher with one example from one of the sixty-four teams that participated in the survey used for this research – it is available in Appendix E: Example of team climate regular evaluation by Company “AutoParts”. From an interview with a responsible manager from HR department of Company “AutoParts”, the student researcher was told that the climate evaluations at team level usually results in highly positive evaluations of teamwork. This may indicate a potential additional element in the path from leadership to team performance, passing through maturity and team performance characteristics.

Finally, one finding that extends the existing theory and represents a very interesting investigation line is the influence of gender and sexual orientation in the path from transformational leadership, eventually passing through team-level variables and reaching team performance. The fact that teams with a higher number of females among its members tend to perform better and the inverse tendency of correlation between members who rated themselves with "other" sexual orientation and some elements from transformational leadership deserves further research efforts.

### ***Study strengths***

This study was prepared on consolidated knowledge from existing literature and extended its application to a specific type of R&D organization in the automotive industry, being one of the few, if not the first one, to be developed with this focus. This

is particularly important as this is considered one of the key industries for the economy of several countries and the world economy as a whole, having its R&D teams being attributed as an area which highly influences the results of companies, be it via the efficient usage of resources or the development and deployment of state-of-the-art products. In addition, the research methods applied are well known, and their efficacy was proved in several past research applications, so no impacts from the methodology could affect the conduction and results of the study.

Moreover, the research protocols were well reviewed and approved by Company “AutoParts”, which will benefit from the findings from the research, mainly regarding the observed positive influence of the percentage of female team members in the overall team performance in this specific set of R&D teams and country/regions covered by the study.

Furthermore, the student researcher was properly instructed and prepared for the sensitive subject of the study of human behavior sciences, being formally enabled to perform it by being trained and obtaining the certifications of Human Subjects Research, Responsible Conduct of Research, Conflicts of Interest, and Information Privacy Security, from the Collaborative Institutional Training Initiative – CITI.

Finally, the main and strong conclusion from the study was that, differently from what was initially empirically inferred, the transformational leadership behaviors demonstrated by the leaders are not what drives the team performance results of Company “AutoParts”, although an intercorrelation coefficient of 0.185 at a  $p=0.071$  was found, slightly deviating from the standard reference of  $p<0.05$ . This brings the

need to investigate further other factors and influence from different elements which may be conducting the collective efforts from the teams to their achievements by a different path from the role played by the transformational leadership in this organization.

### ***Study limitations***

As mentioned previously in the description of the methods adopted and in the presentation of results of the study, there was a limiting condition for the study related to the inaccessibility of the student researcher to the raw individual responses of each participant – the survey system from company “AutoParts” only allow the access to team level data, composed at a minimum by one leader and four team members. With this, it was impossible to assess the within-group variance in the different teams via ANOVA, and the definition of  $F$  value and significance were also unknown. This implies that the observations and conclusions can be attributed to the evaluated teams but cannot be generalized to other teams, including those from the same company. To solve this, one recommended alternative approach for future similar research would be to use a survey tool that allows to get individual responses and to reach agreements with the teams and companies involved in processing this kind of data.

Another limitation that is recommended to be avoided in future research is the consideration of more companies in the survey process, so the acquired data can present a higher level of variability, which can better support the statistical processes' reliability to extend the findings via inferential statistics.

## ***Recommendations based on the research results***

Considering the final results of this research and focusing on providing practical recommendations and insights for companies seeking to improve the predictability of the performance of their teams, I present below three main topics:

- Transformational leadership alone will not ensure the best team performance: although it is one of the most inspiring leadership constructs, with the potential to transform team members into their best version, this study demonstrates that it is not “the” determining factor for good team performance. Even teams with leaders who presented a limited presence of transformational leadership behaviors could be very well evaluated regarding their performance and results. Some additional factors as organizational culture, team cohesion, and team communication, among others, may play a more decisive influence on team performance than transformational leadership. However, this does not mean that leaders must not be stimulated to play transformational leadership properly – in fact, it is a very good practice that could improve the efficiency of the other factors involved –, but instead that this must not be the only focus of the organization when targeting improving or maintaining a good team performance.
- High gender diversity in teams may increase team performance: one of the more interesting findings from this study was that the higher the number of females

in a team, the higher the chances of that team to present a better performance compared with the other teams. This is especially interesting considering that the environment and the type of activities performed in the R&D teams which take part in the study are predominantly dominated by males, so promoting more equal opportunities for females should be a good opportunity also to improve the overall business results and performance.

- The age range of team members must be considered in the strategy: the age range of the team members appeared as a relevant influencing factor to both the perception by the team of transformational leadership behaviors in the leader – the older the team members, the less sensitive to the transformational leadership behaviors by the leader they are – and the observed team performance by the leader – the older the team members, the lower team performance was recognized by the leaders. This effect may be related to the characteristics of the mature team members and their relationship with the work, their leaders, and the team, but further investigation is required to avoid incorrect interpretations. Nevertheless, it is clear that this factor may not be ignored in the equation, as it revealed itself as relevant in the complex structure of predictors of team performance.

## Chapter 6: Conclusion

This study was conceptualized to find, based on proper literature research and in alignment with the models implemented in Company “AutoParts”, a leadership construct to be focused on to explain the path linking leadership and team performance. It was defined to run from a quantitative approach based on the subjective measurement of team performance under the leader evaluation, as contraposed to the evaluation of the leadership behaviors demonstrated by the leader under his team members’ evaluation.

I approached Company “AutoParts” to check its willingness to join the research by providing access to its employees, and it was promptly accepted to support the investigation. A survey was run, reaching 64 different teams and summing up to 477 participating employees. From those, data was collected to support the statistical process focusing on the correlation between transformational leadership and team performance and general demographic data to serve as control variables.

The results obtained had not supported the proposed relational model of this study, as a weak correlation was observed at a coefficient of 0.185 and  $p=0.071$ , but served to identify some potential focus for new research in this area.

Firstly, there may be the presence of additional variables related to the way the team operates and cooperates. Mapping how they may fit into the model linking transformational leadership to team performance may be of importance to understand a broader universe of variables and factors influencing on team results other than

leadership itself. Radi Afsouran et al. (2022), for example, mention the influence of transformational leadership, combined with the maturity of team members, on the organizational development as an intermediate process toward organizational goals and overall performance (Radi Afsouran, N., Charkhabi, M., Mohammadkhani, F., & Seidel, L., 2022). Similarly, Dionne et al. (2004) propose the influence of team cohesion, team communication and team conflict management as intermediators between transformational leadership and team performance (Dionne, S. D., Yammarino, F. J., Atwater, L. E., & Spangler, W. D., 2004). Both references illustrate the need to take into consideration other elements in this equation in order to have a holistic view of whole path from leadership to organizational results. An additional element which may play an important role in the complex model which links transformational leadership and team performance lies in the fact that Company “AutoParts” works in a matricial organizational setup. This may add, at least, one additional leadership layer in the map, bringing additional influences to the team level variables and to the ways the team operates. This scenario was not in the scope of the current study, but is now seen as a relevant factor to be taken into consideration by future research.

Secondly, a deeper analysis of the influences from gender and sexual orientation in how transformational leadership reaches team performance is recommended as well, as the results of the current study indicate that more diverse teams in terms of gender tend to be more productive. In this direction, not only the presence of female team members is of interest, but also the influence of non-binary



sexual orientations in the influences from transformational leadership on team performance, passing through the other potential variables and factors mentioned previously. The results of this study supports this need with the statistically significant findings at  $p < 0.01$  that non-binary team members are reversely correlated with both inspirational motivation (Spearman's rho coefficient of -0.301) and intellectual stimulation (Spearman's rho coefficient of -0.291).

In addition to that, the age ranges of the involved team members revealed itself as another factor which deserves further special attention to be mapped, as one of the resulting models from the linear regression exercise showed that higher age ranges may contribute to the team performance outcomes in combination to the quantity of females in the team. Young team members, for example, in the range of 18-24 years were correlated at  $p < 0.01$  and Spearman's rho coefficient of 0.303 with higher evaluations of individual consideration behavior by the leaders, showing that, for this group of individuals, this type of consideration by the leaders may be more perceptible and, supposedly, with higher relevance than for older ones, which makes a lot of sense considering the different development needs from both groups. This may indicate that the way leaders interact with the individuals would be needed to be adjusted depending on the age diversity in a respective team. In the other hand, it is important to highlight that this same study revealed other findings related to team members age ranges which may seem, at a first glance, controversial and conflicting. I can mention, for example, the reverse correlation found at  $p < 0.01$  and Spearman's rho coefficient of -0.354 between the age range of 45-54 years and the inspirational motivation behavior from

the leaders. In this case, the results suggests that mature team members are less sensible to demonstrations of inspirational motivation than the younger ones and would require increased efforts from the leaders to be seen as inspiring and, as a result, to motivate. Taking the input from these examples and considering other potential influences of the team maturity and behaviors in the path from transformational leadership to team performance, the contributions from organizational culture may be another interesting focal point for future research.

Besides all the above, extending the sampling universe to other companies (within the automotive industry or outside it) would also be beneficial to the increase of the knowledge about the topic by further increasing the variability of the data acquired and potentially being able to determine robust relations leading to other conclusions.

Finally, although this study did not confirm the proposed causal model, as it was reported a weak correlation at the coefficient of 0.185 and  $p=0.071$  between transformational leadership and team performance, the reflections and insights taken from it for sure contribute not only to my personal knowledge about the topic, as I honestly believed that transformational leadership itself would suffice for predicting good team performance, but also brings this insight to the Company “AutoParts”, to be taken in consideration for its development planning initiatives, to focus not only on its leaders but also on how the teams can maintain these hidden catalyzer elements to assure good performance.

## References

- Avolio, B. J., & Bass, B. M. (2004). Multifactor Leadership Questionnaire™ - Manual and Sample Set (Third). Mind Garden, Inc. Retrieved from <https://www.mindgarden.com/multifactor-leadership-questionnaire/238-mlq-manual.html>
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The leadership quarterly*, 16(3), 315-338.
- Bass, B. M. (1985). Leadership: Good, better, best. *Organizational Dynamics*, 13(3), 26–40. [https://doi.org/10.1016/0090-2616\(85\)90028-2](https://doi.org/10.1016/0090-2616(85)90028-2)
- Bass, B. M. (1997). Does the transactional–transformational leadership paradigm transcend organizational and national boundaries?. *American psychologist*, 52(2), 130.
- Bass, B., & Avolio, B. (n.d.). *Multifactor Leadership Questionnaire™*. Retrieved 05 26, 2021, from © 2019 Mind Garden, Inc.: <https://www.mindgarden.com/16-multifactor-leadership-questionnaire#horizontalTab3>
- Blanchard, K., & Hersey, P. (1970). A Leadership Theory for Educational Administrators. *Education*, 90(4), 303-310
- Brannick, M. T., Salas, E., & Prince, C. W. (Eds.). (1997). Team performance assessment and measurement (0 ed.). *Psychology Press*. <https://doi.org/10.4324/9781410602053>

- Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational behavior and human decision processes*, 97(2), 117-134.
- Brown, M. E., & Treviño, L. K. (2006). Ethical leadership: A review and future directions. *The leadership quarterly*, 17(6), 595-616.
- Brown, S., Marinan, J., & Partridge, M. (2020, Nov). THE MODERATING EFFECT OF SERVANT LEADERSHIP ON TRANSFORMATIONAL, TRANSACTIONAL, AUTHENTIC, AND CHARISMATIC LEADERSHIP. *Journal of International Business Disciplines.*, 15(2), pp. 67-86
- De Hoogh, A. H., Greer, L. L., & Den Hartog, D. N. (2015). Diabolical dictators or capable commanders? An investigation of the differential effects of autocratic leadership on team performance. *The Leadership Quarterly*, 26(5), 687-701.
- Diferencias entre las pruebas no paramétricas y pruebas paramétricas. (2019, January 9). QuestionPro. <https://www.questionpro.com/blog/es/diferencia-pruebas-no-parametricas-y-pruebas-parametricas/>
- Dionne, S. D., Yammarino, F. J., Atwater, L. E., & Spangler, W. D. (2004). Transformational leadership and team performance. *Journal of Organizational Change Management*, 17(2), 177–193. <https://doi.org/10.1108/09534810410530601>
- Dóci, E., & Hofmans, J. (2015). Task complexity and Transformational Leadership: The mediating role of leaders' state core self-evaluations. *The Leadership Quarterly*, 26(3), 436–447. <https://doi.org/10.1016/j.leaqua.2015.02.008>

- Ewest, T. (2015). The relationship between transformational leadership practices and global social responsibility. *Journal of Leadership Studies*, 9(1), 19–29.  
<https://doi.org/10.1002/jls.21347>
- Factor analysis and principal component analysis using spss | a user-friendly guide. (n.d.). Retrieved from <https://www.youtube.com/watch?v=WO4Qzp1wzz4>
- Frost, J. (2018, February 4). Difference between descriptive and inferential statistics. Statistics By Jim. <http://statisticsbyjim.com/basics/descriptive-inferential-statistics/>
- Frost, J. (2019, February 26). Can high p-values be meaningful? Statistics By Jim. <http://statisticsbyjim.com/hypothesis-testing/high-p-values/>
- Frost, J. (2021, March 29). Spearman’s correlation explained. Statistics By Jim. <https://statisticsbyjim.com/basics/spearmans-correlation/>
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The leadership quarterly*, 6(2), 219-247.
- Howell, J. M., Neufeld, D. J., & Avolio, B. J. (2005). Examining the relationship of leadership and physical distance with business unit performance. *The Leadership Quarterly*, 16(2), 273-285.
- Inferential statistics. (n.d.). Statistics By Jim. Retrieved October 16, 2022, from <http://statisticsbyjim.com/glossary/inferential-statistics/>

Jelača, M. S., Bjekić, R., & Leković, B. (2016). A proposal for research framework based on the theoretical analysis and practical application of mlq questionnaire. *Economic Themes*, 54(4), 549–562. <https://doi.org/10.1515/ethemes-2016-0028>

Kearney. (n.d.). *The contribution of the automobile industry to technology and value creation*. Retrieved 03 21, 2021, from The contribution of the automobile industry to technology and value creation:

<https://www.es.kearney.com/automotive/article/?/a/the-contribution-of-the-automobile-industry-to-technology-and-value-creation#:~:text=The%20automotive%20industry%20is%20important,at%207%20percent%20and%20rising>

Liden, R. C., Wayne, S. J., Zhao, H., & Henderson, D. (2008). Servant leadership: Development of a multidimensional measure and multi-level assessment. *The leadership quarterly*, 19(2), 161-177.

Lunardi, M. A., Zonatto, V. C. da S., & Nascimento, J. C. (2019). Relationship between leadership style, encouragement of budgetary participation and budgetary participation. *Estudios Gerenciales*, 27–37.

<https://doi.org/10.18046/j.estger.2019.150.2974>

Martin, R., Guillaume, Y., Thomas, G., Lee, A., & Epitropaki, O. (2016). Leader-member exchange (LMX) and performance: A meta-analytic review. *Personnel psychology*, 69(1), 67-121.

McManus, J. (2006). *Leadership: Project and human capital management*. Amsterdam ; Boston: Butterworth-Heinemann

- Norcross, M. A. (2018). *Developing a measure for humble team culture and exploring its impact on performance*. (Unpublished doctoral dissertation). Benedictine University, Lisle, Illinois.
- Owens, B. P., & Hekman, D. R. (2016). How does leader humility influence team performance? Exploring the mechanisms of contagion and collective promotion focus. *Academy of Management Journal*, 59(3), 1088–1111.  
<https://doi.org/10.5465/amj.2013.0660>
- Pawar, B. S., & Eastman, K. K. (1997). The nature and implications of contextual influences on transformational leadership: A conceptual examination. *The Academy of Management Review*, 22(1), 80. <https://doi.org/10.2307/259225>
- Project Management Institute, Inc., editor. (2017). *La guía de los fundamentos para la dirección de proyectos (Guía del PMBOK)* (Sexta ed.). Newtown Square, PA: Project Management Institute
- Rivera, Jéssica Pérez (2019, November 25). *Prueba de normalidad con SPSS* [Video]. YouTube. [https://www.youtube.com/watch?v=topPiJ0H7\\_w](https://www.youtube.com/watch?v=topPiJ0H7_w)
- Rabechini Jr., R., Müller, S., & Silva, A. (2010, ene-mar). Maturidade e Sucesso em Projetos sob a Perspectiva do Binômio Fornecedor e Cliente. *Revista Brasileira de Gestão de Negócios.*, 12(34), pp. 56-72
- Radi Afsouran, N., Charkhabi, M., Mohammadkhani, F., & Seidel, L. (2022). The link between transformational leadership and organizational development: Testing the mediating role of employees' maturity. *Journal of Management Development*.  
<https://doi.org/10.1108/JMD-06-2021-0167>

- Rajaretnam, T. (2016). *Statistics for social sciences*. Los Angeles: SAGE
- Reis Neto, M., Nélia de Araújo, R., & Avelar Ferreira, C. (2019, Jul-Dec). Leadership theories and individual performance. *Pensamiento & Gestión*.(47), pp. 148-179
- Rimita, K., Hoon, S. N., & Levasseur, R. (2020). Leader readiness in a volatile, uncertain, complex, and ambiguous business environment. *Journal of Social Change*, 12(1).  
<https://doi.org/10.5590/JOSC.2020.12.1.02>
- Rodríguez-Ponce, E., Pedraja-Rejas, L., & Ganga-Contreras, F. (2017). La relación entre los estilos de liderazgo y el desempeño de los equipos de dirección intermedia: un estudio exploratorio desde Chile. *Contabilidad y Negocios*, 12(23), 129-144
- Schein, E. H., & Schein, P. A. (2018). *Humble leadership: The power of relationships, openness, and trust* (First edition). Oakland, CA: Berrett-Koehler Publishers, Inc.
- Schoel, C., Bluemke, M., Mueller, P., & Stahlberg, D. (2011). When autocratic leaders become an option—Uncertainty and self-esteem predict implicit leadership preferences. *Journal of personality and social psychology*, 101(3), 521.
- Setiadi, P. B., Ursula, R., ti, R., & Setini, M. (2020). Labour productivity, work experience, age and education: The case of lurik weaving industry in Klaten, Indonesia. *Webology*, 17(2), 487–502.  
<https://doi.org/10.14704/WEB/V17I2/WEB17047>
- Shao, Z., Feng, Y., & Wang, T. (2016). Charismatic leadership and tacit knowledge sharing in the context of enterprise systems learning: the mediating effect of psychological safety climate and intrinsic motivation. *Behaviour & Information Technology*, 36(2), 194-208.



- Smith, B. N., Montagno, R. V., & Kuzmenko, T. N. (2004). Transformational and servant leadership: Content and contextual comparisons. *Journal of Leadership & Organizational Studies*, 10(4), 80-91.
- Uppal, N., Mishra, S. K., & Vohra, N. (2014). Prior related work experience and job performance: Role of personality: work experience, person, or both. *International Journal of Selection and Assessment*, 22(1), 39–51. <https://doi.org/10.1111/ijsa.12055>
- Vazquez Jr., F. (2020, August). The Impact of Humble Leadership on Innovation and Team Performance. Lisle, Illinois, USA: Benedictine University, Center for Values-Driven Leadership
- Walumbwa, F. O., Avolio, B. J., & Zhu, W. (2008). How transformational leadership weaves its influence on individual job performance: The role of identification and efficacy beliefs. *Personnel Psychology*, 61(4), 793–825.  
<https://doi.org/10.1111/j.1744-6570.2008.00131.x>
- Yang, I. (2015). Positive effects of laissez-faire leadership: Conceptual exploration. *Journal of Management Development*.
- Yuan-Duen Lee, Pi-Ching Chen, & Chin-Lai Su. (2020, Jan). THE EVOLUTION OF THE LEADERSHIP THEORIES AND THE ANALYSIS OF NEW RESEARCH TRENDS. *International Journal of Organizational Innovation*., 12(3), pp. 88-104

## Appendix A: Survey with Question Background

Upon approval from IRB, the scales will be used in their original form in the English language only.

### ***Participant Data***

#### *Demographic questions*

ID-1      What is your gender? \_\_\_\_\_ Male    \_\_\_\_\_ Female    \_\_\_\_ Other /

Prefer not to answer

ID-2      What is your age?

- a. 18-24 years old
- b. 25-34 years old
- c. 35-44 years old
- d. 45 to 54 years old
- e. 55 years old or more

ID-3      What is your ethnicity? (Please check all that apply.)

- American Indian or Alaskan Native
- Asian or Pacific Islander
- Black or African American
- Hispanic or Latino
- White/Caucasian
- Prefer not to answer
- Other (please specify)

### ***Basic Team Information***

*Please consider the team you work with the most and answer the questions in this survey based on that team.*

- ID-4      What percentage of your workweek is spent on this team?
- a. Less than 25%
  - b. 25% to less than 50%
  - c. 50% to less than 75%
  - d. 75% to less than 90%
  - e. 90% or more
- ID-5      How long have you been working on this team?
- a. Less than six months
  - b. Six months to less than one year
  - c. One year to less than three years
  - d. Three years to less than five years
  - e. Five years or more
- ID-6      What percentage of team members are located in the same facilities?
- a. Less than 25%
  - b. 25% to less than 50%
  - c. 50% to less than 75%
  - d. 75% to less than 90%
  - e. 90% or more
- ID-7      Do you work in:
- a. Same building as the majority of the team
  - b. Different location in the same building
  - c. Different location in the same city
  - d. Different location in the same region
  - e. Different time zone in the same country
  - f. Different country?
- ID-8      It is now important to assess the team you just described, but only from the team leader's perspective.
- a. Are you a leader of the team you just described?

### ***Independent Variable***

**Transformational leadership (II-A, II-B, IM, IS, IC):** it will be used the known validated instrument MLQ-5X (Bass and Avolio, 1990 as cited in Owens & Hekman, 2016). This instrument “identifies the characteristics of a transformational leader and helps individuals discover how they measure up in their own eyes and in the eyes of those with whom they work.” (Bass & Avolio, Multifactor Leadership Questionnaire™, n.d.). The instrument has scales for measuring other leadership styles, but the only ones considered in this study are the scales related to transformational leadership. The proprietary entity of the commercial rights of the instrument was

contacted and confirmed that there are no jeopardies in the instrument validity nor reliability for using only a subset of complete scales, as reliability is given on the individual scales level. Therefore, the scales to be used are described below:

Transformational leadership:

- Builds trust (idealized attributes: II-A)
- Acts with integrity (idealized behaviors: II-B)
- Encourages others (inspirational motivation: IM)
- Encourages innovative thinking (intellectual stimulation: IS)
- Coaches & develops people (individualized consideration: IC)

Measures will be scaled to a 5-point Likert scale (Frequently, If not always=4, Fairly often=3, Sometimes=2, Once in a while=1, Not at all=0)

Instructions: The following survey items refer to the style of your previously selected leader as you perceive it. Judge how frequently each statement fits his or her leadership style using the following scale:

- II-A - 1 (10)<sup>3</sup> Copyrights do not allow the question to be reproduced herein.<sup>4</sup>
- II-A - 2 (18) Copyrights do not allow the question to be reproduced herein.
- II-A - 3 (21) Copyrights do not allow the question to be reproduced herein.
- II-A - 4 (25) Copyrights do not allow the question to be reproduced herein.
  
- II-B - 1 (6) Copyrights do not allow the question to be reproduced herein.
- II-B - 2 (14) Copyrights do not allow the question to be reproduced herein.
- II-B - 3 (23) Copyrights do not allow the question to be reproduced herein.
- II-B - 4 (34) Copyrights do not allow the question to be reproduced herein.
  
- IM - 1 (9) Talks optimistically about the future.
- IM - 2 (13) Copyrights do not allow the question to be reproduced herein.
- IM - 3 (26) Copyrights do not allow the question to be reproduced herein.
- IM - 4 (36) Copyrights do not allow the question to be reproduced herein.
  
- IS - 1 (2) Copyrights do not allow the question to be reproduced herein.
- IS - 2 (8) Copyrights do not allow the question to be reproduced herein.

---

<sup>3</sup> The numbers in parenthesis indicate the order in which each question is applied in the full MLQ-5X instrument. The idea is to put the questions in the same order, although using only the scale subset related to transformational leadership.

<sup>4</sup> The usage of the instrument and its scales in this study was licensed and followed the proper copyrights - Copyright © 1995 by Bernard Bass & Bruce J. Avolio. All rights reserved in all media. Published by Mind Garden, Inc. [www.mindgarden.com](http://www.mindgarden.com). Only two sample items are allowed to be part of this document; the other ones are omitted under the comment "Copyrights do not allow the question to be reproduced herein", but were used properly as part of the survey answered by participant 413 team members.

- IS - 3 (30) Copyrights do not allow the question to be reproduced herein.  
IS - 4 (32) Copyrights do not allow the question to be reproduced herein.
- IC - 1 (15) Spends time teaching and coaching.  
IC - 2 (19) Copyrights do not allow the question to be reproduced herein.  
IC - 3 (29) Copyrights do not allow the question to be reproduced herein.  
IC - 4 (31) Copyrights do not allow the question to be reproduced herein.

### ***Outcome Variables***

**Subjective Measure of Team Performance (SMTP):** Adapted from leader rating questions used in Owens and Hekman (2016), as adapted from Walumbwa et al. (2008), their methodology asked the team leader to evaluate performance. As per Vazquez Jr. (2020) when citing Owens and Hekman (2016), asking the leader reduces the issues of common method bias (Vazquez Jr., 2020). The alpha reliability for this scale is .96.

Using a 5-point Likert scale of 5 =Consistently Performs Way Beyond Expectations, 4 = Consistently Performs Above Expectations, 3 = Consistently Performs at Expectations, 2 = Consistently Perform Below Expectations, and 1 = Consistently Performs Way Below Expectations.

Instructions: Please rate your team (the one you lead) on the extent to which:

- SMTP - 1 All in all, how competently does the team perform its work?  
SMTP - 2 In your estimation, how effectively does the team get its work done?  
SMTP - 3 How would you judge the overall quality of the work performed by the team?  
SMTP - 4 How would you judge the overall perceived competence of the team?

### ***Feedback Data***

F-1 Do you have any feedback on this survey?

## Appendix B: Employer Acknowledgment Form

The following template will be used to obtain employer acknowledgment of the survey process for their employees and permission to use the company name in subsequent study publications. The final letter ultimately distributed may be tweaked slightly for formatting or minor wordsmithing as appropriate but will adhere to the template provisions below in all material respects.

### Measuring the Impact of Transformational Leadership on Team Performance

---

**Background Information:** The purpose of this study is to develop a better understanding of the effect of transformational leadership on team performance. The study utilizes surveys based on scientifically validated instruments from previous research.

**Procedures:** With your approval, employees may be contacted by invitation moderated by your Human Resources department to participate in the survey (Online survey, e.g., SurveyMonkey link submitted via email).

**Risks and Benefits Associated with the Study:** This study does not have any known risks. The potential benefits in this study include the opportunity for employees to reflect upon what makes teams effective, to obtain aggregate feedback to understand better what you may be able to do as a leader and organization to more effectively support a team culture development fostering team performance, and the opportunity to contribute to broader research and literature for other organizations to learn from as well.

**Data Usage/Confidentiality:** The survey will ask for some basic demographic data to be used solely for matching purposes to follow-up survey responses. Only the researcher will have access to the raw responses, and the resultant data will be coded for anonymity. In no event shall identifying participant information be shared with you as the employer or any other party. The records of this study and the data noted above will be kept in password-protected, encrypted storage during the study. After the project completion, all data will be transferred to Ph.D. Francisco Javier Vázquez Jr., Professor at the Instituto Tecnológico y de Estudios Superiores de Occidente in Guadalajara, for secure and ultimate disposal after seven years. Should the study ever become published material, employee names will in no way be linked to the study.

**Voluntary Nature of the Study:** Your employees' decision whether or not to participate is voluntary. Informed consent will be obtained for each participant survey

through the online survey tool (e.g., SurveyMonkey). Copies of these consent forms are attached herein for your reference.

**Contacts and Questions:** The researcher conducting this study is Otavio de Andrade Oliveira, (MBA candidate) with his thesis Director, Ph.D., Francisco Javier Vázquez Jr., Professor at the Instituto Tecnológico y de Estudios Superiores de Occidente in Guadalajara. If you have any questions or concerns regarding this study, please ask the student researcher at this time. If questions or concerns arise at a later time, you may direct them to Otavio de Andrade Oliveira at [otavio.deandrade@iteso.mx](mailto:otavio.deandrade@iteso.mx) or +52 (33) 2183-6982 or to Ph.D., Francisco Javier Vázquez Jr. [franciscovazquez@iteso.mx](mailto:franciscovazquez@iteso.mx) or +52 (33) 3669-3434, 3424.

**Statement of Consent:**

By signing below, you agree to the above information in its entirety and consent to the data collection described above as well as the following with regards to broader company identification that may result from this research and any subsequent publication:

\_\_\_\_\_My company name and general profile information may be used when writing about the study findings.

\_\_\_\_\_My company name may not be used, only general profile information when writing about the study findings.

Signature of Company Official \_\_\_\_\_ Date \_\_\_\_\_

Printed Name \_\_\_\_\_ Role \_\_\_\_\_

## Appendix C: Consent Form for Survey Research

The following template will be used to obtain informed consent via email from participants. The final letter distributed may be tweaked slightly for formatting or minor wordsmithing as appropriate but will adhere to the template provisions below in all material respects.

### Measuring the Impact of Transformational Leadership on Team Performance

---

**Background Information:** The purpose of this study is to develop a better understanding of the effect of transformational leadership on team performance. The study utilizes surveys based on scientifically validated instruments from previous research.

**Procedures:** Upon your agreement to participate in this study, you will respond to a brief survey that generally should take not more than 15-25 minutes to complete. There are no right or wrong answers to the questions. The intention is to administer the survey in various team environments so that the data can be used to assess the causality between transformational leadership on team performance.

**Risks and Benefits Associated with the Study:** This study does not have any known risks. The potential benefits in this study include the opportunity for employees to reflect upon what makes teams effective; to obtain aggregate feedback to understand better what you may be able to do as an organization to more effectively support a team culture focused on better team performance, and the opportunity to contribute to broader research and literature for other organizations to learn from as well.

**Confidentiality:** The survey will ask for some basic demographic data used solely for matching purposes to follow-up survey responses. Only the researcher will have access to the raw responses, and the resultant data will be coded for anonymity. In no event shall identifying participant information be shared with your employer or any other party. The records of this study and the data noted above will be kept in password-protected, encrypted storage during the study. After the project, all data will be transferred to Ph.D. Francisco Javier Vázquez Jr., Professor at the Instituto Tecnológico y de Estudios Superiores de Occidente in Guadalajara, for secure and ultimate disposal after seven years. Should the study ever become published material, employee names will in no way be linked to the study.

**Voluntary Nature of the Study:** Your decision to participate is voluntary and will not affect your current or future relations with your employer, this student researcher, nor with the Instituto Tecnológico y de Estudios Superiores de Occidente faculty.



You are free to withdraw at any time without affecting your relationship with your employer, the researcher, nor with the Instituto Tecnológico y de Estudios Superiores de Occidente faculty.

**Contacts and Questions:** The researcher conducting this study is Otavio de Andrade Oliveira, (MBA candidate) with his thesis Director, Ph.D., Francisco Javier Vázquez Jr., Professor at the Instituto Tecnológico y de Estudios Superiores de Occidente in Guadalajara. If you have any questions or concerns regarding this study, please ask the student researcher at this time. If questions or concerns arise at a later time, you may direct them to Otavio de Andrade Oliveira at [otavio.deandrade@iteso.mx](mailto:otavio.deandrade@iteso.mx) or +52 (33) 2183-6982 or to Ph.D., Francisco Javier Vázquez Jr. [franciscovazquez@iteso.mx](mailto:franciscovazquez@iteso.mx) or +52 (33) 3669-3434, 3424.

**Statement of Consent:**

By signing below, you have agreed to the above information in its entirety. This consent also indicates that you are 18 years of age or more and have agreed to participate.

Signature \_\_\_\_\_ Date \_\_\_\_\_

## Appendix D: Intercorrelation between study variables and control variables

**Table 18 - Intercorrelation between study variables and control variables**

Control variable	II-A	II-B	IM	IS	IC	SMTF
Group Name	0.282*	0.269*	0.310**	0.154	0.309**	0.172
Resp	0.113	0.097	0.092	0.187	0.080	-0.155
Female Leader	-0.123	-0.119	-0.123	-0.038	-0.157	-0.055
FemalePerc	0.184	0.110	0.253*	0.142	0.113	0.336**
MalePerc	-0.144	-0.062	-0.199	-0.090	-0.067	-0.334**
OtherPerc	-0.254*	-0.287*	-0.301**	-0.291**	-0.277*	0.090
Age1Perc	0.217*	0.133	0.224*	0.251*	0.303**	0.091
Age2Perc	0.201	0.194	0.255*	0.134	0.142	0.048
Age3Perc	-0.227*	-0.150	-0.259*	-0.153	-0.183	0.002
Age4Perc	-0.217*	-0.245*	-0.354**	-0.259*	-0.220*	-0.294**
Age5Perc	-0.089	-0.072	0.009	-0.037	-0.044	-0.034
Eth4Perc	0.031	0.129	0.010	0.014	0.099	0.075
Eth5Perc	0.051	-0.033	-0.013	0.035	0.055	-0.005
Eth6Perc	-0.177	-0.222*	-0.151	-0.055	-0.122	0.001
Dur1Perc	0.173	0.054	0.200	0.107	0.217*	-0.041
Dur2Perc	-0.209*	-0.138	-0.105	-0.067	-0.205	-0.156
Dur3Perc	0.301**	0.288*	0.232*	0.171	0.268*	0.008
Dur4Perc	0.014	0.006	0.040	-0.182	0.019	0.100
Dur5Perc	-0.174	-0.188	-0.250*	-0.095	-0.177	0.122
WorkWk1Perc	0.003	-0.118	-0.010	-0.142	-0.075	0.166
WorkWk2Perc	0.082	0.060	0.127	-0.048	0.031	0.215*
WorkWk3Perc	-0.138	-0.145	-0.161	-0.040	-0.070	-0.328**
WorkWk4Perc	0.035	0.034	0.010	0.064	0.120	-0.279*
WorkWk5Perc	-0.022	0.029	0.003	0.067	-0.030	0.059
Fac1Perc	-0.054	-0.067	-0.065	-0.194	-0.166	0.036
Fac2Perc	0.044	0.076	0.034	-0.086	-0.156	0.025

<b>Control variable</b>	<b>II-A</b>	<b>II-B</b>	<b>IM</b>	<b>IS</b>	<b>IC</b>	<b>SMTp</b>
Fac3Perc	0.083	-0.044	-0.047	0.047	0.153	-0.195
Fac4Perc	-0.127	-0.166	-0.102	-0.220*	-0.077	0.154
Fac5Perc	0.120	0.162	0.169	0.309**	0.147	-0.047
Geo1Perc	-0.072	-0.106	-0.037	0.109	0.012	0.154
Geo2Perc	-0.037	0.008	-0.067	-0.015	-0.062	0.136
Geo3Perc	0.150	0.213*	0.081	0.038	0.047	-0.236*
Geo4Perc	0.065	0.015	0.108	-0.063	0.025	-0.055
Geo5Perc	0.061	0.055	0.028	0.099	0.161	0.056
Geo6Perc	-0.172	-0.143	-0.199	-0.250*	-0.185	-0.116

n=64. \*\*p<0.01, \*p<0.05 (1-tailed)

Table 19 below is given as a reference to the meaning of the data behind the control variables:

**Table 19 - Control variables descriptions**

<b>Control variable</b>	<b>Description</b>
Group Name	Name of the Business Area to which the team belongs to
Resp	Number of team members (valid respondents) per team
Female Leader	Identifies teams lead by a female leader
FemalePerc	Percentage of female team members for each team
MalePerc	Percentage of male team members for each team
OtherPerc	Percentage of team members who define themselves as belonging to other sexual orientation
Age1Perc	Percentage of team members within the age range 18-24 years
Age2Perc	Percentage of team members within the age range 25-34 years
Age3Perc	Percentage of team members within the age range 35-44 years

<b>Control variable</b>	<b>Description</b>
Age4Perc	Percentage of team members within the age range 45-54 years
Age5Perc	Percentage of team members within the age range higher than 55 years
Eth4Perc	Percentage of team members who identify themselves as Hispanic or Latinos
Eth5Perc	Percentage of team members who identify themselves as White or Caucasian
Eth6Perc	Percentage of team members who prefer not to inform their ethnicity
Dur1Perc	Percentage of team members who belong to the team for less than six months
Dur2Perc	Percentage of team members who belong to the team for more than six months but less than one year
Dur3Perc	Percentage of team members who belong to the team for more than one year but less than three years
Dur4Perc	Percentage of team members who belong to the team for more than three years but less than five years
Dur5Perc	Percentage of team members who belong to the team for more than one year but less than three years
WorkWk1Perc	Percentage of the team members who dedicate from 0% to 25% of their week to this team
WorkWk2Perc	Percentage of the team members who dedicate from 25% to 50% of their week to this team
WorkWk3Perc	Percentage of the team members who dedicate from 50% to 75% of their week to this team

<b>Control variable</b>	<b>Description</b>
WorkWk4Perc	Percentage of the team members who dedicate from 75% to 90% of their week to this team
WorkWk5Perc	Percentage of the team members who dedicate more than 90% of their week to this team
Fac1Perc	Percentage of team members located in the same facilities from 0% to 25%
Fac2Perc	Percentage of team members located in the same facilities from 25% to 50%
Fac3Perc	Percentage of team members located in the same facilities from 50% to 75%
Fac4Perc	Percentage of team members located in the same facilities from 75% to 90%
Fac5Perc	Percentage of team members located in the same facilities more than 90%
Geo1Perc	Percentage of team members who work in the same building as the rest of the team
Geo2Perc	Percentage of team members who work in a different location in the same building than the rest of the team
Geo3Perc	Percentage of team members who work in a different location in the same city than the rest of the team
Geo4Perc	Percentage of team members who work in a different location in the same region than the rest of the team
Geo5Perc	Percentage of team members who work in a different time zone in the same country than the rest of the team

---

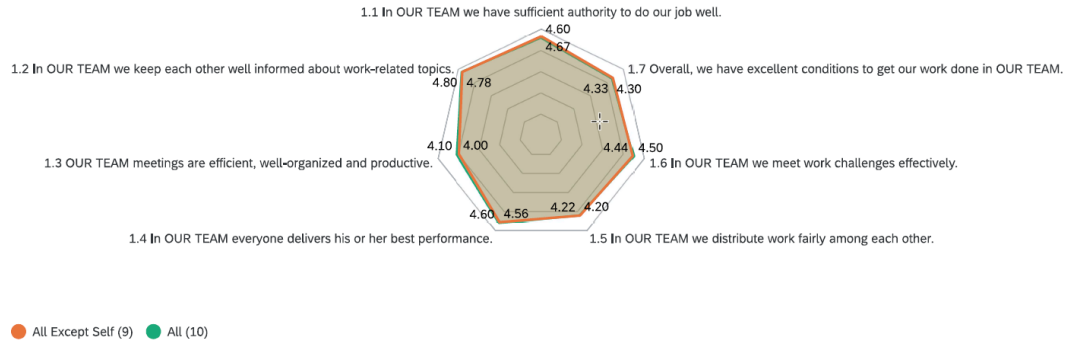
<b>Control variable</b>	<b>Description</b>
Geo6Perc	Percentage of team members who work in a different country than the rest of the team

---

# Appendix E: Example of team climate regular evaluation by Company “AutoParts”

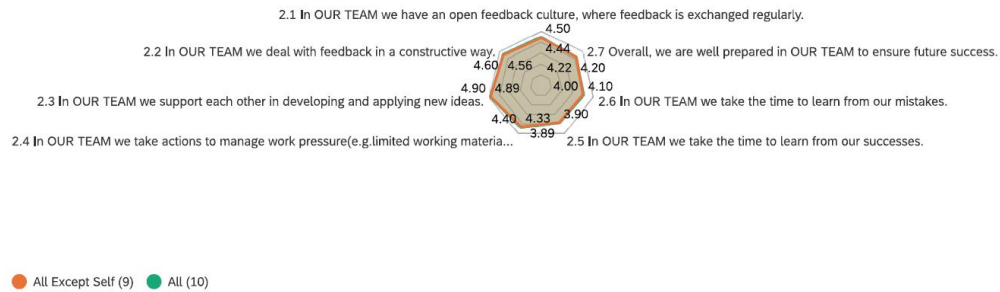
## Action (7)

---



## Transformation (7)

---



## Interpersonal (8)

---

- 3.1 OUR TEAM is open to share knowledge and experiences with colleagues from other departments/parts of the organization.
- 3.2 In OUR TEAM we value differences (e.g. age, gender, nationality, experience, pe... 4.89 4.90 3.8 Overall, we maintain good cooperative relations within OUR TEAM.  
4.70 4.67 5.00
- 3.3 In OUR TEAM we discuss different opinions in reaching decisions. 4.89 4.78 3.7 OUR TEAM maintains good cooperative relations outside the team.  
4.90 4.80
- 3.4 In OUR TEAM we deal with conflicts in a sensible manner. 4.60 4.56 4.78 4.80
- 3.5 In OUR TEAM we treat each other with respect. 4.89 4.90 3.6 In OUR TEAM collaboration is built on mutual trust.

● All Except Self (9) ● All (10)

---