

# **The Impact of Humble Leadership on Innovation and Team Performance**

A dissertation submitted

by

Francisco Javier Vazquez Jr.

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This dissertation has been  
accepted for the faculty of  
Benedictine University.

*Michael R. Manning*

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Michael R. Manning, Ph.D.  
Chair

August 2020

## Committee Members

Mikko Ketokivi, Ph.D. IE Business School

Ronald E. Riggio, Ph.D. Claremont McKenna College

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## **Abstract**

The study focuses on exploring the mechanisms through which the virtue of humility at the leader and team level influences team performance, team predictors of innovation, and innovation with two emphases: market and problem orientation. Notably, the study was envisioned to propose a causal model that shows the components that catalyze innovation and team performance through humble leadership. Additionally, the study also envisioned to empirically test the relationship between leader-expressed humility, collective humility, team promotion focus, and team predictors of innovation mediating the relationship between leader-expressed humility, innovation, and team performance. Moreover, the study seeks to better understand the moderating effects of humble leadership with innovation and team performance by having team power distance and team balanced processing as moderators in different paths of the model.

This research adopted a field study survey design and a quantitative research method. The electronic survey, composed of 89 items, was sent to near 1563 individuals distributed among the employees of the eight organizations. The aggregated data of the 87 teams was taken as the study database used in the statistical analysis to test the study general model and relationships between variables. Moreover, the data analysis suggested a path model via which humble leadership influences team characteristics of innovation and innovation with a problem orientation in a study population mostly

composed of Hispanic respondents (86%) and known for its elevated team power distance levels.

Finally, this research will add to the body of knowledge about the value of developing humble leadership behaviors. It could also be used as one mechanism by which teams can improve innovation capabilities and team performance.

### **Keywords**

humble leadership, innovation, team performance, team balance processing, team power distance, team predictors of innovation, narcissism.

## **Dedication**

To my grandfather, Francisco Vazquez Fonseca, who taught me his example of life, the value of work, and discipline.

To my bullfighting grandfather, Manuel Fernández, who taught me the value of temperance, bravery, courage, and timing.

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To my friends, for listening, for their guidance, for leading me, correcting me,  
accepting me, and encouraging me to keep moving forward...

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## Table of Contents

Chapter 1: Introduction .....	1
Many Routes, One Destination .....	2
Research Questions .....	13
Studying Humble Leadership .....	13
Chapter 2: Literature Review .....	18
Introduction .....	18
Humility: Equivalent to Low Self-Esteem and Modesty? .....	18
Objectivity and Humility: Team Balance Processing .....	21
Humility and Team Power Distance .....	22
Intertwined Virtues: Integrity and Humility .....	24
Humility in the Context of Leadership and Diverse Cultures .....	28
Humble Leadership, Core Virtues, and Innovation Practices .....	30
Humble Leadership and Team Predictors of Innovation .....	34
Humble Leadership and Team Innovation .....	39
Humble Leadership and Team Performance .....	45
Research Questions and a Model Proposal .....	47
Summary .....	49
Chapter 3: Methods .....	51
Introduction .....	51
Proposed Causal Model .....	53
Overview of Research Design and Procedures .....	56
Recruitment of Research Sample .....	58
Survey sample .....	58
Procedure for the Development of Study Survey .....	63
Team Level Variables .....	65
Operationalization of Variables, Scales Intercorrelation, and Factors .....	66
Operationalization of variables .....	68
Research Precautions .....	77
Data Analysis Plan .....	79
Analyzing at the individual response level .....	79
Descriptive statistics and intercorrelations .....	80
Creation of team level variables .....	81
Heterogeneity and validity of team data .....	81
Path and regression analyses .....	82
Summary .....	83
Chapter 4: Findings and Results .....	85
Introduction .....	85
Quantitative Survey Results .....	86
Reliability and unidimensionality assessments .....	86
ANOVA validation at the item scale level .....	89
Analysis at the Team Level .....	90

Descriptive statistics .....	90
Scales intercorrelation and factor analysis.....	92
Moderating Relationships in the General Model.....	101
Exploring the Causality of the Three Models and Trimming Processes .....	101
Regression analyses: Humble leadership, factors and outcome variables.....	102
Trimming the model .....	106
Goodness of Fit for the Three Outcome Variables .....	109
Summary .....	114
Chapter 5: Discussion .....	115
Introduction.....	115
Implications for Research .....	115
Findings that support existing theory.....	116
Findings that extend or do not support existing theory.....	117
Study Strengths, Limitations, and Endogeneity .....	125
Future Research .....	130
Implications for Practice .....	132
Chapter 6: Conclusion.....	134
Appendix A. Survey with Question Background .....	142
Participant Data.....	142
Independent Variable .....	144
Mediating Variables.....	145
Moderating Variables.....	150
Outcome Variables.....	151
Appendix B. Sworn Translator Signed Document .....	153
Appendix C. ANOVA Test per Scale Item.....	154
Appendix D. Employer Acknowledgment Form .....	161
Appendix E. Consent Form for Survey Research .....	163
Appendix F. Analyses of the Moderating Effects.....	165
Regression Analysis: Leader-Expressed Humility, Team Power Distance, Collective Humility, and Team Promotion Focus .....	165
Regression Analysis: Leader-Expressed Humility, Collective Humility, Team Promotion Focus, Team Balanced Processing, and Team Characteristics .....	169
Appendix G. Factor Analysis on Restricted Model .....	178
References.....	179
Vita.....	186

## List of Figures

Figure 1. Path Model of Humble Leadership, Innovation, and Team Performance ...	50
Figure 2. General Path Model with Eight Team Predictors of Innovation .....	54
Figure 3. General Model with Mediating and Moderating Variables.....	55
Figure 4. General Model: Humble Leadership, Team Characteristics, Innovation, and Team Performance .....	85
Figure 5. Restricted General Models with Three Outcome Variables.....	103
Figure 6. Restricted Path Models with Three Output Variables .....	112
Figure 7. Restricted Path Model Including Control Variables .....	113
Figure 8. Original Proposed Model of Humble Leadership, Innovation and Team Performance .....	138
Figure 9. Revised Model of Humble Leadership, Innovation, and Team Performance .....	140
Figure 10. Path Model: Leader-Expressed Humility, Collective Humility and Team Promotion Focus .....	167
Figure 11. Path Model: Team Balance Processing as Moderator and Team Characteristics as Output Variables .....	169
Figure 12. Path Model: Team Promotion Focus as a Mediator and Team Characteristics as Output Variables .....	174

## List of Tables

Table 1. Participants, Respondents, and Responses Distribution by Organization ....	62
Table 2. Number of Respondents Per Team .....	63
Table 3. Survey Questions .....	64
Table 4. Scale Reliability and Unidimensionality Test (n = 382 responses) .....	87
Table 5. Descriptive Statistics (n = 87 teams) .....	91
Table 6. Intercorrelations Between the Eight Team Predictors of Innovation .....	95
Table 7. Factor Analysis of Team Predictors of Innovation .....	96
Table 8. Rotation Component Matrix for Three Factors .....	96
Table 9. Intercorrelations Between Study Variables .....	99
Table 10. Intercorrelations Between Predictors and Control Variables .....	100
Table 11. Standardized Beta Weights for Restricted General Model .....	104
Table 12. Standardized Beta Weights After Trimming Processes.....	108
Table 13. Variance Explained: General vs Restricted Models .....	110
Table 14. One-way ANOVA Test per Scale Item .....	154
Table 15. Standardized Regression Coefficients for Collective Humility as Outcome Variable and Team Power Distance as Moderator .....	166
Table 16. Standardized Regression Coefficients for Team Promotion Focus as Outcome Variable .....	168
Table 17. Standardized Regression Coefficients for Team Interdependence and Learning as Outcome Variable and Team Balance Processing as Moderator .....	171
Table 18. Standardized Regression Coefficients for Team Camaraderie as Outcome Variable and Team Balance Processing as Moderator .....	172
Table 19. Standardized Regression Coefficients for Team Feedback and Support as Outcome Variable and Team Balance Processing as Moderator.....	173
Table 20. Standardized Regression Coefficients for Team Interdependence and Learning as Outcome Variable .....	174
Table 21. Standardized Regression Coefficients for Team Camaraderie as Outcome Variable.....	176
Table 22. Standardized Regression Coefficients for Team Feedback and Support as Outcome Variable .....	177
Table 23. Exploratory Factor Analysis on Final Set of Model Variables.....	178

# **Chapter 1: Introduction**

For the learning process, either at the individual or team level, the virtue of humility is for knowledge, like oxygen is for fire.

From my perspective, learning implies three essential phases: (1) knowing what you know, (2) knowing what you do not know about a topic (Dame & Gedmin, 2013), and most importantly, (3) being aware that both of the previous learning phases are also part of the learning process. Acknowledging the various levels of learning involves the development of specific virtues, especially those that could support an individual to be open to new ways of sensing and explaining reality, open to be teachable, and open to be self-considered a work in progress; it requires the need to be humble (Edmondson, 2014).

While we are all influenced by knowledge from various sources, as leaders, we influence people with our explanations about reality, our decisions, and our life example. As per Llano (1979), there are six virtues that a leader needs to develop to influence people and deliver results as teams. Each pair of virtues are connected as predictors of what he calls the three components of the management action function.

Following this theory, the dyad of virtues related to the management function's components is listed below.

- Diagnostic—Virtues of humility and objectivity.

- Decision—Virtues of audacity and magnanimity.
- Command—Virtues of trust in people and constancy of purpose.

These dyads captured my attention many years ago and caused questions to flourish in my mind since, but precisely, the question below:

- Does humble leadership matter for innovation and organization sustainable development?

Part of the journey leading me to such a question is documented in the next section, and it is based on the essay I submitted as part of the application process to the Ph.D. Program in Values-Driven Leadership of the Benedictine University.

### ***Many Routes, One Destination***

Many paths to find an answer could be taken, but the need to pick one out of many routes available always presents dilemmas. Besides, the courage to make the call and lead based on values that foster people's development could turn into significant challenges. However, the courage to keep moving forward and the art of not giving up demands the development of virtues, and the virtue of humility is of particular need in these days.

In 2016, I decided to take part in a Ph.D. program and started with many questions related to the role of leadership as a predictor of innovation and company sustainable growth. As a practitioner and academic, my journey depicted below directed me to a

research a question documented at the end of this section. Let me start from the beginning.

According to Porter and Kramer (2011), towards creating shared value, “No company is self-contained. The success of every company is affected by the supporting companies and infrastructure around it” (p. 12). Despite the social structures established to shape the processes of company sustainable growth and innovation, yet indeed many new companies fail. Thus, (1) What is the role of leadership in catalyzing sustainable growth of a company?; (2) How can leadership catalyze sustainable growth of a company?; (3) How do these structures shape the process of technology development and innovation?; (4) How do these social structures impact company sustainable growth? During my Ph.D. program, I have focused all of my energy, passion for knowledge, and will to structure a research project that could lead me to some answers, so I can find more effective ways to lead and help existing and new firms succeed, especially in emerging countries. In the next lines, I will briefly explain my personal experience as an entrepreneur and managing director of a high-tech venture, hoping that the story will provide the insights that directed me to study the effects of humble leadership on innovation and team performance.

In late 2004, when I was 29 years old and just two years after opening operations of Testing House Mexico, one of my partners suggested that I fire two out of five employees as part of a cost-reduction initiative. The suggestion shocked me. An in-

depth review of the data found our Mexican engineering team had developed essential software tools necessary to ensure a multimillion USD contract over the year 2003 for Testing House Texas. There was no evidence indicating the poor financial or operative performance of the Mexican business unit. However, this situation led me to preliminarily conclude three things.

- My partner and I had communication issues;
- We needed to jointly define and structure critical company “success” indicators and develop a reliable system to measure and communicate them to the different stakeholders; but most importantly,
- I found the need to research and develop an in-depth understanding of how humble leadership is of value when it comes to agreeing on a business plan with the ultimate goal of collectively working towards the sustainable growth of our company.

Working towards the “success/sustainable growth” of our business unit generated vital questions: (1) What is the meaning of company success? (2) Is it enough to increase revenue and profit year over year to consider a company successful? According to data from the Mexican National Institute of Statistics and Geography (INEGI) from 1983 to 2014, the probability of a Mexican company going out of business in the first year of operations is 52%, and the probability of a company remaining in business by the 10th year of operations is 23% (Instituto Nacional de Geografía y Estadística, 2020). Based on these facts, I also asked myself the following questions: (3) Is it enough to last in business at least for ten years for the

company to be considered successful? (4) How can the people also be successful while in pursuit of achieving the company goals? (5) What do the different stakeholders understand and expect from a successful company? Based on my limited experience as a practitioner, the preliminary answers to these questions showed that profit is essential, yet indeed not enough. Leadership and the human side of managing a business and its technological innovations could also be critical factors towards the success of an organization.

While working on my first master's degree in Engineering for Quality (2001–2005), I learned the relevance of many quality topics and advanced statistical methods. Authors like Mr. W. Edwards Deming, Kaoru Ishikawa, Joseph M. Juran, and Blanton Godfrey captured my full attention because they explained how to structure a culture focused on total quality management and how to achieve superior company performance. They also addressed how to avoid or get a company out of crisis and learn from customers' expectations, translating these learnings into products and services (Edwards, 1986). After reviewing this literature in-depth, to my disappointment, I ended up in the master's program still wanting to understand better the meaning of "company success." I yearned to study further such topics as leadership, sustainable company growth, entrepreneurship, innovation, and technology development. They were not centrally considered in this master's program, and they were gaining relevance in my professional life. My engineering background led me to dive deeper into the look of answers to my questions.

After concluding my master's program, the search for answers to my questions took me to study different topics, ranging from the Practice of Management, Effective Executive, Innovation Sources, and Entrepreneurship, between 2005 and 2007 (Drucker, 1993, 2006, 2014). I reviewed strategy and marketing topics, and later continued studying Schumacher (1999) and his book, *Small is Beautiful: Economics as if People Mattered*. The holistic view developed by Schumacher (1999) as it relates to a company purpose and development, as well as his definition of the virtue of prudence, which is, "Prudence implies the transformation of the knowledge of the truth into decisions corresponding to reality" (p. 251), led me to a new question: (6) Why is it important to foster the development of virtues in the company that develop people and sustain growth?

Based on Schumacher's (1999) studies, I began to focus my attention on the concepts of sustainable company growth and human development, and its relationship with virtues and leadership. I studied extensively how essential the virtue of humility is to leadership, a topic that is well addressed by different authors (Edmondson, 1996; Llano, 1979, 2000, 2004; Owens & Hekman, 2012; Owens, Wallace, & Waldman, 2015; Owens, Johnson, & Mitchell, 2013; Tomás, 2004). I went to the sources of some of the authors mentioned earlier. First, I found that Thomas Aquinas beautifully contributed to understanding the relationship between the divine, natural, and human laws and the relationship between the laws and virtues as they apply to people's

development (Tomás, 2004). I also studied the contributions of Cicero and finally Aristotle to understand that developing core virtues is a life journey—they are not traits but instead practices that any individual can develop. Together, with the literature related to the value of emotional intelligence in a professional relationship (Goleman, 2004) and the habits of highly effective people (Covey & Covey, 2020), these authors helped me understand the relevance of fostering virtues and good habits as a means of transcendence in life and organization sustainable development based on the work performed by each individual of an organization. They also explained why good human relationships, as well as managing with emotional intelligence, are critical for success.

The aforementioned academic journey led me to find human development and sustainable company growth as the two dependent variables that a business should focus its energy on. I studied the four main functions of a company: (1) people development, (2) customer service, (3) economic value creation, and (4) reinvestment of profits to the company (Llano, 2000). Besides, I studied the ethical dilemmas faced by management when there is a lack of equilibrium between these four functions. For example, the board of directors' dilemma could be between deciding to reinvest profits to develop new organizational competencies or deciding to distribute all the profits among the stockholders. Even though both decisions are essential for different stakeholders, a balance between the two is critical for sustainable business growth.

In January 2008, I started an MBA at ITESO University to develop management competencies and work on my MBA thesis research, titled, “A Management Model that Facilitates the Human Development and Sustainable Growth of a Company: A Proposal for the High Technology Industry.” I worked on my thesis research during a financial uncertainty in Testing House de Mexico. This was caused by the bankruptcy of one of our most important customers, Nortel Networks Inc. I needed to lead and manage in the face of uncertainty and risk to avoid financial hardship at the company due to cash flow issues caused by the Nortel Chapter 11 processes. I had to do all of this while also focusing on my research project. My thesis employed a case research methodology and took advantage of the aforementioned financial problems to research and document how a social structure—formed with eight people, customers, suppliers, and partner—can continue shaping the process of innovation and stay in business under extremely complicated circumstances. The case study developed is an excellent reference to understand how a small business can (1) develop strategies to overcome a situation threatening company survival, (2) improve organizational resilience, and (3) develop strategies similar to those applied by medium and large enterprises that are also of great value for a small business unit (Delacerda-Gastélum, 2009).

Meanwhile, by the year 2010, Testing House de Mexico was able to overcome the company’s financial difficulties and global crisis. In July 2010, I was able to graduate from an MBA with honors. The company defeated the economic issues caused by

Nortel in late 2010. Still, our company was also honored with the Jalisco State Export Award, and it was again honored in 2011 with the National Exportation Award. Both awards raised the organizational self-confidence and motivated our team to realize that for Testing House de Mexico, the best was yet to come. And it came—in 2010, we released our latest technology product, named EZ4000, to the market.

Conceptualizing, designing, and developing the EZ4000 required us to create the ability to simultaneously perform many organizational actions. We were able to conduct systematic analyses of market research, business intelligence, and customer needs. In addition, we performed engineering and management capacity analysis, translated these requirements into product specifications, trained people, developed the new product, conducted prototype testing, and created new structures of marketing strategy and product commercialization through partnerships with companies located worldwide that assisted us in identifying and encouraging early product adopters. Furthermore, innovating and developing new processes, services, and products is an exciting challenge for any organization because they need to be designed in a way that aligns with the company's overall strategy, and, most importantly, the needs of the customer mission and vision of the company. Aligning these elements is usually a significant challenge, and this is where humble leadership could be of value.

During 2012 and 2015, Testing House de Mexico was honored with the National Prize of Technology and Innovation on its XII and XVI editions. We received these honors because our innovation and technology management model and EZ4000 product were considered unique and novel. The model proved to be capable of bringing entrepreneurial ideas to life. Our model incorporates the management function composed of three phases: diagnostic, decisions, and command. Several virtues support each phase:

- The virtues of objectivity and humility support diagnostics.
- The virtues of magnanimity and audacity support decisions.
- The virtues of confidence in people and perseverance support command processes. (Llano, 1979)

Finally, the innovation functions, based on the Mexican National Model of Technology Management and Innovation, were also integrated into our management model: vigilance, planning, empower people, intellectual property management, and implementation/innovation (Fundación del Premio Nacional de Tecnología e Innovación, 2012). During 2015, we found that the new ISO 9001:2015 norm includes aspects directly related to risk management and company stakeholders' requirements, and expectations are explicitly required to be identified and integrated into the company quality system. As a result, we managed to integrate the new norm specifics into the Testing House de Mexico quality system, and by July 2016, our

company reached the ISO 9001:2015 certification, all towards supporting its sustainable growth.

Reflecting now on this journey, I learned that defining company success is a collective and dynamic process that requires the development of several habits. For instance, good internal and external communication and certain predictors of innovation reflect perceived goal interdependence, shared vision, internal and external communication, team cohesion, (Hülsheger, Anderson, & Salgado, 2009), supportiveness for organization context, team learning behavior, and clear direction (Edmondson, 1999).

I now understand that goal definition requires integrating the different stakeholders in the planning process, especially the employees, because their involvement significantly reinforces their commitment to the company and eases the execution process. The communication of the goals and performance indicators to the different company stakeholders is also of immense importance towards achieving company success. The means to reach established goals is critical, and this is where humble leadership, shared values, team performance, sustainable company growth, and innovation captured my interest as research topics.

After the journey mentioned above, and after spending a few days in 2016 reflecting over the three essential learning phases depicted at the beginning of the chapter, I

ended with the idea of exploring ways to contribute as a researcher to the body of knowledge related to humble leadership. Hence, I entered the doctoral program on Values-Driven Leadership at Benedictine University because my plans, background, and research interests were very much associated with the Benedictine University research initiatives, which are the following: (1) What is the business case for being a values-driven company?; (2) What does a values-driven company look like?; and (3) How does a company get there? Specifically, I want to advance our understanding of the following: (1) What is the role of values-driven leadership in catalyzing a company's sustainable growth?; and (2) How can values-driven leadership catalyze sustainable growth of a company? I wanted to find more effective ways to lead and help existing and new high-tech firms to succeed in emerging countries through a focus on sustainable growth, thus contributing to the increase of the survival company rate.

At that time, my vision in life was to be a dynamic, professional, and disciplined leader and researcher. My passion was to continuously contribute to human development and companies' sustainable growth through high-quality research. I wanted to focus my talents and efforts in (1) research that builds flourishing companies and positively transforms business and society; (2) being one of those selected individuals to join the Benedictine University doctoral program on Values-Driven Leadership; (3) and collaborating with my partners, colleagues, and other renown scholars to advance the knowledge base of the influence of leadership on

sustainable company growth. At that time, I envisioned myself as a successful executive, researcher, and professor. I definitely and most importantly envisioned myself creatively working smart and hard on leaving this world better than it was before joining the team of scholars so that new generations will have a better knowledge base to turn innovative leadership ideas and management models into practical solutions to the world's problems.

The successes and failures depicted in the past journey matter if an individual can capitalize knowledge learned from both experiences, and, most importantly, if after experiencing both, an individual is better equipped to serve society.

In part, the journey mentioned above was how I ended up submitting my research proposal to the Internal Review Board of Benedictine University in October 2019, where the below research questions were included as part of the document.

### ***Research Questions***

- What is the impact of humble leadership on innovation and team performance?
- What is the impact of humble leadership on innovation and team performance while mediated by team predictors of innovation?

### ***Studying Humble Leadership***

Earlier and recent work on the topic of humble leadership have shown the components of individual and team humility and its relationship with team performance (Edmondson, 2012; Norcross, 2018; Owens & Hekman, 2016). In

addition, while most of the authors reported the value of the virtue of humility and psychological safety (Edmondson, 2012) to foster team performance (Owens & Hekman, 2016), my goal is to add to the literature on the dynamics and impact of leader humility and collective humility on innovation with a market and a problem orientation, as well as team performance based on a study population mostly composed by Hispanics.

For instance, knowing what you know requires having the will to acknowledge and understand your strengths, but most importantly, having the will to acknowledge and understand your limitations as well. In addition, discovering what you do not know needs the following: (1) openness to recognize in others what they know and to juxtapose their knowledge with your limited knowledge about a topic; (2) an issue or a challenge to later become vulnerable and open to learning from others; (3) not knowing what you do not know involves having the will to establish a dialogue, to become exposed and (especially) teachable, to listen, and to learn from others despite the role played in an organization (the director, the expert, the manager, the professor, the parent, etc.). Bottom line, it requires having the will to learn despite the role played in any context (Owens & Hekman, 2016).

The virtue of humility is fundamental to the ability to learn from self and others. Relevant outcomes (e.g., innovation and team performance) require a leader to have the ability to learn from different stakeholders. Having the will to learn from self and

others welcomes the virtue of humility to become part of the development journey of an individual and a team. Furthermore, for leadership to have an influence on people, teams, and relevant outcomes (e.g., innovation and team performance) requires a leader to learn from all of the different stakeholders—most importantly, their followers and themselves. This is because both followers and leaders are part of the dynamic roles of leadership, and leadership can only exist if both leaders and followers are part of the model (Uhl-Bien, Riggio, Lowe, & Carsten, 2014).

Towards adding value to society, a responsible leader must sense and take into account different views, needs, dreams, and requirements of people toward envisioning a better future that could only be accomplished by combining disciplines of knowledge (Denning & Dunham, 2010), and especially within a framework of a collective effort enabled with leadership. Leaders must consider futures in the context of a need to emphasize a societal impact and the common good (Yip, Trainor, Black, Soto-torres, & Reichard, 2019).

Because of the relevance of humble leadership using a field study design, the purpose of this research was to study the effect of humble leadership on team innovation with emphases on market and problem orientation (Burpitt & Bigoness, 1997) and team performance. My research goal was to support the existing theory about the value of humble leadership for team performance (Owens & Hekman, 2016) and expand

existing theory by analyzing the value of humble leadership for team predictors of innovation and innovation.

The present study was deployed using known validated instruments to assess the proposed model. The validated instruments were structured in a single survey and applied to team leaders and team members. To do this, I have studied eight different organizations where 87 teams formed within companies from diverse industries found in Mexico, Italy, and the US. Respondents answered surveys between January 8th, 2020, and April 18th, 2020. In the results section of this document, I have documented the causality and statistical significance of the relationship between the variables and the aggregation process to compose team level variables.

With this study, I hope to add to the literature on the dynamics and impact of humble leadership on innovation and team performance at the team level of analysis. By hypothesizing a model and using validated instruments, I also hope to supply guidance for leaders and followers to understand how humble behaviors affect team members as well as team innovation and performance.

Toward grounding this study, the next chapter presents a review of the research to date. It begins by giving an overview of the virtue of humility, its validity in diverse cultures and societies, and its differences among other constructs, like modesty and narcissism. Finally, it reviews current research relating to different leadership theories

with innovation and concludes with the proposed causal model for this study. The review of the existing research will set the framework within which the findings and results of this study will be analyzed in the discussion chapter.

# **Chapter 2: Literature Review**

## ***Introduction***

In the last chapter, I described a journey as a practitioner and academic that led me to the research questions of this study. These questions will guide the discussion of the remaining parts of this document.

While humility can be observed at the individual and team level, in this chapter, I will review why it is yet to be studied how humble leadership could impact team predictors of innovation with two emphases: market and problem orientation (Burpitt & Bigoness, 1997) and team performance (Owens & Hekman, 2016). Previous research has found a relationship between humble leadership and team performance (Owens & Hekman, 2016). This study takes a population mostly composed of Hispanics or Latinos. The review of the existing and relevant literature will include a variety of related and pertinent constructs that have been studied at both the individual and the team level. Once the current research has been reviewed, the articulation of the findings and results of this study will support the exploration of the different model paths depicted in Figure 1 and explore how humble leadership may impact team performance and innovation, both at the team level of analysis.

## ***Humility: Equivalent to Low Self-Esteem and Modesty?***

Even though Roberts, Tangney, van Dierendonck, and Patterson found that humility could be an expression of low self-esteem or an example of leadership weakness (as cited in Hu, Erdogan, Jiang, Bauer, & Liu, 2018), other studies considered humility a

strength because it allows leaders to positively influence their respective team members by acknowledging mistakes and limitations, being teachable, and remaining open to learning from the strengths and contributions of team members (Owens & Hekman, 2016). Therefore, understanding humility as a social process, as a set of behavior that appears through social interactions, and not only as of the absence of narcissism or as a self-deprecating behavior, is an essential inquiry at the individual and team level.

The definition of leader-expressed humility, developed by Owens et al. (2013) is “an interpersonal characteristic that emerges in a social context that connotes (a) a manifested willingness to view oneself accurately, (b) a displayed appreciation of others’ strengths and contributions, and (c) teachability.” (p. 1518). With this definition, Owens et al. (2013) summarized the differences between leader-expressed humility and the concepts of modesty, narcissism, openness to experience, honesty, learning orientation, and core self-evaluations.

For instance, Owens et al. (2013) argued that while modesty implies withholding positive information about the self, it does not include a learning orientation (e.g., teachability). In addition, as per the Owens et al. (2013) literature review, while narcissism encompasses self-absorption and arrogance, anti-narcissism does not necessarily capture humility. In addition, openness to experience implies that someone is imaginative and insightful and has a broad range of interests; however, it

does not necessarily entitle being open to feedback and ideas from others. Also, while they found honesty implies sincerity, fairness, greed avoidance, and modesty, it does not capture the core elements of willingness to accurately view oneself, teachability, and appreciate others' strengths and contributions. In addition, while referencing the work of Dweck, a learning orientation implies an "adaptive approach to task situations associated with the motivation to understand and master the task rather than to display or prove competence" (as cited in Owens et al., 2013, p. 1521) and reflects a desire to develop new competencies and acquire new skills. However, the concept of leader humility shows behaviors that direct the pursuit of accurate self-awareness and appreciation of others' strengths and learning and development. Finally, while core self-evaluation is essential for motivation, persistence, and consistency in performance, it is limited about how viewing others may influence team performance via social learning, which is well captured by the concept of leader-expressed humility developed in this study. In their research, Owens et al. (2013) developed the concept of leader-expressed humility and "a measure that reflects the perceptions of humble behaviors expressed by a focal person." (p. 1520).

Because of the distinctions between humility and modesty, narcissism, openness to experience, honesty, learning orientation, and core self-evaluations mentioned above, humility as a virtue resulted in value for leadership development—especially of value for its development with a focus on facilitating learning processes of teams and individuals to strive to the team's highest potential and, ultimately, improve team

performance (Owens & Hekman, 2016) and team creativity (Hu et al., 2018).

However, it is yet to be determined if humble leadership positively affects team innovation performance.

### ***Objectivity and Humility: Team Balance Processing***

Suppose humility could be considered the internal factor in a personal assessment process, as per Llano (1979), then the external element is also essential for proper a diagnostic about a situation, strengths, limitation, or contribution. While humility could facilitate a leader to understand their weaknesses and strengths, the virtue of objectivity fosters an individual or team to reflect on certain aspects of the external reality about a situation. The dyad of virtues could facilitate the development of the capacity—as an individual or collective—to approach and describe the truth as it is, and not with the bias of the beliefs and paradigms that an individual or collective may have about the specific circumstances.

From the authentic leadership literature, the concept of balanced processing is equivalent to the virtue of objectivity. According to Avolio and Gardner (2005), objectivity implies that individuals “are inclined to and able to consider multiple sides of an issue and multiple perspectives as they assess information in a relatively balanced manner.” (p. 317). Therefore, to enable an individual to make sound decisions that leverage team performance, proper diagnostic processes are required. Both humility and balanced processing are cornerstones of the diagnostics processes, which could drive appropriate decisions (Walumbwa, Avolio, Gardner, Wernsing, &

Peterson, 2008) toward changing practices in a team or society, and potentially fostering innovation and leveraging team performance.

### ***Humility and Team Power Distance***

Even though Hofstede's (2011) original definition of power distance is at the societal level, which implies "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally." (p. 9); nevertheless, later studies have explored power distance from the team level and consider it as the extent to which most members accept the legitimacy of unequally distributed power in the team (Hu et al., 2018). Furthermore, as per Hofstede's (2011) studies, a country like Mexico, with 81 points in its power distance scale, is considered a hierarchical society, meaning that Mexicans usually accept a hierarchical order in which individuals have a place without further justification, with centralized decision processes, and team members expected to be told what to do. In contrast, the United States and Finland have 40 points and 33 points, respectively. According to Hofstede, Hofstede, and Minkov (2010), individuals from the US and Finland are considered independent, are a hierarchy for convenience only, are empowered, have equal rights, and have accessible superiors, coaching leaders, and management facilitates.

Based on the findings mentioned above and the characteristics of humble leadership depicted in the earlier section, it is argued 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.

In addition, Hu et al. (2018) examined team power distance as a moderator of leader humility and team psychological safety, team information sharing, and having team creativity as the outcome variable. They found support for a positive relationship between leader humility and team information sharing. Still, they did not find support related to the positive effect of leader humility to team psychological safety.

However, they were able to find support for the relationship between leader humility and team information sharing; also, the relationship between these two constructs was more positive in teams with low power distance. However, Hu et al. (2018) did not support the moderating effect of team power distance in leader humility and team psychological safety. Furthermore, they did find support from the positive relationship between team information sharing and team psychological safety with team creativity (pp. 317–318).

Furthermore, the findings mentioned above are of value for this study because creativity, as per Oldham and Cummings, is defined as the generation of novel and useful ideas (as cited in Hu et al., 2018). In addition, as per Amabile, creativity is the first phase of the innovation process. The second phase is considered the implementation of the novel ideas developed during the creativity phase (as cited in Hu et al., 2018).

Based on these findings, the moderating effect of team power distance between leader humility and collective humility could be analyzed and expected to lessen the positive impact of leader humility on collective humility. In addition, in a Mexican culture, where the population of this study is mostly composed and where power distance is rated as high, team power distance effects are considered valuable. Thus, the dimensions are included as part of the model depicted in Figure 1.

### ***Intertwined Virtues: Integrity and Humility***

While the humble behaviors depicted by Owens and Hekman (2012) are observable, other core virtues, like integrity as well as positivity ratios during a disclosure narrative, are both noticeable aspects of individuals through their verbal communication in terms of approving versus disapproving statements (Losada & Heaphy, 2004). Furthermore, the behaviors resulting from the core virtues of humility and integrity could be assessed through the disclosure of ideas through verbal communication and primarily the actions of individuals. In addition, for an individual to show integrity, as per Llano (2004), there must be alignment between what an individual thinks, says, and does for them to have the supreme quality of a leader. This quality, as considered by Dwight D. Eisenhower, is integrity (as cited in Vogelgesang, Leroy, & Avolio, 2013).

If the virtue of integrity plays such a crucial part in someone playing the role of a leader, then practicing and developing the virtue becomes a vital part of a leader's

developmental journey. While a leader can value different tangible and not tangible aspects of life, appreciating virtues is not enough to develop a leader's character—the practice must follow until they become behavioral habits (Llano, 2004). Therefore, a virtue-based leadership perspective is a life journey based on generally accepted core virtues among philosophical and religious traditions. It is something that could and should be in practice at all times. In contrast, and according to Kouzes and Posner, values are guiding principles to personal and social ends desires (as cited in Riggio, Zhu, Reina, & Maroosis, 2010). Therefore, value-based leadership is a contingent concept that is subject to the team's needs, values of a society, and culture. In contrast, virtues, especially the virtue of humility, are developmental and common to diverse cultures (Dahlsgaard, Peterson, & Seligman, 2005). Therefore, virtue-based leadership should be considered the cornerstone of a leader's developmental journey, especially for the development of virtues, traits, and values (Crossan, Gandz, & Seijts, 2012).

Additionally, Vogelgesang et al. (2013) built from the authentic leadership construct and took the position “that the more followers perceive greater alignment between a leader’s words and deeds, the more likely they will view their leader as being authentic” (p. 406). These authors built their research more from the leader behavioral integrity constructs that sees transparency as a cornerstone of integrity. Authentic leadership is defined as the following:

[A] pattern of leader behaviors that draws upon and promotes both positive psychological capacities and a positive ethical climate, to

foster greater self-awareness, and internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development. (pp. 405–406)

As per the above definition, the part of the authentic leadership definition more related to integrity is the relational transparency piece of it. However, this element should be considered with caution because, as per Chang and Diddams (2009), authenticity is different from leadership and extensive self-knowledge. This is because transparency could be more related to the promotion of self through impression management rather than transparent relationship. Furthermore, Chang and Diddams (2009) emphasized the need for humility in any further empirical research related to the authentic leadership theory.

If integrity is taken as a significant component of authentic leadership, then it could be concluded that integrity is related to the humility construct developed by Owens and Hekman (2016). In addition, for a leader to acknowledge its own mistakes and self-limitation, recognize the contribution and strengths of others, and be teachable, the leader and team members need to practice transparency with self and others, primarily integrity. Thus, the behavioral example of a leader could influence the followers and drive collective humility, which is a critical component of the humble leadership model developed by Owens and Hekman (2016). Furthermore, during the study of Vogelgesang et al. (2013), they supported the hypothesis below.

- Hypothesis 1—Communication transparency is positively related to follower attributions of leader behavioral integrity;
- Hypothesis 2—The positive relationship between leader communication transparency and follower engagement is mediated by follower perceptions of leader behavioral integrity; and
- Hypothesis 3—Follower engagement is positively related to follower performance. (pp. 407–408)

Their study findings (research executed in a military context) imply that communication transparency in a group leads to individual behavioral integrity and emotional engagement of team members. In addition, Vogelgesang et al. (2013) argued that these components could later enable teams to strive for the members' and teams' higher potential (team promotion focus) and eventually drive individual and team performance. However, for humble leadership, transparency is not enough. Limiting the learning and influence process to the disclosure of information (e.g., self and others' strengths, limitations, contributions) does not fully capture the concept of learning attitude, which is part of the construct of leader-expressed humility and is identified as teachability. Hence, humility, as defined by Owens et al. (2013), has integrity embedded in the construct of humble leadership.

Furthermore, without knowing the self-strengths, limitations, and contributions of others (aspects facilitated by humility), there is nothing to disclose either verbally or

by the contagion effect of the self-example. For an individual to be authentic and develop integrity as a virtue, they should first develop humility. Still, without integrity, it isn't straightforward to develop humility in a team (Crossan et al., 2012).

With these assertions, it could be concluded that integrity and humility are different constructs but intertwined with developing collective humility in a team.

Furthermore, integrity could be found as embedded in the humble leadership construct developed by Owens and Hekman (2016). This is because of the transparency and related disclosure required to share self and others' strengths, limitations, and contributions, and become teachable, all while humbly leading. In addition, integrity is of value for leadership because it is characterized by the actual actions and conduct of leaders. Crossan et al. (2012) referred to it in the following excerpt:

Without humility, leaders cannot be open-minded, and solicit and consider the views of others... Without integrity, leaders cannot build good relationships with followers, with their organizational superiors, with allies or partners... Every promise has to be guaranteed and the resulting mistrust slows down decisions and actions. (p. 3)

### ***Humility in the Context of Leadership and Diverse Cultures***

In several publications, humility and leadership are topics that are found to be related to one another (Collins, 2005; Llano, 2004; Owens & Hekman, 2016; Schein & Schein, 2018). Sometimes it is argued that the relationship between humility and leadership is for the good of individuals and teams (Norcross & Manning, 2019;

Owens & Hekman, 2012; Owens & Hekman, 2016; Owens et al., 2013). In other publications, they are considered the antithesis of one another because leadership is perceived as autocratic or required to be directive to be effective, thus regarded as countercultural (Collins, 2005; Llano, 2004). However, humility was also found to be of value in the organizations (Chang & Diddams, 2009; Collins, 2005; Llano, 2004). As per Collins (2005), level 5 leaders have dyads like modest and willful, shy and fearless; all of these were considered the main differentiators that enabled leaders to lead their organizations from good to great, despite the challenges and crises they all faced. In addition, recent research also reports the value of the interaction between leader narcissism and humility to predict perceived leader effectiveness and follower job engagement and performance (Owens et al., 2015). Therefore, the dyads found by Collins (2005) and the consideration of humility in leadership as a strength instead of a weakness are vital parts of leadership. However, would it be a virtue valued by diverse cultures, as briefly documented in earlier sections of this document?

Fortunately, Dahlsgaard et al. (2005) addressed this question. They analyzed traditions from China (Confucianism and Taoism), South Asia (Buddhism and Hinduism), and the West (Athenian philosophy, Judaism, Christianity, and Islam) in the search for answers to what constitutes moral behaviors and the good life. I needed to understand if there were commonalities between different philosophical and religious traditions. I wanted to know if the virtue of humility is an essential virtue, despite the social and cultural differences between the previously mentioned

societies. It is essential to consider that the authors found that the virtues of courage, justice, humanity, temperance, wisdom, and transcendence were valued in different order levels by all the philosophical and religious traditions.

Furthermore, they related the virtue of humility to the core virtue of temperance. If they asserted that “coming to higher knowledge is central to all traditions,” (p. 208), then developing the virtue of humility as an enabler of leaders and team members’ learning processes is of value. In addition, developing the virtue of humility enables followers and leaders to learn from their actions, ideas, failures, and behaviors toward enabling predictors of innovation to flourish and to help as antecedents of innovation processes and catalyze team performance (Hu et al., 2018; Owens & Hekman, 2016).

### ***Humble Leadership, Core Virtues, and Innovation Practices***

As previously addressed, through a qualitative study, Owens and Hekman (2012) defined a humble leader as one that “admits mistakes and limitations, spotlights followers’ strengths and contributions, and models teachability” (p. 792). They further developed the humility construct with a second quantitative research study. They stated that leader-expressed humility (leader humility as perceived by the followers) is composed of three main aspects, described as “(a) a manifested willingness to view oneself accurately, (b) a displayed appreciation of others’ strengths and contributions, and (c) teachability” (Owens et al., 2013, p. 1518). These three aspects of leader-expressed humility are not only related to the virtue of

temperance but also different core virtues common to the philosophical and religious traditions as put forth by (Dahlsgaard et al., 2005).

If leadership implies influence, and the description of the virtue of justice considers leadership as part of the construct (Dahlsgaard et al., 2005), then leader humility could also imply influencing people through the humble behaviors described earlier. The purpose of such influence is to foster teamwork and to achieve organizational goals together. However, and most importantly, a humble leader should foster what Owens et al. (2013) titled *collective humility*, which implies that team members admit their mistakes and limitations, spotlight their team members' strengths and contributions, and model teachability. The virtue of humility has been found by Owens et al. (2013) to be positively related to team promotion focus, which implies that "a collective team focuses on progressively striving toward achieving the team's highest potential" (Owens & Hekman, 2016, p. 1089). Finally, courage as a virtue implies accomplishing goals in the face of opposition (Dahlsgaard et al., 2005).

These three elements of humble leadership, identified as leader-expressed humility, collective humility, and team promotion focus, are the key components of the mediating model. They are structured and studied by Owens and Hekman (2016) and were found to have a positive effect on team performance.

The value of the common virtues previously identified (temperance, justice, and courage) is considered as particular styles of behaving that, as per the assertions by Dahlsgaard et al. (2005), “may have emerged and been sustained because each allows a crucial survival problem to be solved...Philosophers often refer to virtues as corrective, meaning that they counteract some difficulty inherent in the human condition” (p. 212). If this is the case, then developing the core virtues is a developmental survival path that deserves more attention, especially at teams and organizations that, in most instances, struggle to survive under volatile, uncertain, complex, and ambiguous conditions, mostly induced by the negligent actions of leadership (Collins, 2005).

As mentioned in the introductory chapter and according to the Mexican National Institute of Statistics and Geography (INEGI) from 1983 to 2014, the probability of a Mexican company to run out of business in the first year of operations is 52%. The likelihood of a company to remain in business by the 10th year of operations is 23% (Instituto Nacional de Geografía y Estadística, 2020). If this is the case, would it be possible that focusing on developing particular virtues could facilitate innovation and better performance?

There is still one additional core virtue related to humility and creativity. As per Dahlsgaard et al. (2005), wisdom implies creativity, curiosity, and perspective because it entails the acquisition and use of knowledge. In connection with these

ideas, Hu et al. (2018) also found the virtue of humility to foster creativity. Furthermore, as asserted by Edmondson (1999), creativity could be achieved by providing the psychological space required to encourage new ideas to flourish. All these aspects could be facilitated by displaying an appreciation of other's strengths and contributions, and as a leader being teachable, open to learning from others despite having organizational hierarchies for organization management purposes (Owens & Hekman, 2016).

Furthermore, creativity could be considered the antecedent of innovation; however, it might not necessarily be a condition for innovation. This is because innovation is more related to the adoption of novel ideas than novel ideas per se (Denning & Dunham, 2010). Hence, new and novel ideas are still crucial for innovation. According to Denning (2012), innovation is a set of practices that any individual can learn and develop. The one they named as *adoption* of a new practice, product, or service is the critical practice. They argued that to persuade someone about a value proposition, an individual needs first to be aware (sensing) about the needs of the person or community, envisioning a better future if the proposed practice is adopted and communicating the offer to potential adopters to finally cause adoption (innovate). The innovation practices of sensing, envisioning, offering, and adopting demands iterations. Those iterations require an individual to be open to new ideas from others; to recognize the needs, expectations, and requirements from the diverse stakeholders; and to assess if the organization's capacities can develop and deliver the

solution expected by the community. It requires awareness of the self and other strengths and limitations and open to learning from customer needs. Essentially, it requires the three components of humble leadership developed by Owens and Hekman (2016).

While those innovation practices are related to humble leadership with humility supporting the development of the innovation practices, it is also argued that humble leadership (specifically, team promotion focus) could drive the team predictors of innovation (Hülsheger et al., 2009). I will address these predictors of innovation in detail in the next section.

### ***Humble Leadership and Team Predictors of Innovation***

In a metanalysis presenting team-level antecedents of innovation published before or during March 2007, Hülsheger et al. (2009) found several team predictors of innovation. The authors defined innovation as the dyad between the generation of novel ideas, which they identified as creativity, and the implementation of those ideas. Both phases are considered part of innovation. Besides, they assessed the value of both measurement level and measurement method to determine the predictors of innovation and innovation itself. At the measurement level, they assessed two levels: individual and team. While at the individual level, they studied publications where individuals assessed their number of patents, the number of creative suggestions made by an employee, or by experts rating a specific solution. At the team level, the innovativeness of a team focused on the same vital processes indicators mentioned at

the individual level (patents, number of creative suggestions made by an employee, or by experts rating a specific solution). Furthermore, they found that “team members’ perceptions of team processes affect the innovativeness of the whole team more than the innovativeness of individual team members” (p. 1140); this is, in part, encouraging because, as I will depict in the methods section, the unit of analysis in this study is at the team level, and the findings of Hülsheger et al. (2009) support this approach.

At the measurement method level, they concluded that a single-source, self-report data overestimates the effect of team predictors of innovation and innovation itself as the outcome variable. In addition, they found that it is better to manage this common method bias by having a neutral individual (e.g., principal, supervisor, or team leader) assess the team innovation performance instead of having each team member assess the outcome variables. In the present study, the approach of a neutral individual evaluating team performance and innovation was adopted to manage common method bias.

From the 15 team-level variables that Hülsheger et al. (2009) identified over the meta-analysis as predictors of innovation, they found that the team predictors positively correlating with team innovation (generation and implementation of new ideas), generalizable to any context, and statistically significant, are the ones listed below:

- Perceived goal interdependence describes “the extent to which team members’ goals and rewards are related in such a way that an individual team member can only reach their goal if the other team members achieve their goals as well” (p. 1129);
- Shared vision is a dimension that “assesses the extent to which team members have a common understanding of objectives and display high commitment to those team goals” (pp. 1131). This dimension is conceptually related to the construct identified by Edmondson (1999) as *clear direction*; this is because this dimension assesses how clearly team members know what they are supposed to accomplish, how they spent time making sure every team member understands the team goals, and how the team invested time clarifying its goals;
- Task orientation, which, according to West (1990), describes “a shared concern with excellence of quality of task performance in relation to shared vision or outcomes ” (as cited in Hülsheger et al., 2009, p. 1131). This dimension is conceptually related to task design documented by Edmondson (1999). This is because the task design orientation from Edmondson (1999) assesses if the work the team does makes a difference, if the team receives enough feedback about the task performed, and if the work meets the needs of the stakeholders;
- Team cohesion, which, as per Lott and Lott (1965), “refers to the commitment of team members to their work team and their desire to maintain group membership” (as cited in Hülsheger et al., 2009, p. 1131). This dimension was further developed by Carless and de Paola (2000) with three scales: (1) task cohesion, (2) social cohesion, and (3) individual attraction to the group;

- Internal and external communication are considered a major source of innovations because it enables the sharing of information and ideas (Hülsheger et al., 2009). This dimension is conceptually related to team learning behavior documented by Edmondson (1999). This is because team learning behavior assesses how the team invest times in communicating to find ways to improve the team's processes, how the team goes out to get all information they can possibly can to address a market opportunity or solve internal problems, and how the team invites people from outside of the group to present information for discussion;
- Support for innovation, which, according to West (1990), describes the “expectation, approval and practical support of attempts to introduce new and improved ways of doing thinks in the work environment” (as cited in Hülsheger et al., 2009, p. 1131). This dimension is conceptually related to supportiveness of organization context documented by Edmondson (1996) because her constructs could provide information about the teams' attempts to introduce new and improved ways of doing things through having access to information, obtaining expert assistance, being exposed to current developments, and having proper access to training and related rewards.

The team predictors of innovation mentioned above were adopted in this study as part of team innovation predictors with two emphases: market and problem orientation. In addition, I argue that team promotion focus, or having a progressively striving toward achieving the team's highest potential, could positively affect each of the team

predictors of innovation, thus facilitating not only better team performance, but a more creative team and related implementation of novel ideas, as well as fundamentally better innovation processes with external (market) and internal (problem) orientations.

If the virtue of humility in a social and organizational context is of value for creating a positive and safe space for individuals to learn from self and others, and if learning is the cornerstone of creativity and innovation, then it could also be the case that leader-expressed humility, collective humility, and team promotion focus could drive innovation predictors, such as those found to be statistically significant and generalizable over the meta-analysis performed by Hülsheger et al. (2009).

Creativity and innovation imply changing the state of mind and things. Pasmore (2011) argued that successful organizational change requires leaders and followers to collaborate on overcoming challenges, achieving common goals, adapting to dynamic environments, learning from internal resistance, and sustaining change initiatives. Similarly, Burke (2011) has written that organization development's mission has been to loosen tightened organizations by involving and gaining team members' commitment. In addition, humble leader and follower behaviors are essential to the efficiency of a planned change process. Finally, such behaviors lead to human fulfillment, task accomplishment (Friedlander & Brown, 1974; Norcross & Manning

2019), innovation (Bel, 2010; Hu et al., 2018; Manz, Bastien, Hostager, & Shapiro, 1989); and team performance (Owens & Hekman, 2016).

Finally, certain studies validated a positive relationship between leader-expressed humility, collective humility, and team performance by having collective humility and team promotion focus as mediators (Owens & Hekman, 2016; Owens et al., 2013); however, the effect of the humble leadership construct on the change process is yet to be explained. However, the impact of humble leadership in team processes related to the antecedents of innovation, and innovation itself with both emphases, market and problem orientation is yet to be determined.

### ***Humble Leadership and Team Innovation***

As per Crossan and Apaydin, innovation is “widely regarded as a critical source of competitive advantage” for organization survival and success” (as cited in Zhang, Ou, Tsui, & Wang, 2017). In addition, Manz et al. (1989) found through multiple cases that innovation firm performance is the result of situational leadership in action (e.g., transformational leadership, transactional leadership, and participative leadership). In contrast, Zhang et al. (2017) took a paradoxical approach between humility and narcissism and found that firm innovation is not only the result of leader humility or narcissism as separate predictors, but instead, the interaction term between the two is the one driving innovation. This paradoxical approach had proven to support their hypothesis, showing that humility and firm innovation had a positive and significant relationship when narcissism was high, but not a significant effect when narcissism

was low. In a different approach to innovation, a complementary work is the one reported by Drucker (1993, 2014). His studies presented the seven sources of innovation, known as the unexpected, incongruities, process need, industry and market structure change, demographics, changes in perception, and new knowledge. Drucker (1993) also addressed management practices that could enable organizations to manage resources and focus them on finding business opportunities in any of the innovation sources toward developing a competitive advantage. In addition, while the sources of innovation depicted by Drucker (2014) provided a practical approach to look for innovation opportunities, he neither reported the means to develop the competencies required to enable a team to become innovative nor addressed the practices or behaviors that could allow them to sense opportunities in those innovation sources and cause adoption. However, Drucker (1993) explicitly addressed management and leadership. While he considered the manager the one who defines the organization's mission and develops and retains productive teams, he defined a leader as one that enables people to flourish based on values, fosters a shared purpose and vision, and provides the means to allow people with the systems and processes required by the organization for people to reach the firm goals.

While knowing that (1) innovation is a critical source of competitive advantage, that (2) a single leadership style does not ensure firm innovation performance, that (3) innovation sources and management practices could support the identification of opportunities and allocation of resources to capitalize innovation opportunities, and,

on top of that, that (4) findings indicating that a combination of humble and narcissistic behaviors are predictors of firm innovation, the research gap between leadership and innovation still offers exciting research opportunities.

Such a gap is well documented in the research done by Rosing, Frese, and Bausch (2011). While their findings support what Manz et al. (1989) found, as it relates to the evidence showing leadership as the main predictor of innovation, they documented two phases of innovation. The first phase is related to exploration and the second phase is related to exploitation. As defined by March, exploration and exploitation are two forms of organizational learning (as cited in Rosing et al., 2011). Furthermore, Burpitt and Bigoness (1997) regarded exploration as the search for alternatives and risk-taking, as identified by and defined as team innovation with a market orientation.

On the other hand, Burpitt and Bigoness (1997) indicated that exploitation is regarded as adherence to rules, alignment, and risk avoidance, and is mostly focused on internal processes of the organization—those requiring a focus on developing the solutions needed by the market and defined as team innovation with a problem orientation. Both views, exploration and exploitation, or team innovation with market orientation and team innovation with a problem orientation, respectively, are as ,per their findings, of great value for innovation to flourish in a team if leadership behaviors and not leadership styles are appropriately selected and deployed (Rosing et al., 2011). They emphasized behaviors because they found that a single leadership

theory or style does not suffice for innovation. Finally, the exploration phase could identify external opportunities by looking for opportunities in the innovation sources depicted by Drucker (2014); consequently, the team will need to focus on translating the needs of the market into a tangible solution to be developed at the company with an emphasis on innovation with a problem orientation.

Rosing et al. (2011) argued that single leadership theory is not able to influence both innovation phases positively, but instead, situational leadership with specific behaviors is needed for innovation to flourish in teams. Rosing et al. (2011) reviewed and meta-analytically integrated the existing literature on leadership and innovation and found a complex and inconsistent phenomenon of the relationship between the different studies' findings. In addition, they analyzed the studies available that related innovation with the theories of transformational leadership, transactional leadership, leader-member exchange theory, initiating structure and consideration, supervisor support, participative leadership, noncontrolling leadership, and consultative advisory. The only leadership theory or style that had proven to provide equivalent and not contradictory results among the studies related to leadership with innovation was the leader-member exchange theory. In addition, they concluded that a need for complementary behaviors instead of a specific leadership style was a better fit to foster innovation. The behaviors they suggested to foster innovation are listed below per the innovation phase (Rosing et al., 2011, p. 967):

- Opening leader behaviors (explorative activities/team innovation with a market orientation)
  - Allowing different ways of accomplishing a task;
  - Encouraging experimentation with different ideas;
  - Motivating to take risks;
  - Giving possibilities for independent thinking and acting;
  - Giving room for own ideas;
  - Allowing errors; and
  - Encouraging error learning.
  
- Closing leader behaviors (exploitative activities/team innovation with a problem orientation)
  - Monitoring and controlling goal attainment;
  - Establishing routines;
  - Taking corrective action;
  - Controlling adherence to rules;
  - Paying attention to uniform task accomplishment;
  - Sanctioning errors, and
  - Sticking to plans.

In their study, what I found most interesting were their conclusions leading to behaviors to affect team innovation, instead of single leadership theory. For instance,

the opening leader behaviors (team innovation with a market orientation) listed above foster a focus on individuals' strengths (leader and team members). Furthermore, allowing different ways to accomplish a task and encouraging experimentation, giving possibilities for independent thinking, and providing the space to allow error could all be related to the humble behaviors depicted by Owens and Hekman (2016) and Edmondson (1999). In addition, this is because acknowledging strengths, contributions, and limitations of team members and self as a leader could facilitate the development of sensitivity and openness to new external opportunities available in the different innovation sources from Drucker (2014).

Finally, the closing leader behaviors (team innovation with a problem orientation) could also be related to the components of humble leadership in a way that taking corrective actions requires an individual to reflect and acknowledge mistakes and limitations, to be aware of their strengths, and striving to the team highest potential. All of these, by sticking to plans and pursuing magnanimous goals, are components related the humble leadership construct developed by Owens and Hekman (2016).

Based on these findings, this study adopts the concepts of team innovation with a market and problem orientation as outcome variables and explores the relationship between humble leadership and innovation.

## **Humble Leadership and Team Performance**

As mentioned in an early section of this chapter, and as per Losada et al. (2004), positivity ratios of verbal communication are observable aspects of individuals. Still, they also showed a relationship between positivity and connectivity of a team in the performance of teams. In their research, they captured teams' verbal communication and found "how positivity and negativity interact as powerful feedback systems to generate different emotional spaces" (Losada et al., 2004, p. 744). These spaces allow crafting a model that "demonstrates how the emotional dynamics generated by P/N ratios differentiate teams into high, medium, and low-performance levels" (Losada et al., 2004, p. 744). Furthermore, if these ratios and related communication, which could be considered acts of transparency as per the authentic leadership model, are so important for team performance as well as individual flourishing, then the narratives and behaviors facilitated by a humble individual playing the dynamic roles of leader and team member could be considered of the utmost importance for the people learning processes.

In addition, understanding the value of humility in teams is important because, as discovered by Owens and Hekman (2016), it has a positive impact on organizational development and change, and, specifically, team performance. As documented before, Owens and Hekman (2016) coined the term collective humility to refer to the orientation of groups "toward owning limitations and mistakes, appreciating groups' member strengths, and being teachable" (p. 1089). Owens and Hekman (2016) and

Rego et al.(2019) also showed that collective humility is the result of the social contagion of humble leader behaviors.

Leaders are theorized to be vital in providing the “enabling structure” (Burke et al., 2006: 289) for team functioning and performance largely by modeling positive ways of interrelating: “leader behavior ‘models the way’ organizational/group goals should be pursued” (Yaffe & Kark, 2011: 809), and leaders “model teamwork, or how team members should work together” (Zaccaro et al., 2002: 468). Thus, leaders can have a vital influence in shaping how team members interact through the leaders’ own social modeling (see Dragoni, 2005; Naumann & Ehrhart, 2005)....This social modeling idea fits with evidence that followers emulate leaders’ emotions (Johnson, 2009; Sy, Cote, & Saavedra, 2005) and behaviors (Fast & Tiedens, 2010; Visser, van Knippenberg, van Kleef, & Wisse, 2013). (as cited in Owens & Hekman, 2016, p. 1090)

Furthermore, Owens and Hekman (2016) also found a strong relationship between leader-expressed humility, collective humility, and team promotion focus.

Team promotion focus is also identified as a collective promotion focus, which is defined as the following:

[A] shared team focus on progressively striving toward achieving the team’s highest potential, and leads group members to approach opportunities (Rietzschel, 2011) and motivates them to be “more focused on what they want to achieve than on what could go wrong” (Beersma et al., 2013: 196). (as cited in Owens & Hekman, 2016, p. 1092)

To strive for the team’s highest potential, a team must first understand what that potential is and not underestimate it. This assessment is supported by exercising humility, by having both leader and team members acknowledging strengths and limitations, recognizing their contributions, and being teachable.

Finally, in their study, Owens and Hekman (2016) found the relationship of the mediating model (leader-expressed humility >> collective humility >> team promotion focus >> team performance) to be strong and statistically significant. However, it is yet to be determined if this model is valid in a population mostly composed of Hispanic respondents and a country like Mexico, where power distance is rated as high (Hofstede et al., 2010). It is also yet to be determined if team promotion focus could also drive team predictors of innovation and innovation with two emphases—market and problem orientation. Innovation with these two emphases as a potential outcome variable will be analyzed in the following section.

### ***Research Questions and a Model Proposal***

I have considered that the behaviors of the two innovation approaches (market and problem orientation) and team performance are related to the humble leadership behaviors of the model developed by Owens and Hekman (2016). This potential relationship between the components of humble leadership, team innovation, and team performance could address the research gap discussed in the previous section between leadership and innovation. At the same time, the focus on specific behaviors that foster innovation instead of a single leadership style, has proven among different studies to result in various and, most of the time, contradictory findings (Rosing et al., 2011).

Based on the current state of theories relating to leadership, innovation, and team performance, this research is designed to explore answers to the research questions listed below:

- What is the impact of humble leadership on innovation and team performance?
- What is the impact of humble leadership on innovation and team performance while mediated by team predictors of innovation?

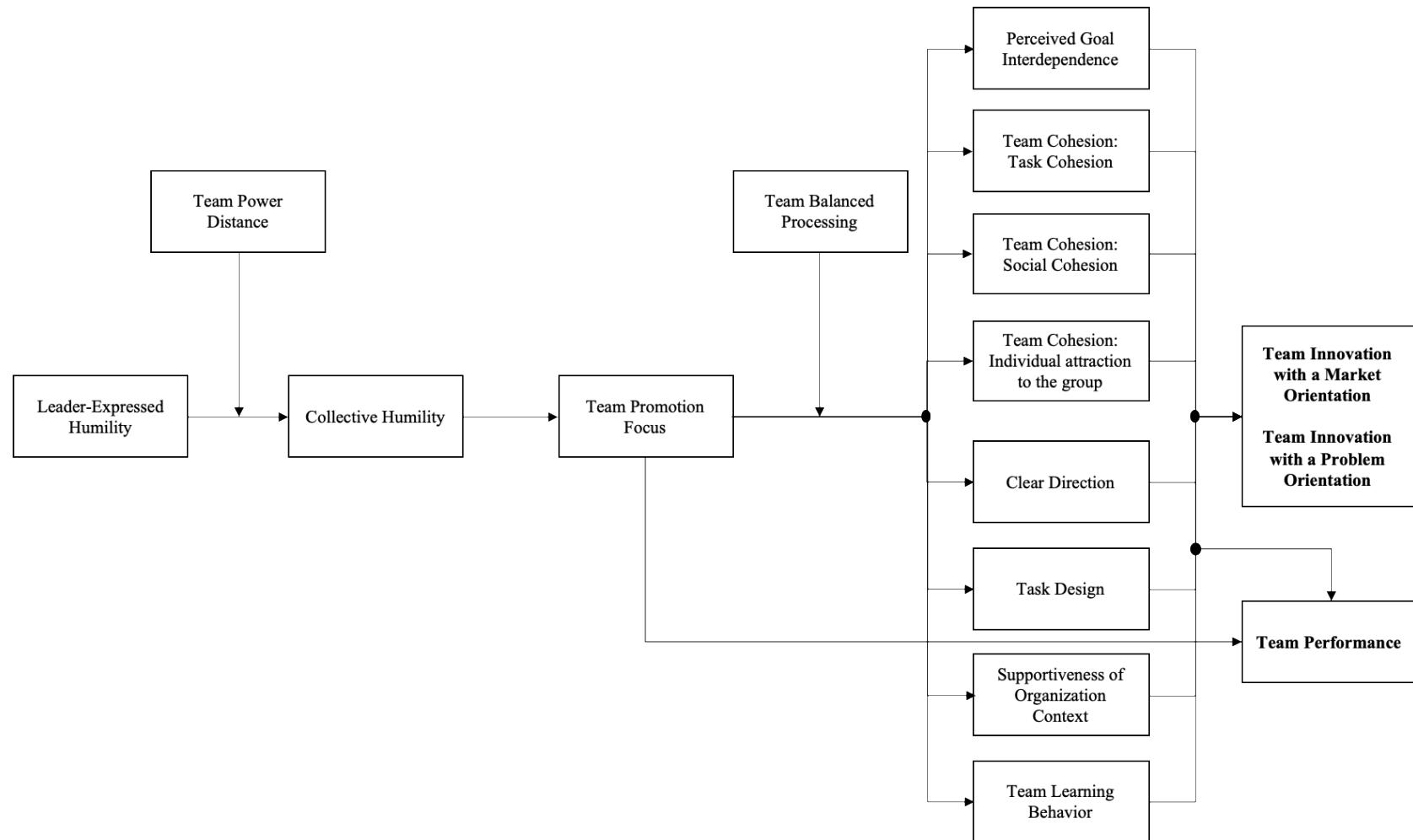
The proposed model (Figure 1) considers that the components of humble leadership (leader-expressed humility >> collective humility >> team promotion focus) are related to innovation and team performance. In addition, such a relationship could be direct from the humble leadership construct to team performance or also mediated by the team predictors of innovation. As discussed in a previous section of this chapter and referred to by Rietzschel, team promotion focus “involves team members focusing on ‘collective’ goals rather than ‘personal’ goals, and maximal ‘promotion’ goals rather than minimal ‘prevention’ goals “ (as cited in Owens & Hekman, 2016, p. 1092). Therefore, team promotion focus is hypothesized as a mediator between innovation, team performance, and team predictors of innovation. In addition, it is argued that when striving to the team’s highest potential (team promotion focus), members will be in better conditions to affect facilitating team performance, structuring a shared vision, and fostering goal interdependence, task orientation, team cohesion, proper internal and external communication, and support for innovation (Hülsheger et al., 2009, p. 1138). The team promotion focus’s mediating effect is

hypothesized to be positive for the team predictors of innovation and contingent on the moderating effect of team-balanced processing on the relationship between team promotion focus and each of the eight-team predictors of innovation. In addition, the mediating effect of the collective humility is hypothesized to be positive for the team promotion focus and contingent on the moderating effect of team power distance on the relationship between leader-expressed humility and collective humility. The causalities depicted in the model of Figure 1 are the basis of this study.

## **Summary**

As reviewed in the preceding sections, indeed, the virtue of humility is a valuable behavior for individuals and team to flourish, and to drive team performance. However, it is yet to be determined if humble leadership positively affects the team predictors of innovation, innovation with a market and problem orientation, and team performance in a population mostly composed of Hispanic individuals (Mexicans) rated with high levels of power distance (Hofstede et al., 2010).

This chapter has focused on how the existing literature suggests a more vibrant model for how humility affects team innovation and performance. The following chapter will describe the way in which research supports to determine whether the proposed causal model is related to what teams in the field consider of value, and it means to measure each of the dimensions of the model depicted in Figure 1.



**Figure 1. Path Model of Humble Leadership, Innovation, and Team Performance**

# **Chapter 3: Methods**

## ***Introduction***

Research in this dissertation focuses on exploring the mechanisms through which the virtue of humility at the leader and team level influences team performance and innovation with two emphases, market, and problem orientation. The previous chapter focused on reviewing the existing literature related to human virtues, humble leadership, power distance, team predictors of innovation, balanced processing, team performance, and innovation. The review helped the structure of a proposed causal model within which humble leader behaviors and collective humility moderated by power distance and balance processing could affect the innovation and team performance. Notably, the study was envisioned to do the following:

- Propose a causal model that shows the components that catalyze innovation and team performance through humble leadership.
- Empirically test the relationship between leader-expressed humility, collective humility, team promotion focus, and team predictors of innovation mediating the relationship between leader-expressed humility, innovation, and team performance.
- Develop a better understanding of the moderating effects between humble leadership with innovation and team performance by having team power distance and team balanced processing as moderators in different paths of the model.

This chapter will explain the research method employed to investigate and assess the proposed model. The research method was quantitative and employed a survey design using known validated scales. Thirteen companies with 7000 employees were invited to take part in the study. Upon concluding the review of the research proposal, eight organizations accepted the invitation to take part in the study (six from Mexico, one from the USA, and one from Italy), totaling 1563 employees receiving the electronic survey by email. All organizations formally approved the research and the study to be applied to their leaders and respective team members.

The electronic survey, composed of 89 items, was sent to 1563 individuals distributed among the employees of the eight organizations. The average response time was 18 minutes. Out of the 1563 individuals invited, 530 (33.90%) started the process. The leader and team matching process concluded with 382 responses that eased the structure of 87 teams with an average of 4.4 individuals per team, ranging from 2 to 13 members per team. The aggregated data of the 87 teams was taken as the study database used in the statistical analysis to test the study general model and relationships between variables.

The critical question driving this research is the following: What is the impact of humble leadership on innovation and team performance? This inquiry is related to the need to understand the impact of the leader and collective humility as perceived by

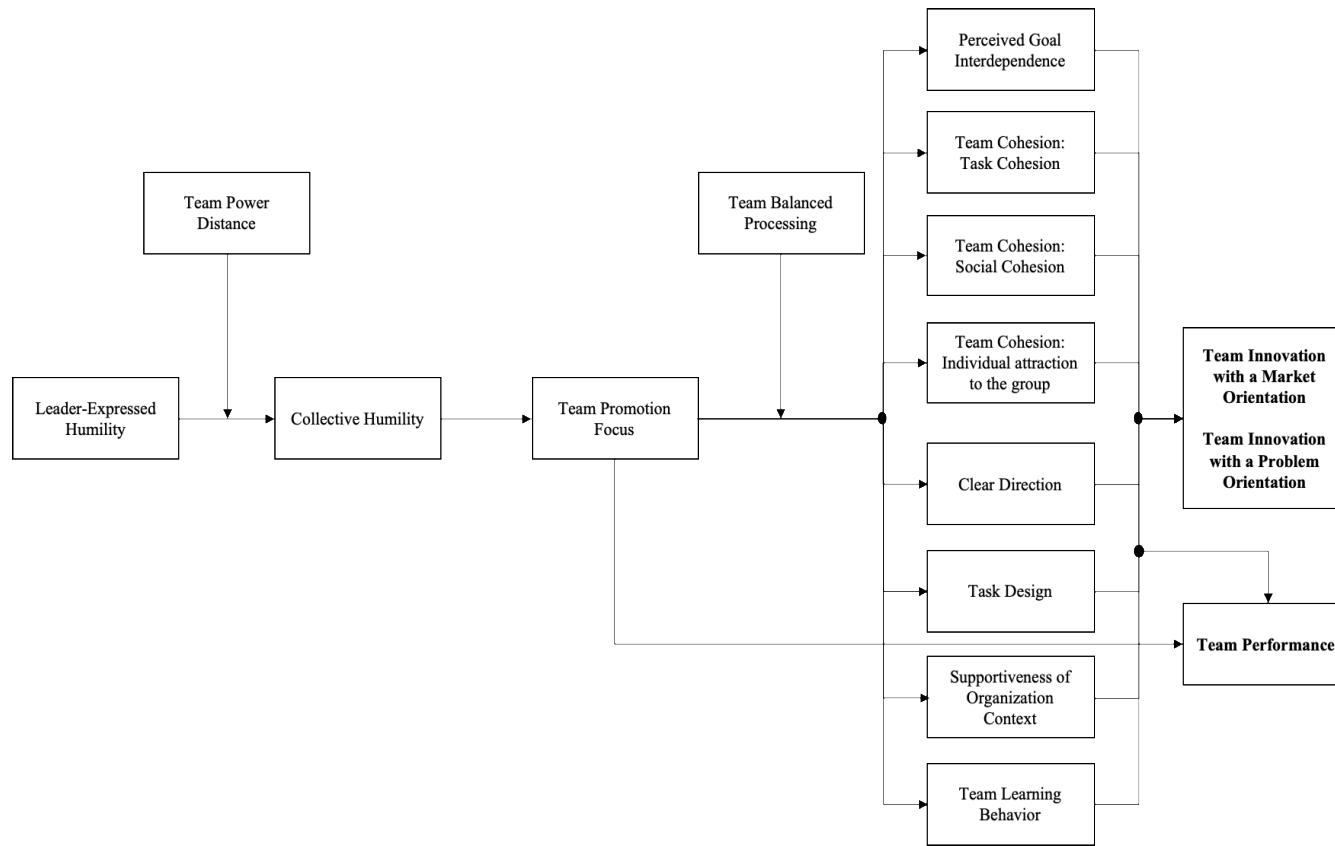
team members on team performance and innovation with two emphases, market, and problem orientation.

The unit of analysis is at the team level. A team was 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). The team leader could be either a director, a manager, a coordinator, or supervisor—any role that provides direction and influence with its decisions to the teams’ shared vision, goals, execution processes, and performance.

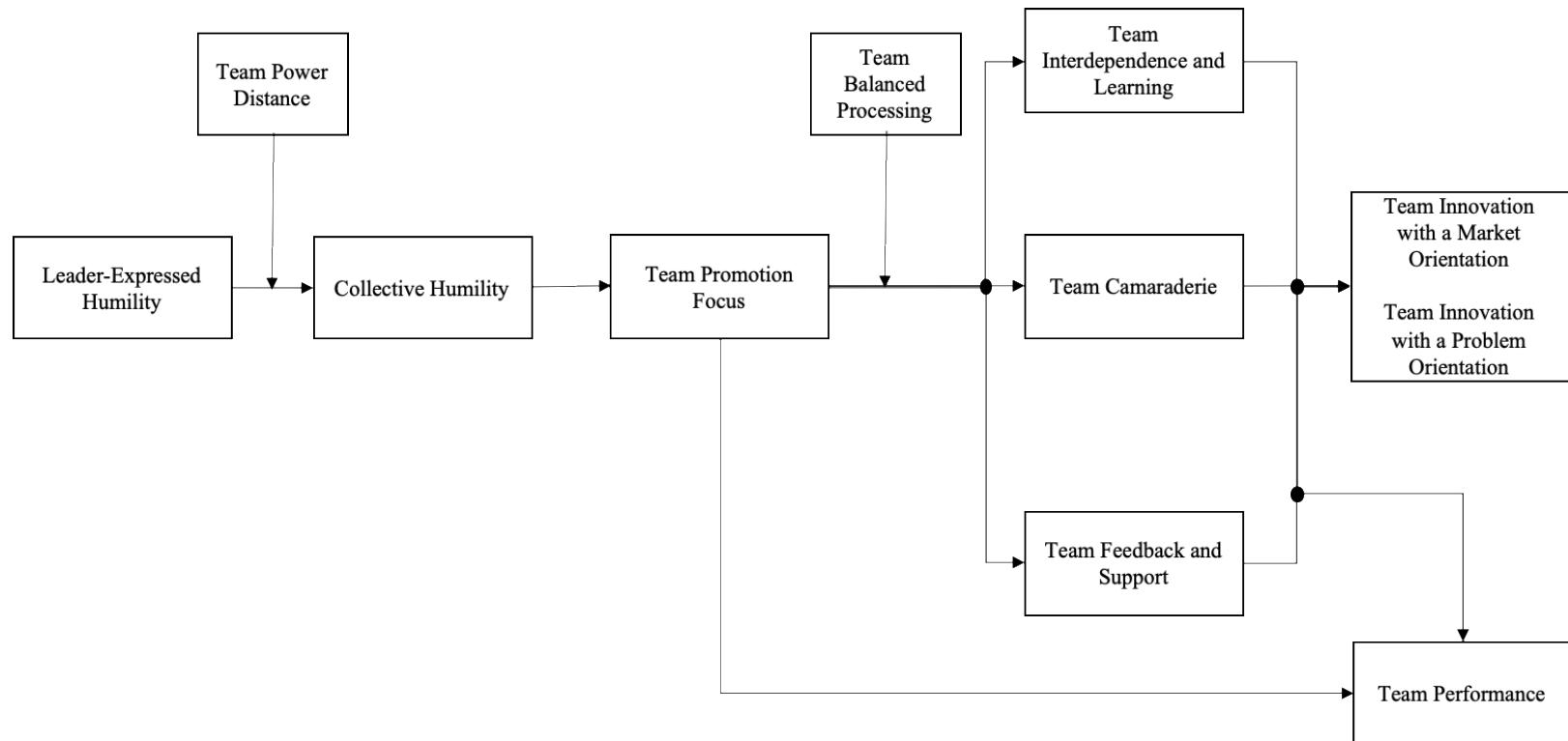
### ***Proposed Causal Model***

Figure 2 (below) details the original general model that includes the eight-team predictors of innovation as the last mediators of the model path. As I will detail in the results chapter, during preliminary data analyses, intercorrelations between the eight-team predictors of innovation were considered high and raised concerns of multicollinearity. These issues were addressed through a factor analysis process and concluded with three factors—(1) team interdependence and learning, (2) team camaraderie, and (3) team support and feedback—instead of eight predictors of innovation.

Figure 3 depicts the revised general model that details the relationship between humble leadership and team characteristics on innovation and team performance, and it is the model that will be used in the analysis of causal relations.



**Figure 2. General Path Model with Eight Team Predictors of Innovation**



**Figure 3. General Model with Mediating and Moderating Variables**

The design of this research implies exploring the paths of the model related to humble leadership (leader-expressed humility, collective humility, and team promotion focus) and team characteristics with team performance, and innovation with emphases in market and problem orientations. It also explores whether team power distance moderates the relationship between leader-expressed humility and collective humility, and whether team balanced processing moderates the relationship between team promotion focus and the three composed team characteristics as represented by team interdependence and learning, team camaraderie, and team feedback and support. Finally, it analyzes the influence of the predictors on each of the three outcome variables.

The development of these models was influenced by the humble leadership framework proposed by Owens and Hekman (2016), a meta-analysis examining team-level predictors of creativity and innovation (Hülsheger et al., 2009) and my background and interest in explaining how teams are enabled to innovate and perform through humble leadership.

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

To ensure consistency between this research study and Owen and Hekman's (2012, 2016) approach, I repeated their survey questions and scales for all the validated instruments they used in their research (leader-expressed humility, collective humility, team promotion focus, and team performance). In addition, I used questions from validated instruments for each of the remaining scales and administered the

survey questions electronically via surveymonkey.com. Finally, the survey questionnaire used a standard Likert (1932) scale with a 5- or 7-point response format.

From the 1563 individuals invited by email to participate, 530 started the survey, and 403 concluded the process. The data was collected via surveys according to the following steps:

- Survey design—The survey questions were taken from the English version of the original questionnaires, translated to Spanish by an official translator, and integrated into the surveymonkey.com software tool for pilot testing.
- Pilot survey questions—A small number of surveys (5) were administered to test subjects to ensure the survey questions and directions were clear and understandable in both English and Spanish. The validation process considered meetings with the respondents to confirm if the questions in English and Spanish appropriately reflected the intent of the item. The surveyors' feedback was considered to improve the Spanish version of the questions, which were later confirmed by the official translator.
- Identification and recruitment of survey respondents—All the directors of each organization were asked if they would be willing to have their organizations participate in the survey. The 13 organizations were recruited through my personal and professional network. One of those chose not to join as a result of having been involved in a scale survey recently. Four of those declined to join because, upon

reviewing the research proposal, their legal teams did not approve the study to be applicable to their employees. All the participants were given a choice to take part or not to take part in the survey.

- Questionnaire Administration—Final surveys were administered via surveymonkey.com and sent to approximately 1563 individuals. Of those, 530 individuals began the study, and 403 concluded the process, and a total of 87 teams were structured in the dataset for statistical analysis purposes.

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

In the following sections, I will address the specifics about the population studied, how organizations were invited to take part in the study, and the recruiting processes of the respondents.

### **Survey sample**

#### Participants contact and consent

As previously mentioned, the participant organizations' leaders were available through my personal network of contacts and were invited to explore the research purpose and survey protocol. The eight organizations that decided to participate are named with the following codes: AA, BI, CI, DK, EL, FN, GS, and HV.

As previously mentioned, 1563 individuals received the electronic survey, of which 530 started the process, and 403 respondents concluded the process. From that, 315 useful responses were obtained, of which 58% were females and 42% males; 86% of

the respondents were Hispanic or Latinos, 9% White or Caucasian, and 5% from another ethnicity.

The matching process between leaders and their respective teams was created based on respondents' answers to questions about their team and leaders' names. It is essential to clarify that there was no reward received by the participants.

**Data preparation and cleansing**As previously mentioned, the participant organizations' leaders were available through my personal network of contacts and were invited to explore the research purpose and survey protocol. The eight organizations that decided to participate are named with the following codes: AA, BI, CI, DK, EL, FN, GS, and HV.

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Table 1 shows the companies selected for the study. While respondents are unique individuals answering the survey, the responses relate to the total amount of configured survey answers after the data leader-team matching process. A total of 382 responses were configured in the dataset because 67 respondents were common team members to more than one team, which implies that a single individual was part (e.g., a leader for one team and a follower for another team) of different teams within the same company, either as a leader or as a team member. Thus, in part, 67 responses were replicated to fulfill the team matching process requirements. Proper care was taken to ensure the performance assessed by a leader is unique (not replicated) for each of the 87 teams configured in the dataset.

Because a matching process was needed between leaders and team members, it was impossible to integrate all the survey responses into the dataset at the team level of analysis. Out of the 530 individuals that started the survey, 487 acknowledged their participation in the survey and supplied their organization name on the related question. However, a total of 215 (40.56%) responses were dropped from the dataset.

Below a list of the reasons related to the dropped responses:

- 4 respondents formally declined to take part;
- 35 respondents did not supply their organization name;
- 34 respondents did not supply their leader's full name;
- 50 respondents did not supply their team name;

- 4 respondents did not answer the question that could identify them as the leaders of the team described; and
- 88 responses were dropped because there was no way to match the identified leader with an identified team.

At the team level, these 315 respondents (59.43% out of the 530 respondents) were informants of 87 teams with an average team size of 4.4 individuals, ranging from 2 to 13 members per team (see Table 2 for details).

**Table 1. Participants, Respondents, and Responses Distribution by Organization**

Organization	Participants	Respondents	Responses	Organization Description
AA*	9	8	17	U.S. based high-tech company
BI*	25	18	24	Mexican based software and hardware company
CI*	248	119	138	Mexican higher education institution
DK*	35	32	38	Mexican biotechnology organization
EL*	22	17	23	Mexican financial technology organization
FN*	40	34	41	Mexican organization related to the bakery industry
GS*	26	23	28	Italy based high-tech company
HV*	82	64	73	Mexican elementary education institution
Total	487	315	382	

\* For confidentiality, pseudonyms have been used.

**Table 2. Number of Respondents Per Team**

<b>Number of Respondents Per Team</b>	<b>Number of Teams</b>
2	20 (23%)
3	17 (20%)
4	20 (23%)
5	12 (14%)
6	6 (7%)
7-9	7 (8%)
10-13	5 (6%)
<b>Total: 87 (100%)</b>	

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

The quantitative survey was employed to operationalize study variables at the team level, as directed by the proposed causal model of Figure 2. As shown in Table 3, all the questions were sourced from previously validated instruments with minor changes made only on some Likert scales, which are well documented in Appendix A.

**Table 3. Survey Questions**

<b>Question Numbers</b>	<b>Description</b>
ID-0 to ID-12	Organization, demographic, background, leader and team identifying questions
F-1	Request for questionnaire feedback
LEH-1 to LEH-9	Leader-expressed humility, from Owens and Hekman (2016) as adapted by Owens et al. (2013)
CH-1 to CH-9	Collective humility, from Owens and Hekman (2016) as adapted by Owens et al. (2013)
TPF-1 to TPF-4	Team promotion focus, from Owens and Hekman (2016) as adapted from Lockwood, Jordan, and Kunda (2002) (as cited in Owens & Hekman, 2016)
PGI-1 to PGI-3	Perceived goal interdependence, from Van der Vegt and Janssen (2003) as adapted from Tjosvold, (1984) and Van der Vegt, Emans, and Van de Vliert, (1999) (as cited in Ven der Vegt & Janssen, 2003)
TCS-1 to TCS-10	Team cohesion scale, from Carless and de Paola (2000)
SV-CD-1 to SV-CD-3	Clear direction (shared vision), from Edmondson (1999)
TO-TD-1 to TO-TD-3	Task design (task orientation), from Edmondson (1999)
SI-SOC-1 to SI-SOC-5	Supportiveness of organization context (support for innovation), from Edmondson (1996)
IC-EC-TLB-1 to IC-EC-TLB-6	Team learning behaviors (internal communication and external communication), from Edmondson (1999)
TPD-1 to TPD-3	Team power distance, from Hu et al. (2018) as adapted from Lee, Pillutla, and Law (2000) (as cited in Hu et al., 2018)
TBP-1 to TBP-3	Team balance processing, from Walumbwa et al. (2008)
TINN-1 to TINN-9	Team innovation, from Burpitt and Bigoness (1997)
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)

Furthermore, excluding the demographic and contact information questions, 16 scales with a total of 71 questions included in the survey from which team members and team leaders answered 58 questions, and 13 questions related to team innovation and team performance were answered only by team leaders. In addition, all the questions were translated from English to Spanish by a certified translator member of the American Translator's Association (see Appendix B for details). Finally, a version of the entire survey with the complete text of all the questions can be viewed in Appendix A.

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

The procedure to calculate team-level variables was adapted from Norcross (2018). For this study, to calculate team-level data for all study variables, a systematic process was employed. First, all individual respondents were coded as members of a specific organization, then a member of a particular team, and finally reporting to a specific leader. Second, a composite scale score was created 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. It calculated the average of the different answers for that composite scale generated in the previous step by individuals on the designated team. Besides, all the organizations, teams, and leaders' names were coded for confidentiality purposes. A one-way ANOVA analysis was processed to check that the amount of variance related to the between-group cases was not close to zero, indicating the responses between teams do differ from each

other. Finally, after a correlation analysis executed in the scales, it was determined that issues of multicollinearity could be present between the eight team predictors of innovation depicted in Figure 2, and a factor analysis was executed that ended up with three factors, titled team characteristics, where the team predictors of innovation are embedded.

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

The procedures for operationalizing all of the study variables are described below.

To assess if a measurement scale could be composed of a single dimension out of the several items per scale, a unidimensionality assessment was executed. The assessment implied computing the eigenvalues to determine if a single scale dimension could represent the multiple items composing the original scales validated by other researchers on earlier studies (see details in Table 3). As per Zopluoglu and Davenport (2017), based on the Kaiser-Guttmann rule, “for a dimension to be stronger than average, it has to have an eigenvalue higher than one” (p. 1), and such a rule was taken as a reference for the present study. Therefore, assessing dimensionality for each of the study scales implied validating that for most, if not all, of the scales, the eigenvalue related to one dimension integrating all the scale items was higher than one. For example, leader-expressed humility is composed of nine items, and it was essential to assess if a single dimension could represent this scale

appropriately to ensure the number if the nine items measured the single construct (DeCoster, 2005).

After concluding the unidimensionality assessment for each of the individual scales, I continued with the composite and aggregation processes towards having team-level values for each study variable. While the composite process implied computing the average of each scale item to create a single dimension (e.g., collective humility), the aggregation process involved computing the average of the resulting composed scales to develop the team level variables of this study (DeCoster, 2005).

Furthermore, upon concluding the composite and aggregation processes, the scale's internal consistency reliability test was processed based on the Cronbach's alpha test (Cronbach, 1951). As per DeCoster (2005), "Calculating Cronbach's alpha is the most commonly used procedure to estimate reliability. It is highly accurate and has the advantage of only requiring a single application of the scale" (p. 11). Therefore, the Cronbach's alpha test was adopted for this study.

Also, a one-way analysis of variance (ANOVA) test was processed to ensure statistical differences between the means of the eight independent organizations for each component scale (see Appendix C for details). A one-way ANOVA fulfills the requirements of this study because the purpose is to compare means between groups. Only one characteristic (not multiple characteristics) per scale item is assessed.

Finally, and as shown in the earlier section of this chapter, during the intercorrelation studies that will follow, the need to create three factors due to high intercorrelation between the eight team predictors of innovation was required as to address potential multicollinearity issues. The factors were created based on a principal component analysis because I was only interested in performing a data reduction process (DeCoster, 1998) and avoid by design correlation between the factors, and most importantly, manage potential multicollinearity issues.

Results of the dimensionality assessment, Cronbach's alpha reliability test, and factor analysis are all reported in Chapter 4: Findings and Results.

## **Operationalization of variables**

### Humble leadership scales

Leader-expressed humility

Leader-expressed humility was defined with nine items used by Owens and Hekman. (2016) as adapted by Owens et al. (2013). Measures were scaled to a 5-point Likert scale (1 = "strongly disagree"; 5 = "strongly agree") 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. In the research from Owens and Hekman (2016), the alpha reliability for this scale was .95, and the one resulting from the dataset of this research was .936.

Collective humility

Collective humility was defined with nine items used by Owens and Hekman's measures exactly as used in Owens and Hekman (2016) as adapted from Owens et al. (2013). Measures were scaled to a 5-point Likert scale (1 = "strongly disagree"; 5 = "strongly agree") 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. In the research from Owens and Hekman (2016), the alpha reliability for this scale was .92, and the one resulting from the dataset of this research was .930.

#### Team promotion focus

Team promotion focus was defined with four items used by Owens and Hekman's measures exactly as used in Owens and Hekman (2016) as adapted from Lockwood et al. (2002) (as cited in Owens & Hekman, 2016). Measures were scaled to a 5-point Likert scale (1 = "strongly disagree"; 5 = "strongly agree") 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. In the research from Owens and Hekman (2016), the alpha reliability for this scale was .82, and the one resulting from the dataset of this research was .913.

#### Team predictors of innovation

##### Perceived goal interdependence

Perceived goal interdependence was defined with three items used by Van der Vegt and Janssen (2003) as adapted from Tjosvold (1984) and Van der Vegt, Emans and Van de Vliert (1999) (as cited in Van der Vegt & Janssen, 2003). Measures were

scaled to a 5-point Likert scale (1 = “strongly disagree”; 5 = “strongly agree”) 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. In the research from Van der Vegt and Janssen (2003), the alpha reliability for this scale was .83, and the one resulting from the dataset of this research was .896.

#### Team cohesion scale

Team cohesion scale was defined with ten items used by Carless and De Paola (2000). The response format of Carless and De Paola (2000) was a 9-point Likert scale for each, ranging from 1 (strongly disagree) to 9 (strongly agree). However, in this study, a 5-point Likert scale was adopted as to ensure consistency with the remaining of the variables assessed with a similar scale. Measures were scaled to a 5-point Likert scale (1 = “strongly disagree”; 5 = “strongly agree”) 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 alpha reliability from Carless and De Paola (2000) for this scale was divided in three components of task cohesion, which are listed below:

- Task cohesion—The alpha reliability for this scale was .74, and the one resulting from the dataset of this research was .787.
- Social cohesion—The alpha reliability for this scale was .81, and the one resulting from the dataset of this research was .772.
- Individual attraction to the group—The alpha reliability for this scale was .63, and the one resulting from the dataset of this research was .580.

### **Shared vision/clear direction**

The shared vision/clear direction scale was defined with three items used by Edmondson, (1999). This dimension is referred to as clarity of and commitment to objectives, and it assesses the extent to which team members have a common understanding of objectives and display high commitment to those team goals (Hülsheger et al., 2009). Pearce and Ensley (2004) also considered shared vision as “how well team members shared in the development, creation, communication, and reinforcement of a common vision for the goals and desired future state of the team” (p. 266).

The dimension of clear direction from Edmondson (1999) is considered to cover the shared vision dimension referred to by Hülsheger et al. (2009). Measures were scaled to a 7-point Likert scale (1 = “very inaccurate”; 7 = “very accurate”) and will be calculated by calculating the average for each item 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 alpha reliability for this scale was .73 (Edmondson, 1996), and the one resulting from the dataset of this research was .898.

### **Task orientation/task design**

The task orientation/task design scale was defined with three items used by Edmondson, (1999). Task orientation describes “a shared concern with the excellence of quality of task performance in relation to shared vision or outcomes” (Hülsheger et al., 2009, p. 1131). For this study, the task orientation dimension is assessed through

the task design dimension of Edmondson (1999). This is because the content of the survey questions could provide information about the teams striving for the highest standards of performance achievable, or mutual performance monitoring toward achieving superior performance as a team (Hülsheger et al., 2009). Measures were scaled to a 7-point Likert scale (1 = “very inaccurate”; 7 = “very accurate”) 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 alpha reliability for this scale was .50 (Edmondson, 1996), and the one resulting from the dataset of this research was .46. In addition, this low level of alpha in both studies could be related to the fewer items of the scale, but precisely due to a low inter-item correlation. For instance, data supporting the inter-item correlation issue is that in this study, the inter-item correlation between items one and three resulted in .055. The inter-item correlation between items two and three resulted in .101.

Moreover, based on this data, the issue could be isolated to the third item of the scale, because the inter-item correlation between items one and two is .648. Furthermore, these low levels of inter-item correlations could be the main driver of such a low level of alpha and welcomed me to assess and interpret with caution the data resulting from this scale. Finally, the scale reliability issues found do not imply that this scale is not

valid. Instead, the results should be taken with caution because of the low level of scale reliability (DeCoster, 2005).

#### Support for innovation/supportiveness of organization context

The support for innovation/supportiveness of organization context scale was defined with five items used by Edmondson (1999), who describes the “expectation, approval, and practical support of attempts to introduce new and improved ways of doing things in the work environment” (Hülsheger et al., 2009, p. 1131). For this study, support for innovation dimension is assessed through supportiveness of organization context component of Edmondson (1999). This is because the content of the survey questions could provide information about the teams’ attempts to introduce new and improved ways of doing things through having access to information, obtaining expert assistance, being exposed to current developments, having proper access to training, and having related rewards. Measures were scaled to a 7-point Likert scale (1 = “very inaccurate”; 7 = “very accurate”) 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 alpha reliability for this scale was .65 (Edmondson, 1996), and the one resulting from the dataset of this research was .710.

#### Internal communication and external communication/team learning behaviors

The team learning behaviors scale was defined with six items used by Edmondson, (1999). Internal communications are essential for the generation of new ideas, and external communication relates to the interpersonal relations with people outside of

one's organization; both components could be related to the team learning behaviors component of Edmondson (1999), and such a validated instrument is adopted for this study. Measures were scaled to a 7-point Likert scale (1 = "very inaccurate"; 7 = "very accurate") 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 alpha reliability for this scale was .78 (Edmondson, 1999), and the one resulting from the dataset of this research was .714.

### Moderating variables

#### Team power distance

The team power distance scale was defined with three items used by Hu et al. (2018), as adapted from Lee, Pillutla, and Law (2000). This scale "is the extent to which most members accept the legitimacy of unequally distributed power in organization" (p. 316). Measures were scaled to a 5-point Likert scale, reverse coded (1 = "strongly agree"; 5 = "strongly disagree"), 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 alpha reliability for this scale was .82 (Lee et al., 2000), and the one resulting from the dataset of this research was .467. In addition, this low level of alpha in both studies could be related to the fewer number of items of the scale, but specifically due to a low inter-item correlation. For instance, data supporting the inter-item correlation issue is that in this study, the inter-item correlation between item one and two resulted

in .086, and the inter-item correlation between item one and three resulted in .187. In addition, based on this data, the issue could be isolated to the first item of the scale because the inter-item correlation between items two and three is .424. Furthermore, these low level of inter-item correlations could be the main driver of such low level of alpha and welcomed me to cautiously assess and interpret the data resulting from this scale. In addition, the reliability issues found and differences against the original studies taken as a reference could be related to contextual factors. This implies that the Spanish version of the questions does not perfectly match the intent and meaning of the English version of the scales, and respondents did not understand the questions correctly. Finally, the scale reliability issues found do not imply that this scale is invalid, but instead, the results should be taken with caution because the low level of scale reliability (DeCoster, 2005).

#### Team balance processing

The team balance processing scale was defined with three items used by Walumbwa et al. (2008). This scale “refers to leaders who show that they objectively analyze all relevant data before coming to a decision.” (Walumbwa et al., 2008, p. 95). Measures were scaled to a 5-point Likert scale (5 = “Frequently, if not always”; 1 = “Not at all”) 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 alpha reliability for this scale is .81, and the one resulting from the dataset of this research was .769.

### Outcome variables

#### Team innovation

The team innovation scale was defined with nine items used by Burpitt and Bigoness (1997). This scale was completed by the team leader to evaluate their respective team in order to minimize common method bias. The nine items are divided into two groups: (1) market orientation, which is distinguished by an external orientation focused on innovation that can enhance the teams' ability to meet the demands of the market place, and (2) problem orientation focused on innovation, which enables the group to become more adept in solving problems. Measures were scaled to a 5-point Likert scale (1 = "strongly agree"; 5 = "strongly disagree") 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 alpha reliability for the market orientation scale was .87, and the one resulting from the dataset of this research was .833. The alpha for the problem orientation scale was .89, and the one resulting from the dataset of this research was .864.

#### 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 provided a subjective assessment of their respective team performance. 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 Owens and Hekman (2016), asking the leader reduces the issues of common method bias. The alpha reliability for this scale is .96, and the one resulting from the dataset of this research was .833.

### Control variables

I adopted control variables from studies taken as a reference. Female percentage per team, average team size, team member age, and organization. These control variables were operationalized as self-report items on the survey. Like what Owens and Hekman (2016) did, controlling for average team gender (female percentage) in a team is important because female team members may be more receptive to humble behaviors because these behaviors, as per Eagly (2009), are more communal and more congruent to female social preferences. 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). Controlling for team member age is important because humility has been theorized to be valued more by older individuals (Tangney, 2000). Organization was also controlled to hold constant any effects due to an organization on the dependent measures. The organization variable is categorical and was dummy coded in the regression analyses.

### **Research Precautions**

The research precautions discussed below were informed and adapted from Norcross (2018). The potential risk of participation was minimal. Even though the organizations' top management did assess and approve the study and enable their

human resources (HR) executives to manage the survey email distribution, every invitation letter prepared by the HR executives did indicate that (1) participation was free, (2) confidential, and (3) people can drop from the process at any time without any negative consequences with their employer. Also, the front page of the survey requested that the respondents freely choose whether to take part and reinforced the “no penalty” message for quitting the process. For those who decided to take part, care was taken to protect individuals and confidentiality of their responses, including the freedom to drop out of the study and to refuse to answer any questions with which they may not be comfortable.

For the companies who volunteered groups or parts of their organizations as participants in this study, proper care was taken to protect the confidentiality of both the employees and the organization. Organizations requesting feedback on the survey will only receive reports of the general survey findings at large and company-specific findings that could not be attributed to an individual.

The survey asked for the organization name, supervisor names, team name, leader position name, and basic demographic data (age, gender, and ethnicity). This data was used solely for matching purposes (matching respondents to teams and supervisors) and for follow-up survey responses. Only the researcher and the thesis committee have access to the raw answers, and the resultant data was coded for anonymity. In no

event was identifying participant information shared with the employer or any other party.

The records of this study and the data noted above are kept in password-protected, encrypted storage during and after the course of the study. At the conclusion of the project, all the data was transferred to Dr. Mike Manning, Professor at the Center for Values-Driven Leadership at Benedictine University, for secure and ultimate disposal after seven years. See employer acknowledgment form and informed consent documents in Appendix D and Appendix E for details.

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

This section describes the statistical analysis procedures that were executed in this study. In Chapter 4: Findings and Results, I 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 delivers a single indicator of reliability (see Table 4 for details). A factor analysis was also executed to validate the unidimensionality on each of the scales with 382 responses 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). Finally, an ANOVA test was executed to confirm that the variance per item for each of the component scales was not close to zero on the between group level, and similar responses were captured at the within-group level. The reliability of each of the 16 scales was examined by the creators of the related instruments and referred by the author in Table 3.

Besides the reliability estimates, it was considered valuable to compute the measurement error based on the alpha coefficient. As per Tavakol and Dennick (2011), 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 in a scale. To compute the measurement error, it is only a matter of squaring the alpha of each of the scales and subtracting the result from 1 to produce the required indicator.

### **Descriptive statistics and intercorrelations**

Before the composite process, descriptive statistics were calculated for each of the scales (standard deviation, standard error, significance), and a one-way ANOVA was performed. Estimates of internal consistency (coefficient of alpha) for each scale were also computed. A unidimensionality assessment was based on each of the scales with 382 responses to confirm that a single dimension could represent the group of scales of a single variable.

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

Each of the 87 teams is composed of a leader named by the team members, and related team members are reporting to the leader. As mentioned before, the names of the leaders and team were part of the respondents' answers during the survey process. While the respondents assessed leader expressed humility, all the team members, including its leader, evaluated the team level variables except for the team performance and innovation assessment, which were only answered by the team leader. This design feature can help in minimizing the effects of common method variance. The primary statistical analysis was conducted at the team level with aggregated team scores on each variable, as detailed above. After creating the aggregate team variables and descriptive statistics, a one-way ANOVA was executed. In addition to these two statistical processes, 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**

On each of the regression processes that follow the study, the control variables (organization, team size, participant age, and percentage of females in a team) were declared as covariates, and organization was dummy coded for each of the organizations of the study and treated as a categorical variable. All of these steps were taken to control and get a clearer view of the role that the predictor variables played in explaining the outcome variables by reducing the variance attributable to the control variables from the paths under analysis. This was conducted using regression analyses with a step-wise approach.

## **Path and regression analyses**

Because of the existence of three outcome variables, which are (1) team innovation with market orientation, (2) team innovation with a problem orientation, and (3) team performance, three paths were first developed to graphically represent the relationship between the components of humble leadership as predictors of these outcome variables. Multiple regression analyses were executed to assess the potential causality between the various stages of the models and variables of the models. The mediation-moderation model illustrated in Figure 4 depicts the three outcome variables assessed during the regression analyses.

To assess the proposed causal relationship, several path analyses were executed. We chose to employ a path analysis and a theory trimming approach (Motowidlo, Manning, & Packard, 1986; Norcross, 2018) to explore relationships in the directions proposed by the model under analysis (see Figure 4). After covariates were controlled, each dependent and mediating variable of the model (see Figure 4) was regressed on all others that preceded it in the model, and the respective statistical indicators were estimated. The trimming process took place after each relationship's statistical causality was assessed during the multi-stage regression analyses. Hence, the statistical process resulted in a final path model that explained the variance with fewer factors. Finally, a goodness of fit assessment was executed to compare the variance ( $R^2$ ) explained by the general model to the restricted model's variance. This was achieved by estimating both the variance explained by the original model as well as the variance explained by the restricted model. The constrained model fits the data

best when there is a minimum change in variance explained by the general and the restricted models (Norcross, 2018, pp. 114–115).

Results of the procedures, as mentioned above, are all reported in Chapter 4: Findings and Results.

Finally, the IBM SPSS software tool version 1.0.0.1347 with the software was employed for all the described processes. The step-wise analysis approach was executed using linear standard regression methods software options.

## **Summary**

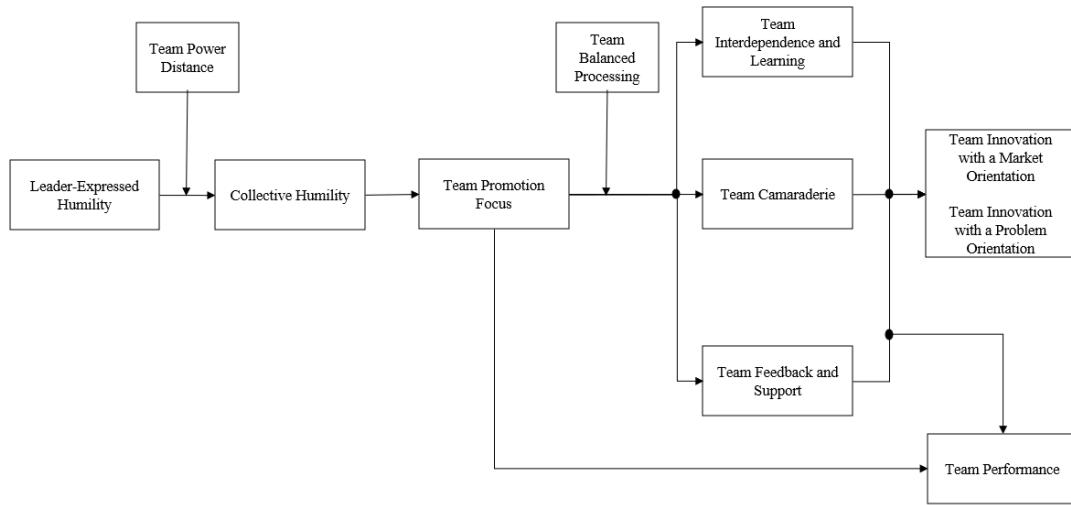
In this chapter, a summary of the study methods was detailed. The sampling method's rationale was documented, and the unit of analysis was defined to be at the team level. The chapter also addressed the reasoning behind the recruitment of the research sample. This chapter also discussed the process used to identify how the scales were assessed for reliability, validity, and unidimensionality; this implies that it is acceptable to create aggregated variables without sacrificing much of the scales' reliability and validity. The chapter described how the dataset's structure resulted in 87 teams with an average team size of 4.4 responses per team, ranging from 2 to 13 members per team. It also presented the general model of causality with the three-team characteristics created after a factor analysis to deal with multicollinearity issues and three outcome variables. Finally, it introduced the steps taken to validate the aggregated variables. This chapter ended describing the path-analysis executed and

regression analyses processed at multiple stages of each of the three outcome variable models. In the next chapter, the findings will be presented.

# Chapter 4: Findings and Results

## ***Introduction***

The previous chapter described the sample obtained from the available population, the structure of the quantitative survey, and the method to evaluate the causal model illustrated in Figure 4. This chapter will present the quantitative results of the 87 teams assessed and investigate the causalities of the paths related to the model under study. It will present scale reliabilities and descriptive statistics for each variable, as well as tests of unidimensionality. Correlations among all of the scale variables were already presented in the earlier chapter to justify the composite factor process leading to team characteristics. In addition, in this chapter, I will present the results of the regression analyses executed for the various causal paths of the model. The chapter will end with a trimming path analysis and goodness of fit model assessment.



**Figure 4. General Model: Humble Leadership, Team Characteristics, Innovation, and Team Performance**

## **Quantitative Survey Results**

In this section, I will explain the reliability test executed at the individual scale item level that later supported the composite and aggregation processes of the variables at the team level. Then, I will report the descriptive statistics and reliabilities at the team level. Afterward, the covariates from the survey data and aggregated predictor variables will be used to test the proposed causal model. Intentionally, the results will be used to simplify and polish a model for the three outcomes examining the predictive ability of each of the variables related to humble leadership.

### **Reliability and unidimensionality assessments**

Table 4 below lists the items per scale. The Cronbach alpha estimates of reliability for each scale (including measurement error) and the eigenvalues per scale in percentage of variance are also reported and related to the unidimensionality assessment, which essentially indicates the percentage of variance explained with a single dimension composed of many items per scale. In addition, all of the scales reported in Table 4 resulted in eigenvalues values for a single dimension higher than 1.408, which meets the Kaiser-Guttman rule criteria of an eigenvalue higher than one (Zopluoglu & Davenport, 2017).

Overall, the resulting alpha values resulting from this study are acceptable. This is because while a couple of alpha values could be considered low (alpha lower than .6) when comparing these values with the original studies taken as a reference (e.g., team power distance and task design), most of the eigenvalues percentage of variance

explained a reasonable amount of variance, despite the low values of alpha. Hence, these estimates could be considered a good indicator, and it was decided not to drop such an item from the aggregated scale.

The variable team power distance is the only scale with a resulting alpha significantly different from the alpha of the study taken as a reference to adopting the questions for this study—.467 vs. .82 (Hu et al., 2018), to validate the scale, an inter-item correlation analysis was processed. It was found that from the three items composing the scale, the first item (TPD–1) was weakly correlated with the second (TPD–2) and the third item (TPD–3), .086, and .187 respectively. The option to drop TPD–1 from the aggregated variable was considered, but it was kept in the later aggregated scale because it makes conceptual sense to keep the item (Hu et al., 2018), and the eigenvalue percentage of variance explained was considered acceptable for the construct. Finally, the scale reliability issues found do not imply that this is scale is not valid, but instead, the results should be taken with caution because of the low level of scale reliability (DeCoster, 2005).

**Table 4. Scale Reliability and Unidimensionality Test (n = 382 responses)**

	Items per scale	Study alpha	Measurement error	Eigenvalues % of variance
1. Leader-Expressed Humility	9	.936	.124	66.776

	<b>Items per scale</b>	<b>Study alpha</b>	<b>Measurement error</b>	<b>Eigenvalues % of variance</b>
2. Collective Humility	9	.930	.135	64.634
3. Team Promotion Focus	4	.913	.166	79.396
4. Team Power Distance	3	.467	.782	49.971
5. Team Balance Processing	3	.769	.409	69.197
6. Perceived Goal Interdependence	3	.896	.197	82.761
7. Team Cohesion/ Task Cohesion	4	.787	.381	61.198
8. Team Cohesion/Social Cohesion	4	.772	.404	59.835
9. Team Cohesion/ Individual Attraction to the Group	2	.580	.664	70. 419
10. Shared Vision/Clear Direction	3	.898	.194	83.282
11. Task Orientation/Task Design	3	.465	.784	55.559
12. Supportiveness of Organization Context/Support for Innovation	5	.710	.496	47.411
13. Team Learning Behavior/Internal and External Communication	6	.714	.490	41.441

	<b>Items per scale</b>	<b>Study alpha</b>	<b>Measurement error</b>	<b>Eigenvalues % of variance</b>
14. Team Innovation/Market Orientation	4	.833	.306	67.121
15. Team Innovation/Problem Orientation	5	.864	.254	65.534
16. Team Performance	4	.833	.306	65.005

### **ANOVA validation at the item scale level**

An ANOVA test was executed to validate the variance per item for each of the component scales. Results reported in Table 14 of Appendix C show that the variance was high at the between-group level ranging from 20% to 44%. The percent of the between-group variance is considered acceptable in social sciences research because they are not close to zero percent, which could be considered problematic since it implies responses between groups are similar, which would be rare based on the fact that 87 teams from eight different organizations were part of the study. Finally, caution when analyzing and discussing the path relationships and regression parameters of the resulting models based on the study results should be taken because, based on Table 4, measurement errors per scale dimension could range from .124 (leader-expressed humility) to up to .784 (task design); the variance that could be explained by the between-group level is also affected by this levels of measurement error. However, the exploratory nature of this study finds in the proposed scales proper validity and reliability combined with the resulting between-

group level variance enough elements to explore potential variables relationships that could be better explained for causality with a bigger sample in future research.

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

Up to this point in this chapter, I have presented a preliminary analysis of the data. These findings led me to conclude that the scales have enough integrity to continue with the processes of composing aggregate variables at the team level. This aggregation process will create the dataset required for a team level analysis. Below I will discuss the descriptive statistics, correlations, and the ANOVA analysis of the aggregated variables.

#### **Descriptive statistics**

Upon developing the team level scores, descriptive statistics were computed. These findings are presented below in Table 5 for all survey variables. From the skewness value calculated for each variable, it could be considered that variables clear direction and team innovation with a market orientation are highly skewed to the right side of the score (values are less than -1). The rest of the variables are either moderately skewed (skewness values between -1 and -.5 or between .5 and 1) or symmetric (skewness values between -.5 and .5). Except for the two scales highly skewed to the right, the rest of the variables have values normally distributed. Notwithstanding this, as reported in Table 5, the value range for such variables is well distributed across the possible spectrum. The data supplies enough response differentiation suggesting ample variation to analyze the different model paths through linear regression analysis.

**Table 5. Descriptive Statistics (n = 87 teams)**

	Likert Scale	Mean	Std. Deviation	Range	Skewness
Leader-Expressed Humility	1–5	3.9875	.5371	2.17–5.00	-.9920
Collective Humility	1–5	3.9387	.4768	2.33–4.96	-.6130
Team Promotion Focus	1–5	3.9495	.5804	2.17–5.00	-.8320
Team Power Distance	1–5	2.1717	.4325	1.22–3.50	.6310
Team Balance Processing	1–5	3.6643	.5862	1.83–5.00	-.4640
Perceived Goal Interdependence	1–5	3.9706	.5546	2.33–5.00	-.4680
Team Cohesion/Task Cohesion	1–5	3.8346	.5651	2.42–5.00	-.4220
Team Cohesion/Social Cohesion	1–5	3.2951	.5906	2.00–4.63	-.2340
Team Cohesion/ Individual Attraction to the Group	1–5	3.204	.5385	1.50–4.50	-.3750
Clear Direction/Shared Vision	1–7	5.4431	.7628	2.89–6.50	<b>-1.2530</b>
Task Design/ ask Orientation	1–7	5.0751	.6036	3.33–6.50	-.5340
Supportiveness of Organization Context/Support for Innovation	1–7	5.1647	.6833	3.30–6.53	-.5100
Team Learning Behavior/Internal and External Communication	1–7	4.9691	.6207	3.07–6.14	-.6020
Team Innovation/Market Orientation	1–5	4.0029	.6609	1.00–5.00	<b>-1.2810</b>
Team Innovation/Problem Orientation	1–5	3.9862	.6052	2.40–5.00	-.1930
Team Performance	1–5	3.5460	.5051	2.50–5.00	.3320

*Note:* Skewness less than -1 are in boldface.

## **Scales intercorrelation and factor analysis**

### Multicollinearity and factor analysis

As noted in the previous section, the preliminary analysis suggested concern regarding the high correlations among the variables representing the eight-team predictors of innovation (perceived goal interdependence, task cohesion, social cohesion, individual attraction to the group, clear direction, task design, supportiveness of organization context, and team learning behavior). Table 6 displays these intercorrelations. Furthermore, correlations among these eight variables range from .318 (individual attraction to group and supportiveness of organization context) to .730 (clear direction and team learning behavior). Finally, 19 of the 28 intercorrelations observed for these variables are all over .50; this raises concerns of multicollinearity.

To deal with these concerns, I conducted a factor analysis of these eight-team predictors of innovation because there are high intercorrelations. By adopting a principal component analysis for data reduction purposes and Varimax for orthogonal rotation process to produce uncorrelated factors (DeCoster, 1998), I looked at the five, four, three and two factor solutions, and I selected the three factor solution because it appropriately separated the eight items by explaining more than 80% of the variance (see Table 7 for details). Once I created these factors, I then used the regression method to estimate the new factors scores. Finally, I renamed these composite scales: team interdependence and learning, team camaraderie, and team feedback and support. The factor loadings are reported in Table 8.

Equally important, we also validated that the three factors were composed of dimensions that make theoretical sense. For instance, the factor of team interdependence and learning is composed of the dimensions related to team goals, having a clear direction, task focused and learning behavior; furthermore, the factor of team camaraderie is composed of dimensions related to social aspects of a group; finally, the factor of team feedback and support is composed of the dimensions related to task characteristics that facilitate collaboration and the support a team receives from leadership to facilitate innovation.

The eight team predictors of innovation where classified in each of the three team characteristics variables as listed below.

- Team interdependence and learning (Factor 1):
  - Perceived goal interdependence
  - Team cohesion/Task cohesion
  - Clear direction
  - Team learning behavior
- Team camaraderie (Factor 2):
  - Team cohesion/Social cohesion
  - Team cohesion/Individual attraction to the group
- Team feedback and support (Factor 3):
  - Task design
  - Supportiveness of organization context

In summary, I found these three factors make theoretical sense—it gives me interpretable factors, and, at the same time, it accounts for 80% of the variance. These composite team characteristics measures will be used in the path analyses related to the outcome variables team innovation with a market orientation, team innovation with a problem orientation and team performance because it is considered that, conceptually, each of the three factors represent a different structure.

**Table 6. Intercorrelations Between the Eight Team Predictors of Innovation**

Variable Name	1	2	3	4	5	6	7	8	9	10
<b>1. Perceived Goal Interdependence</b>										
<b>2. Team Cohesion: Task Cohesion</b>		.655**								
<b>3. Team Cohesion: Social Cohesion</b>			.609**	.612**						
<b>4. Team Cohesion: Individual Attraction to the Group</b>		.591**	.486**	.633**						
<b>5. Clear Direction</b>			.599**	.698**	.456**	.439**				
<b>6. Task Design</b>				.501**	.578**	.436**	.445**	.631**		
<b>7. Supportiveness of Organization Context</b>					.350**	.426**	.369**	.318**	.565**	.601**
<b>8. Team Learning Behavior</b>						.643**	.629**	.613**	.549**	.730**
<b>9. Team Innovation with Market Orientation</b>	-0.050	-0.128	0.084	0.051	-0.064	-0.002	0.004	-0.012		
<b>10. Team Innovation with Problem Orientation</b>							.296**	.316**	.281**	.531**
<b>11. Team Performance</b>	0.169	.320**	0.177	0.132	.210*	.263**	.296**	.266**	.235*	.582**

n=87. \*\*p < 0.01. \*p < 0.05 (1-tailed).

**Table 7. Factor Analysis of Team Predictors of Innovation**

Component	Initial Eigenvalues			Rotation Sums of Square Loading		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.88	60.995	60.995	2.375	29.682	29.682
2	0.953	11.906	72.902	2.038	25.474	55.157
3	0.572	7.154	80.056	1.992	24.899	80.056
4	0.416	5.201	85.257			
5	0.357	4.462	89.719			
6	0.323	4.042	93.76			
7	0.315	3.94	97.701			
8	0.184	2.299	100			

*Note:* Extraction Method: Principal Component Analysis

**Table 8. Rotation Component Matrix for Three Factors**

Team Characteristics	Factor 1	Factor 2	Factor 3
Perceived Goal Interdependence	<b>.689</b>	<u>.532</u>	.117
Team Cohesion/Task Cohesion	<b>.809</b>	.321	.233
Social Cohesion	.352	<b>.787</b>	.184
Individual Attraction to the Group	.186	<b>.872</b>	.211
Clear Direction	<b>.751</b>	.143	<u>.496</u>
Task Design	<u>.432</u>	.230	<b>.707</b>
Supportiveness of Organization Context	.141	.158	<b>.906</b>
Team Learning Behavior	<b>.563</b>	<u>.417</u>	<u>.520</u>

*Note:* Components selected per factor are in boldface. Components highly correlated with multiple factors are underlined.

### Intercorrelations between study variables

The correlation between the study variables is reported in two tables: Table 9 and Table 10. In addition, Table 9 displays intercorrelations among the 11 variables in the causal model. Furthermore, Table 10 presents intercorrelations among these 11 variables and the control variables. For instance, the variable team power distance is not correlated to any of the humble leadership variables (leader-expressed humility, collective humility, and team promotion focus) that matters to the preliminary model to be tested. It is also interesting to see that the variable team innovation with a market orientation is not related to the preceding variables of the model to be tested (team interdependence and learning, team camaraderie, and team feedback and support), but is correlated with the outcome variables team innovation with a problem orientation and team performance. Despite some unexpected absence of correlations between the variables, most of the variables are showing significant correlations at the  $p < .01$  level, correlating between .260 to .849.

In considering the impact of humble leadership components (leader-expressed humility –> collective humility –> team promotion focus) on the team characteristics (team interdependence and learning, team camaraderie, and team feedback and support), the correlations between team promotion focus and each of the three team characteristics is positive and statistically significant at  $p < .01$ , correlating between .331 to .705. This level of correlation is encouraging for the hypothetical model under study. Finally, the intercorrelations between these three team characteristics is zero as it is imposed by design.

While the correlation between humble leadership variables on team innovation with a market orientation is neither strong nor statistically significant, it is interesting to find a correlation between team innovation with a market orientation with team innovation with a problem orientation and team performance.

It is also interesting to find a strong correlation between (.849) leader-expressed humility and team balance processing. According to Llano (1979), the proper diagnostic process demands leaders to develop two virtues: humility and objectivity—leader-expressed humility and team balance processing, respectively. These correlations, among other ones, will supply the bases to explore further novel models of humble leadership, innovation, and team performance during the trimming process.

The control variables named as team size, female percentage, participant age, and organization are included in the correlation Table 10. In contrast, team size resulted in a moderate negative correlation (-.239) with team performance at  $p < .05$ , and female percentage resulted in a moderate positive correlation (.305) at  $p < .01$  with the outcome variable team innovation with a market orientation. Finally, participant age is correlated with most of the variables at  $p < .05$ .

**Table 9. Intercorrelations Between Study Variables**

Variable Name	1	2	3	4	5	6	7	8	9	10
<b>1. Leader-Expressed Humility</b>										
<b>2. Collective Humility</b>		.540**								
<b>3. Team Promotion Focus</b>			.661**	.793**						
<b>4. Team Power Distance</b>				-.142	-.014	-.044				
<b>5. Team Balanced Processing</b>					.849**	.538**	.631**	-.203*		
<b>6. Team Interdependence &amp; Learning</b>						.560**	.609**	.705**	.055	.462**
<b>7. Team Camaraderie</b>							.373**	.412**	.353**	-.043
<b>8. Team Feedback &amp; Support</b>								.380**	<b>0</b>	
<b>9. Team Innovation with Market Orientation</b>									.117	.034
<b>1. Team Innovation with Problem Orientation</b>										.173
<b>11. Team Performance</b>										
	.158	.401**	.384**	-.011	.234*	.143	.189*	.264**	.531**	
										.235* .582**

n=87. \*\*p < .01. \*p < .05 (1-tailed). Factor variable correlations are in boldface.

**Table 10. Intercorrelations Between Predictors and Control Variables**

Variable Name	Leader-Expressed Humility	Collective Humility	Team Promotion Focus	Team Power Distance	Team Balanced Processing	Team Interdependence & Learning	Team Camaraderie	Team Feedback & Support	Team Innovation with Market Orientation	Team Innovation with Problem Orientation	Team Performance
12. Team Size	.020	-.088	.013	-.023	-.061	-.038	-.012	-.083	-.082	-.171	-.239*
13. Female Percentage	.121	-.013	.141	.155	.020	.026	.116	-.086	.305**	.086	-.105
14. Participant Age	-.354**	-.270**	-.296**	-.162	-.326**	-.343**	-.265**	.139	-.109	-.226*	-.100
15. Organization AA	.179*	.154	.184*	-.147	.105	.162	-.103	.055	-.189*	.104	-.023
16. Organization BI	.052	.165	.090	-.089	.206*	.180*	-.017	.077	-.033	.147	.310**
17. Organization CI	-.360**	-.367**	-.417**	-.282**	-.260**	-.559**	-.268**	.307**	.061	-.190*	.004
18. Organization DK	.110	.014	.135	-.058	.051	.181*	.158	-.132	.163	.152	.039
19. Organization EL	.198*	.222*	.150	.005	.234*	.170	.258**	-.023	.171	.172	.088
20. Organization FN	-.020	-.056	.011	.161	-.041	-.009	-.004	-.112	.042	-.030	-.181*
21. Organization GS	.079	.277**	.150	.504**	.054	.218*	.027	.072	-.307**	.035	.078
22. Organization HV	.046	-.069	.021	.070	-.098	.069	.101	-.344**	-.002	-.190*	-.236*

n=87. \*\*p < .01. \*p < .05 (1-tailed).

### ***Moderating Relationships in the General Model***

Before exploring the causal relationships in the general model, I first tested the two moderating variables with a stepwise moderated regression analysis. The results of these analyses are reported in Appendix F. Since both moderating variables—team power distance and team balance processing—did not statistically contribute to predictive variance in the outcome measures, it was decided to drop these variables from the model to simplify the analyses.

Finding an interaction term with no effect in a model could be related to several factors, like limited sample size, no correlation between the variables under study, and unreliability of the interaction term. For this study, the sample size could be considered limited (87 teams) to detect a potential influence of the moderating effect of team power distance and team balance processing. Another explanation for the limited impact is the absence of a statistically significant correlation between the moderating variables (e.g., team power distance) and the other variables shown in Table 9. This moderating relationship should be explored in future research with a bigger sample.

### ***Exploring the Causality of the Three Models and Trimming Processes***

The correlation between variables is useful to understand the relationship between two variables and the slope of such a relationship; however, to test for causality, the regression analysis is needed.

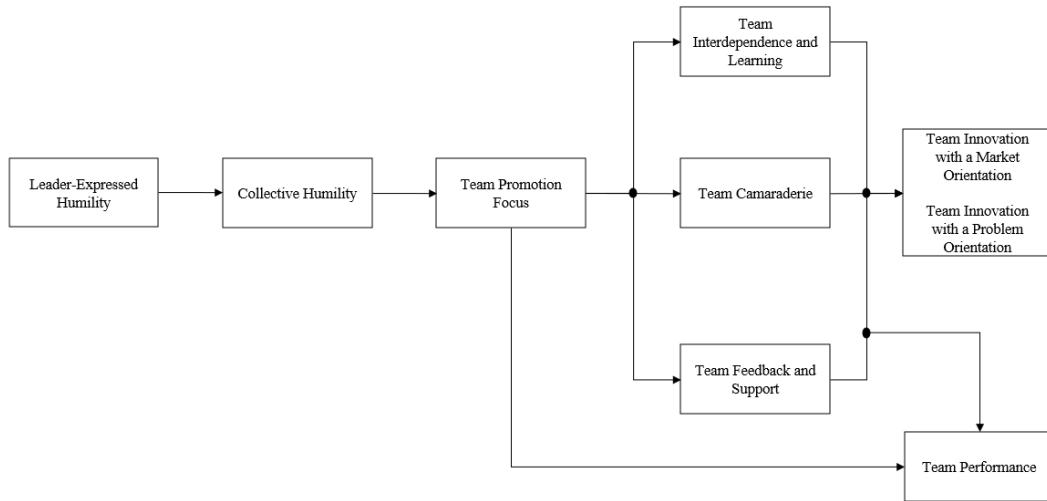
The regression analyses executed to test the different causal paths of the three models took, as a reference, IBM SPSS software. The paths to be analyzed are embedded in Figure 4. There are three outcome variables: team innovation with market orientation, team innovation with problem orientation, and team performance. These outcome variables each need to be analyzed against the predecessors, which have a multiple mediation models—control variables are organization, team size, female percentage, and participant age. The only variable dummy coded was organization, and it was treated as a categorical variable during the analyses. Finally, using a trimming model approach, I created a restricted model that could plausibly depict the variable relationship (Davis, 1985).

### **Regression analyses: Humble leadership, factors and outcome variables**

In this section, I will continue taking a path analysis approach. I will analyze the causalities of the model depicted in Figure 5. The three factors, as represented by team interdependence and learning, team camaraderie, and team feedback and support, are mediators connected in parallel just before the outcome variables. The standard linear regression for path analysis and stepwise process allow us to understand the direct effect between variables.

Table 11 presents the beta weights for the regression analyses run to examine the causal model. Each variable was regressed on all others that preceded it in the proposed model, and standardized beta weights were used to estimate path

coefficients. An examination of this table suggests that several paths reached statistical significance at  $p < .05$  level.



**Figure 5. Restricted General Models with Three Outcome Variables**

#### Paths leading to collective humility

Like Owens and Hekman (2016) found, the path from leader-expressed humility to collective humility reached significance at the  $p < .01$  level and kept in the restricted model. The remaining paths that were not significant were removed from the model.

#### Paths leading to team promotion focus

Like Owens and Hekman (2016) found, the path from collective humility to team promotion focus reached significance at the  $p < .01$  level and will be kept in the trimmed model. It was also found that the path from leader-expressed humility to team promotion focus also reached significance at the  $p < .01$  level and will be kept in the trimmed model. The remaining paths that were not significant were removed from the model.

**Table 11. Standardized Beta Weights for Restricted General Model**

Standardized Beta Weights from Multiple Regression Analysis: Original Model considering the Factors and the Outcome Variables

Predictor Variable	Outcome Variable								
	Factor Variables								
	Collective Humility	Team Promotion Focus	Team Interdependence and Learning	Team Camaraderie	Team Feedback and Support	Team Innovation with a Market Orientation	Team Innovation with a Problem Orientation	Team Performance	
Leader-Expressed Humility	.442**	.277**	.137	.186	.379**	-.347*	-.249	-.031	
Collective Humility		.642**	.032	.427*	-.128	.03	.337	.195	
Team Promotion Focus			.465**	-.142	.421*	.169	.274	.241	
Team Interdependence and Learning						-.201	-.364	-.096	
Team Camaraderie						-.024	-.124	-.095	
Team Feedback and Support						.178	.225	.027	
<b>Control Variables</b>									
Team Size	-.035	.060	-.017	-.020	-.036	-.118	-.094	-.171	
Female Percentage	.043	.105	-.071	.059	-.035	.439**	.286*	.069	
Participant Age	.060	.015	.051	-.070	.272*	-.383*	-.230	-.083	
Organization BI	.058	-.064	.072	.106	.159	.088	-.006	.333*	
Organization CI	-.286	-.156	-.275	.275	.494*	.154	-.392	.248	
Organization DK	-.099	.031	.066	.319	.035	.155	-.027	.108	
Organization EL	.069	-.083	.034	.294	.044	.243	.025	.119	
Organization FN	-.122	-.037	-.021	.198	.098	-.046	-.263	-.075	
Organization GS	.164	-.088	.090	.089	.198	-.255	-.192	.084	
Organization HV	-.195	-.090	.030	.329	-.200	.070	-.280	-.026	

Note: Statistically significant coefficients are in boldface. n = 87; \*p < .05. \*\*p < .01.

### Path leading to team characteristics factor variables

From the nine paths leading to the three-factor variables, one path proved significance at  $p < .01$  level, and three paths at  $p < .05$  level. While leader-expressed humility is a predictor of team feedback and support, collective humility is only a predictor proving significance for team camaraderie. Also, as originally considered, team promotion focus predicts two out of three factors: team interdependence and learning, team feedback and support, the former at  $p < .01$ , and the latter at  $p < .05$ . The remaining paths that were not significant were removed from the model.

### Paths leading to three different outcome variables

From the 18 paths leading to the three outcome variables, only leader-expressed humility demonstrated significance at  $p < .05$ . None of the three factors (team interdependence and learning, team camaraderie, and team feedback and support) positively affected any of the three outcome variables. However, paths marginally significant at  $p < .15$  are listed below:

- Leader expressed humility → Team innovation with a problem orientation;
- Collective humility → Team innovation with a problem orientation;
- Team interdependence and learning → Team innovation with a problem orientation; and
- Team feedback and support → Team innovation with a problem orientation.

Considering that with more prominent sample size paths reported as approaching significance could become significant due to the gain of more statistical power, such

paths were kept in the next phase of the regression analyses because there could be something of interest in these potential relationships. Finally, these relationships approaching significance are of interest in this study because the interpretation of behaviors that could drive team characteristics instead of only a specific leadership style is of value towards discovering potential new relationships.

Interestingly, none of the paths from each of the three team characteristics led to team performance. Equally important, although team promotion focus has proven to positively influence team performance in earlier studies (Owens & Hekman, 2016), the findings of this study do not support such results. Therefore, this path was removed from the trimmed model. Finally, the remaining paths that were tested were not significant and were removed from the model.

### **Trimming the model**

Next, I trimmed the model by dropping those variables previously discussed whose beta weights did not reach significance in the replicated general, keeping only the variables that achieved significance, show a marginal significance at  $p < .15$ . The regressions were then repeated for each outcome variable of the path with the change that only the preceding variables whose direct paths to it had not been trimmed were included in the regression analysis. The resulting beta weights from these regressions were used as estimates of the path coefficients (see Table 12 for details). The restricted model that emerged from this analysis showed a practical path by which certain humble leadership components and innovation team characteristics, as

represented by the three factors, influence team innovation with two emphases, market and problem orientation, but not team performance.

#### Humble leadership impact

Remarkably, leader-expressed humility showed a direct effect on eight out of four of the model variables. Also, collective humility proved to positively influence team promotion focus, team camaraderie, and team innovation with a problem orientation. Team promotion focus showed significance as a predictor on team interdependence and learning, team feedback and support. However, team promotion focus did not influence team performance, as found by Owens and Hekman (2016). While team camaraderie did not prove to affect any outcome variables, collective humility and team feedback and support (approaching significance at  $p = .088$ ) showed a direct effect on team innovation with a problem orientation.

Finally, the path analysis results suggested that some of the control variables do influence the outcome variables. For instance, while participant age proved a negative effect on team innovation with a market orientation, female percentage proved a positive effect on such an outcome variable. Organization BI demonstrated an effect on team performance. Most of the remaining control variables, included as predictors in the adjusted model, did not suggest a significant path that led directly to any of the variables treated as outcome variables.

**Table 12. Standardized Beta Weights After Trimming Processes**

Standardized Beta Weights from Multiple Regression Analyses: Trimmed Model considering the factors and the three outcome variables

Predictor Variable	Outcome Variable								
	Factor Variables								
	Collective Humility	Team Promotion Focus	Team Interdependence and Learning	Team Camaraderie	Team Feedback and Support	Team Innovation with a Market Orientation	Team Innovation with a Problem Orientation	Team Performance	
Leader-Expressed Humility	.540**	.329**			.311**	-.227*			
Collective Humility		.616**		.412**			.461**		
Team Promotion Focus			.705**		.372**				
Team Interdependence and Learning									
Team Camaraderie									
Team Feedback and Support							.193		
<b>Covariates</b>									
Team Size								-.206*	
Female Percentage						.368**			
Participant Age						-.244*			
Organization BI								.286**	
Organization CI					.527**				
Organization DK									
Organization EL									
Organization FN									
Organization GS									
Organization HV									

n = 87; \*p < .05. \*\*p < .01. Underline beta weight is approaching significance at p = .088

### ***Goodness of Fit for the Three Outcome Variables***

The resulting coefficients from the earlier section were then tested for goodness of fit, which compares the variance explained by the replicated general model to the variance explained by the restricted model. The restricted model is determined to fit the data best when there is a minimal difference in variance explained by the general and the restricted models. As shown in Table 13 below, all the variance not explained with the restricted model ranges from .013 to .244 difference in  $R^2$  values between the general and the restricted models. These differences in  $R^2$  values were considered acceptable for this study.

The resulting restricted model is depicted in Figure 6. However, it is important to consider this model with caution due to the limited sample size ( $n = 87$  teams) and the method by which it was created. Specifically, the scales were measured by the same sources (humble leadership and team characteristics) at the same time, except for team innovation with a market and problem orientation and team performance, which were only assessed by the team leader. Thus, the relationship between the variables might be inflated because of common method variance (Owens and Hekman, 2016). However, an exploratory factor analysis was executed to analyze if the three predictors and three outcome variables do load into different factors. The results were positive because six out of six variables resulted in loading unique factors with a value equal or higher than .9. Details per model variable are available in Table 23 of Appendix G.

**Table 13. Variance Explained: General vs Restricted Models**

Outcome Variable	General Model		Restricted Model		
	R <sup>2</sup>	Number of Predictors	R <sup>2</sup>	Number of Predictors	ΔR <sup>2</sup>
<b>Humble Leadership</b>					
Collective Humility	.419**	1	.291**	1	.128
Team Promotion Focus	.739**	2	.706**	2	.033
<b>Team Characteristics Factors</b>					
Team Interdependence and Learning	.542**	3	.496**	1	.046
Team Camaraderie	.183**	3	.170**	1	.013
Team Support and Feedback	.507**	3	.402**	2	.105
<b>Outcome Variables</b>					
Team Innovation with a Market Orientation	.404**	6	.160**	1	.244
Team Innovation with a Problem Orientation	.403**	6	.216**	1	.187
Team Performance	.299**	6	.163**	1	.136

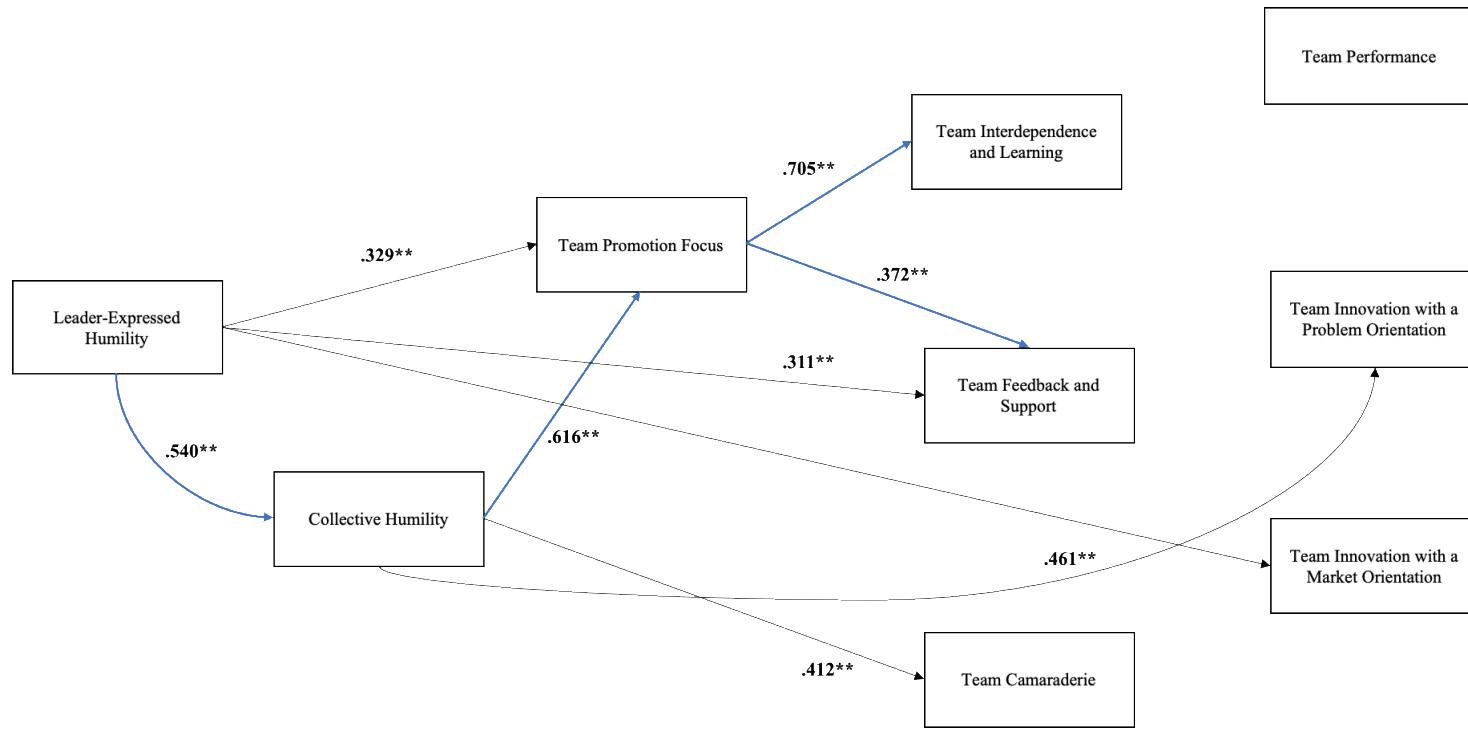
*Note.* The number of predictors is not including the control variables; however the difference in R<sup>2</sup> between the general and restricted models is in cases like Collective Humility, mostly related to the predictors eliminated from the regression analyses.  
 \*p < .05. \*\*p < .01.

These results are encouraging because each variable is uniquely represented by its construct, and potential multicollinearity issues are not present among the variables.

Based on these results, it can be established that the model is a reasonable explanation of the variance resulting in the multiple outcome variables analyzed in the mediation model depicted in Figure 6.

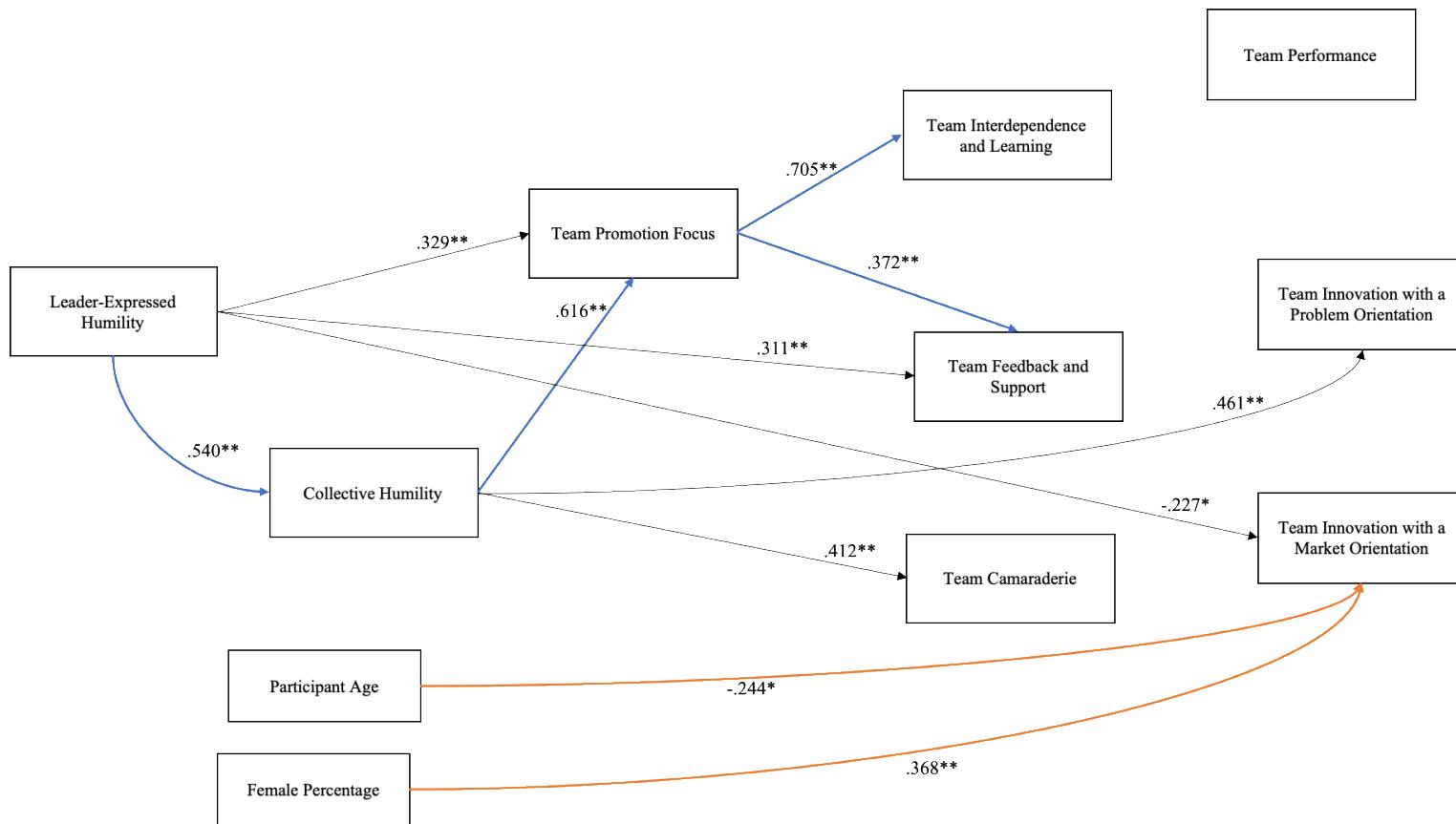
The model depicted in Figure 7 is integrating the control variables that is loading some of the model variables significantly. For instance, organization CI is loading team feedback and support with a beta weight of .527 at  $p < .01$ . This could be related to the cultural profile of the organization; such organization belongs to the academic sector and it could be that teams of such a population are inclined to drive the components of team feedback and support (e.g., task design and supportiveness of organization context).

In addition, organization BI is loading team performance at a beta weight of .286 at  $p < .01$ ; this could be related to the fact that such an organization, as a technology reseller and with activities mostly related to sales of products, is more inclined to manage its team by performance and sales goals. Interesting, though, is to find a negative effect (beta weight of -.244 at  $p < .05$ ) of participant age on team innovation with a market orientation; this finding could imply that, from the studied population, the older the people, the less positive impact on innovation with a market orientation is to be expected. On the contrary, the more females, the more positive impact (beta weight of .368 at  $p < .01$ ) to innovation with a market orientation is expected. Finally, team size appeared not to influence any of the study variables.



**Figure 6. Restricted Path Models with Three Output Variables**

*Note:* Lines in blue are related to the hypothesized model of this study. Boldface lines are aligned to the findings of earlier studies (Owens & Hekman, 2016).



**Figure 7. Restricted Path Model Including Control Variables**

## ***Summary***

This chapter detailed the results of the quantitative analysis of this study and the testing of three proposed models through which humble leadership may affect innovation with a market and a problem orientation and team performance. The hypothesized model for how humble leadership affects the outcome variables was evaluated via a path analysis and a trimmed model approach. It resulted in a viable path that may explain the relationship between some of the study variables. While innovation with a market and problem orientations did not show to be affected by team characteristics of innovation, team performance was neither affected by these team characteristics nor by team promotion focus, as found by Owens and Hekman (2016). Finally, while collective humility positively influences team camaraderie and team innovation with a problem orientation, leader-expressed humility positively influenced the factor titled team feedback and support, and negatively impacted team innovation with a market orientation. The implications of these results will be discussed in detail in the following chapter.

# **Chapter 5: Discussion**

## ***Introduction***

This thesis has made a case for the importance of humble leadership for innovation and team performance. In addition, based on empirical data collected from 87 teams distributed among eight organizations belonging to different industries, the survey data resulted in showing diverse aspects of how humble leadership and team characteristics created after a factor analysis based on team predictors of innovation may contribute to predict team performance and innovation with two emphases—market and problem orientation. This chapter will analyze these results, considering the existing research documented in Chapter 2: Literature Review to discuss the potential implications for findings that support and do not support the current theory, as well as extending existing theory. Finally, I will address the strengths and limitations of this study, directions for future research, and implications for practice.

## ***Implications for Research***

How might scholars use the knowledge that resulted from this study to advance our understanding of the impact of humble behaviors of leaders and followers on team development, innovation, and team performance?

In the next sections, I will present the implications for research summarized in the list of items below:

- The study partially replicated the findings of Owens and Hekman (2016) as it relates to the humble leadership components related to leader-expressed humility, collective humility, and team promotion focus, and the effect of these components on team performance, but in a population mostly composed of Hispanic respondents; and
- The study is among the first ones, if not the first one, that empirically tested the relationship between humble leadership, innovation, and team performance, all in a population not previously studied and mostly composed of Hispanic or Latino respondents.

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

In this section, I will address the findings supporting the existing theory of the relationship between humble leadership, innovation, and team performance.

#### Humble leadership and team performance

This study partially supported earlier findings (Owens & Hekman, 2016) that showed a positive relationship between the humble leadership components and team performance.

As it relates to supporting existing findings, while Owens and Hekman (2016) found a path weight of .30 at  $p < .05$  between leader-expressed humility and collective humility, the present study resulted in a path weight .54  $p < .01$ . In addition, while Owens and Hekman (2016) found a path weight of .67 at  $p < .001$  between collective humility and team promotion focus, the present study resulted in a path weight of .61 at  $p < .01$ . However, while Owens and Hekman (2016) found a path weight of .47 at  $p$

< .001 between team promotion focus and team performance, this study did not result in a path weight statistically significant at  $p < .05$ .

In addition, this study partially supports the findings of earlier studies and extends existing research because it implies that in a population characterized by higher power distance like Mexicans (Hofstede et al., 2010), leader-expressed humility does positively affect collective humility and team promotion focus. Finally, the contagious nature of humility, as reported by Owens and Hekman (2016), is confirmed in the present study because it was also proven that the contagion effect of a leader's behavior is taking place in teams, despite the cultural profile as it relates to power distance. This is because a positive and significant effect was found in this study population between leader-expressed humility and collective humility, which later positively impacted team promotion focus. Nevertheless, it is crucial to consider this model with caution due to the limited sample size ( $n = 87$  teams) and the path analysis method by which it was created.

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

In this section, I will address the findings extending existing theory of the relationship between humble leadership, innovation, and team performance.

#### Team promotion focus and team characteristics

The present study took as a reference the eight-team level predictors of innovation documented by Hüscher et al. (2009) because of several reasons. The first one reason is that they found that “team members’ perceptions of team processes affect

the innovativeness of the whole team more than the innovativeness of individual team members” (p. 1140). Therefore, the present study took a similar approach and considered the team as the unit of analysis. A second reason for integrating team predictors of innovation in the model depicted in Figure 2 was because it was hypothesized that striving for the team highest potential, as represented by team promotion focus (Owens & Hekman, 2016), could encourage a team toward the following: structure a sense of perceived goal interdependence, clear direction, task design, team cohesion, good internal and external communication, foster a team learning behavior, and supportiveness of organization context (Hülsheger et al., 2009; Edmondson, 1996).

The model depicted in Figure 2 illustrates the relationship between team promotion focus and team predictors of innovation driving innovation and team performance. Furthermore, the model depicted in Figure 4 illustrates the relationship between team promotion focus and each of the three-team characteristics (team interdependence and learning, team camaraderie, and team feedback and support) that resulted from the factor analysis as a way to manage multicollinearity issues identified during the intercorrelation analysis of the eight team innovation predictors illustrated in Figure 2.

Team promotion focus and team interdependence and learning  
An important contribution of this research is that I found that team promotion focus does influence the factor team interdependence and learning at a path weight of .705

at  $p < .01$ . It is important to remind the reader at this point that team interdependence and learning is composed of four out of the eight team predictors of innovation, which are perceived goal interdependence, task cohesion, clear direction, and team learning behavior. In addition, these findings are encouraging because it implies that striving for the team highest potential, as represented by team promotion focus, could positively affect such team innovation predictors.

Furthermore, the effect of team promotion focus is preceded by collective humility and leader-expressed humility as a serial mediation model, thus supporting the impact of humble leadership on team interdependence and learning. In addition, these findings support the results of Rosing et al. (2011) because they argued that not a single leadership style or theory sufficed to predict team innovation components, but instead it was a set of behaviors that could help innovation to flourish. Finally, this is a significant contribution of the present study because it is confirmed that humble leadership behaviors positively affect the team predictors of innovation related to the factor titled team interdependence and learning.

#### Team promotion focus and team camaraderie

The factor of team camaraderie is composed of two dimensions, which are social cohesion and individual attraction to the group. Unlike what is hypothesized in the model of Figure 4, team promotion focus did not positively affect team camaraderie. However, a satisfying direct relationship was found to be related to one of the components of humble leadership. Collective humility was found with a path weight

of .412 at  $p < .01$ , positively affecting team camaraderie. These non-hypothesized findings are interesting to have them flourish in the restricted model of Figure 5 because it implies that certain components of the humble leadership construct and, specifically, collective humility have a significant contagion effect on the components of social cohesion and individual attraction to the group, from which both foster team cohesion. Finally, while no significant relationships between team promotion focus and team cohesion components represented by team camaraderie were found in this study, team camaraderie has proven to be positively affected by the predictor (collective humility) of team promotion focus, therefore, supporting the results of Rosing et al. (2011) because they argued that not a single leadership style or theory sufficed to predict components of team innovation, but instead a set of behaviors could facilitate innovation to flourish. In this case, those behaviors are related to the humble leadership construct developed by Owen and Hekman (2016).

Team promotion focus and team feedback and support  
An essential contribution of this research is that I found that team promotion focus does influence the factor titled team feedback and support at a path weight of .372 at  $p < .01$ . In addition, I also found that leader-expressed humility does influence team feedback and support at a path weight of .311 at  $p < .01$ . It is important to remind the reader that team feedback and support is composed of two out of the eight predictors of innovation: task design and supportiveness of organization context. In addition, these findings are encouraging because it implies that striving for the team's highest potential, as represented by team promotion focus, positively affects such a set of

team innovation predictors. In addition, these findings are supporting the results of Rosing et al. (2011) because they argued that not a single leadership style or theory sufficed to predict components of team innovation, but instead a set of behaviors could facilitate innovation to flourish. Finally, this is a significant contribution of the present study because it is confirmed that humble leadership behaviors positively affect the team predictors of innovation related to the factor titled team feedback and support.

Overall, while the factor named team interdependence and learning was positively influenced by team promotion focus, team camaraderie was positively influenced by collective humility, and team feedback and support was positively influenced by both, leader-expressed humility and team promotion focus. However, unlike hypothesized, no direct effect between team promotion focus and team camaraderie was found. Finally, the findings support the assertions made by Rosing et al. (2011), showing that behaviors do affect innovation predictors and potentially firm innovation performance.

Team innovation with two emphases, market, and problem orientation, is what I will address in the next section. Nevertheless, it is crucial to consider this model with caution due to the limited sample size ( $n = 87$  teams) and the path analysis method by which it was created.

### Team characteristics, team innovation, and team performance

As documented in the literature review chapter, Zhang et al. (2017) took a paradoxical approach between humility and narcissism and found that firm innovation is not only the result of leader humility or narcissism as separate predictors, but instead found the interaction term between the two variables as the one driving innovation. The findings of the present study do not support the findings of Zhang et al. (2017) because it was found that certain humble leadership model components do influence certain predictors of innovation (e.g., team interdependence and learning, team camaraderie, and team feedback and support). Furthermore, the present study supports the findings of Manz et al. (1989), showing that innovation firm performance is the result of leadership in action, and the findings of Rosing et al. (2011), that indicated innovation is positively affected by a set of behaviors that could facilitate innovation to flourish, instead of a single leadership style or theory.

An essential contribution of this research is that I found that leader-expressed humility negatively affects team innovation with a market orientation. This finding could indicate that those humble behaviors, as represented by acknowledging self-limitations, strengths, and mistakes, are not influencers that support a team to use skills it already possesses to learn new ways to apply those skills to develop new products to serve new markets, nor seeks information about new markets or develop existing skills to serve new or existing markets (Burpitt & Bigoness, 1997). However, collective humility was found to positively affect team innovation with a problem orientation, and this could imply that collective humility facilitates teams to learn new

ways to apply existing knowledge of products and techniques to develop innovative solutions to existing problems (Burpitt & Bigoness, 1997).

The aforementioned findings are intriguing because while the team characteristics as represented by team interdependence and learning and team feedback and support are both positively affected by team promotion focus, neither team feedback and support, team interdependence and learning, nor team camaraderie resulted as significant predictors of team innovation with a market or problem orientations. Additionally, these findings do not support the findings of Hülsheger et al. (2009), which showed that perceived goal interdependence, team cohesion (as represented by social and task cohesion as well as individual attraction to the group), clear direction, and team learning behavior do not predict innovation with two emphases, problem and market orientation.

However, as hypothesized, team feedback and support does positively affect (beta weight of .193) team innovation with a problem orientation at a p-value approaching significance ( $p = .088$ ), thus supporting the findings of Hülsheger et al. (2009), which indicated that task design and supportiveness of organization context could positively influence innovation—in this case, innovation with a problem orientation, or, as identified by Rosing et al. (2011), the exploitation phase of innovation, which is regarded as the phase where the actual development of the products and services take place in the organization.

In addition, unlike hypothesized, team camaraderie neither influences team innovation with a market orientation nor team innovation with a problem orientation. This finding does not support the results of Hülsheger et al. (2009), which showed that social cohesion and individual attraction to the group, both components of team cohesion as reported in the scale of Carless and De Paola (2000), do positively impact innovation.

Encouragingly, this study found that collective humility does have a positive direct effect on team innovation with a problem orientation with a path weight of .461 at  $p < .01$ . This finding was not hypothesized in the model depicted in Figure 4; however, it supports the behavioral nature of firm innovation performance for the type of innovation with a problem orientation or an exploitation characteristic.

Finally, unlike what was hypothesized in the model of Figure 4, none of the three-team characteristics influenced team performance, this finding implies that only team innovation with a problem orientation is positively affected by the factor titled team feedback and support.

Nevertheless, it is crucial to consider this model and related relationships with caution due to the limited sample size ( $n = 87$  teams) and the path analysis method by which it was created.

## ***Study Strengths, Limitations, and Endogeneity***

Like any study, this study has strengths, limitations, and opportunities for future research. I have articulated the three aspects in the following paragraphs expecting to welcome the reader to reflect and provide feedback so we can eventually explore new research and collaboration opportunities.

Toward addressing the constant criticism on the lack of relevance and credibility in research management (Yip et al., 2019), this study used a quantitative research method so other researchers could review its validity, reliability, and replicability. Having this study adopting this approach is considered a strength of the study.

Another strength is that team leaders were the only ones assessing their respective teams for performance and innovation with two emphases, market and problem orientation. This process ensured proper management of common method bias, as done by Owens and Hekman (2016). Another strength is the field study design—a matching process between leaders, followers, and teams was properly executed, thus enabling each team to share their view about the different scales in a real situation and context.

As reported in the methods chapter, a population of 1563 employees was estimated among the eight organizations studied. It is considered a strength of this study that out of the 87 teams, 23 percent of them had at least two informants, and 77% had three or

more informants (see Table 2 for details). This is because the more members participating per team, the more within-group variance could be captured. In addition, I controlled for average team size in the study because it was found in different studies to influence team processes (Cummings et al., 1974; Hackman & Vidmar, 1970; Menon & Phillips, 2011). However, this study appears not to be a similar case since (except for team performance, which resulted in a negative relationship with a beta weight of -.201 at  $p < .05$ ) it did not predict any of the variables as per the model depicted in Figure 7. Finally, another strength is the range of the between-group variance because it is from 20% to 44%, thus ensuring enough variability between groups was present in the study.

Another strength is that all respondents reported on their teams, and efforts were made to reach out to all remaining members of their teams to gather survey data from as many members available per team as possible. When a team was found without the answer of the respective leader, I had access to the organizational chart and email addresses and followed up with every leader by email to enable their team to participate in the study by having the leader performance and innovation assessments completed. However, data was neither available nor gathered to capture the total number of team members on each team, so it was not possible to understand the percentage of the team's members that ultimately provided data in the survey; thus, this could be considered a study limitation. Collecting data from all team participants would have supplied a complete representation of the team assessment. Finally, future

research should explore mechanisms to guarantee higher team participation percentages.

Regarding other limitations of the present study, and as also referred by Owens and Hekman (2016), this study measured not only collective humility and team promotion focus at the same time, but all the other variables too. Therefore, the relationship between the variables could be inflated due to common method variance. However, as reported in the final factor analysis executed with the restricted model (see Figure 4) and reported in Table 23, all the variables were loaded into separate factors. In addition, a limitation is that this study was conducted mostly with a Hispanic sample (86% of the population). The generalization to an alternate context (for instance, the Asian or Eastern context) is unclear. However, this could also be considered a strength because this study intended to assess if what Owens and Hekman (2016) found in a Western sample, mostly composed of a population with lower levels of power distance, could be replicated in a sample consisting primarily of Mexicans characterized by Hofstede et al. (2010) with high levels of power distance, which, in the end, was the case. After all, as documented earlier in this chapter, humble leadership does influence innovation and team performance in a Mexican context.

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. Future research should consider other invitation processes that could ensure individuals feel safer when supplying such identification details during the survey process.

In addition, a limitation of this study was the multicollinearity issue identified by the high intercorrelation between the team level predictors of innovation that prevented the findings and the results chapter from analyzing the effect of each team predictor of innovation with the outcome variables. This issue was resolved with a factor analysis; however, the factor analysis limits the possibility of executing regression analysis per team innovation predictor and concluding with specifics per team variable instead of a factorized dimension. Future research should consider a more significant sample of teams to ensure an increase of variance that could show single effects for each of the eight team predictors of innovation.

In addition, the team sample size is considered a limitation because it was not possible to identify statistically significant moderating effects of team power distance and team balanced processing, both reported in Appendix F as a way to tribute the intellectual honesty process that led me to drop the variables from the study.

Furthermore, the measurement error (higher than .600) for task design, team power distance and some components of team cohesion (e.g., task cohesion) should be considered with caution prior to reaching any conclusions about potential relationships between the variables (see Table 4 for details).

Finally, a limitation of this study is inherent to social sciences. It is related to the restriction of ensuring a complete randomized process to the sample studies and its non-experimental setting (Antonakis, Bendahan, Jacquart & Lalivé, 2010) toward guaranteeing a lack of endogeneity issues. While individuals were not explicitly selected to answer the survey questions, the eight organizations were selected among my professional network. This sampling characteristic of the study does not ensure a random process in the strict sense. Besides, as per Antonakis et al. (2010), endogeneity could be caused by multiple reasons, but mostly by the following situations: (1) omitting variables in the study, (2) model misspecification, (3) simultaneity between predictors and outcome variables, (4) omitted selection, (5) and common method variance.

As it relates to possible omitted variables, model misspecifications, and simultaneity, for this study, the selected variables associated with the humble leadership model (Owens & Hekman, 2016) and team predictors of innovation (Hülsheger et al., 2009) were based on the results of earlier studies that ensured the most common variables of the constructs were included. In addition, concerning the issues of model

misspecification and simultaneity between independent and outcome variables, the problem was managed by structuring the model (see Figure 2) based on existing theory supporting the potential paths of the model to be studied. Furthermore, regarding the source of endogeneity related to an omitted selection, it is considered that it was not the case of the present study because individuals were all part of a team. Finally, the matching process between leaders and team members ensured that each team member was properly matched with its related leader; thus, team members did not choose to be part of the team, which could cause omitted selection issues.

### ***Future Research***

Based on the strengths and limitations of this present study and exploratory regression analyses based on the original model (see Figure 2), below is a list of items that could guide future research:

- Future research should explore mechanisms to guarantee team participation percentages;
- Future research should consider alternate invitation processes to members that could ensure individuals feel safer when supplying such identification details (e.g., organization name, team name, leader's full name) during the survey process;
- Future research should consider a more substantial sample of teams to ensure an increased variance that could show the effects of team power distance as the moderating variable of the model (see Figure 3);

- Even though the moderating impact did not show significance, it makes conceptual sense to see teams with high power distance levels to lessen the contagion effect of leader-expressed humility on collective humility. The beta weight resulted in a negative influence (-.135); however none that were statistically significant at  $p < .1$  (see Table 15 for details);
- Future research should consider a more substantial sample of teams to ensure an increased variance that could show the effects of team balanced processing as the moderating variable of the model (see Figure 3);
- Although the moderating impact of team balanced processing on each of the three-team characteristics resulted in a negative impact (beta unstandardized beta weight ranging from -.178 to -.336) and marginally significant at  $p < .07$ , preliminary results imply that the higher the team balanced processing level of the leader as perceived by team members, the lesser impact of team promotion focus (teams striving to its highest potential) on each of the three team characteristics. Finally, this finding should encourage future research because the virtue of objectivity as represented by team balanced processing could regulate team members' perception about their potential to reach their goals and vision;
- Before processing the factor analysis to manage the multicollinearity issues documented in the findings section of this study (see Table 7), exploratory regression analyses were executed to understand the relationship between team promotion focus with each of the eight-team predictors of innovation (see Figure 2). Even though the results of the regression analyses show that there were no relationships between team

promotion focus and the variables related to team cohesion (task cohesion, social cohesion, and individual attraction to the group), team promotion focus did positively impact the remaining team predictors of innovation (with both beta weights and  $p$  values in parenthesis) as represented by perceived goal interdependence (.466,  $p < .01$ ), clear direction (.660,  $p < .01$ ), task design (.401,  $p < .05$ ), supportiveness of organization context (.418,  $p < .01$ ), and team learning behavior (.492,  $p < .01$ ). Finally, these preliminary results imply that humble leadership does influence five out of eight team predictors of innovation, and such relationships should be explored further in future research;

- To better manage the multicollinearity issues reported earlier between the team predictors of innovation and potential common method variance issues (answering all the survey questions at the same time), future research should consider applying the survey questions in different times to the same team members; and
- Future research should consider replicating the findings of the full model depicted in Figure 6 in a more diverse population, from different ethnicities (e.g., Asian or Easter context) and diverse organizations (e.g., sports, academic, high technology, pharmaceutical, agriculture) toward having more valid and reliable results to a broader context about the relationship between humble leadership and innovation with two emphases, market and problem orientation.

### ***Implications for Practice***

How would practitioners and individuals use the knowledge resulting from this study to improve innovation and team performance?

- As per the participants' feedback, this study supplied the bases and an opportunity for leaders and team members to reflect upon what makes teams innovative and capable of performing;
- Each participant organization will obtain aggregate feedback to understand better what their organizations may be able to do better for their teams toward improving its team innovation ability and performance; and
- It was identified that behaviors, and not a single leadership style, foster innovation. Specifically, it was found that certain components of humble leadership do negatively influence team innovation with a market orientation and positively influence team innovation with a problem orientation.

## **Chapter 6: Conclusion**

So, this is the end but also a new beginning.

The journey depicted in the introductory chapter concluded just before starting the Ph.D. program in Values-Driven Leadership. My dream was to explore ways to contribute as a researcher to the body of knowledge related to humble leadership. I wanted to find more effective ways to lead and help existing and new high-tech firms succeed in emerging countries by focusing on sustainable growth, thus contributing to the increase of the company survival rate.

The faculty of the Ph.D. program not only respected my dream but encouraged me to dive deep into the different leadership theories. They welcomed me to put humble leadership on the side for a while to reflect on the value of existing theory and especially the opposites of humility, like the effects of narcissistic behaviors for innovation (Zhang et al., 2017) and how diverse cultures and societies value the core virtues differently (Dahlsgaard et al., 2005). When presenting my preliminary models to different colleagues, Dr. Bradley Owens, Ph.D., (personal communication, September 3, 2018) told me that replicating their model of humble leadership in a Mexican context was an interesting endeavor; indeed, something that has never been done before, but not enough for a publication in a top journal. They encouraged me to explore a more novel relationship between the components of humble leadership to add to the current level of knowledge about the impact of humble leadership on new

aspects of organizational life, and especially on teams. I selected team as the unit of analysis because, as per Banker, Field, Schroeder, and Sintia; Edmondson; and Hackman, all modern work is carried out in teams (as cited in Norcross, 2018).

By August 2017, after five months of starting the program, I pursued and accepted a second job as a professor of the ITESO University. I have considered such service opportunities the other context that will allow me to learn a lot from the academic field's culture, especially as it relates to humble leadership. I was also welcomed to collaborate with teams where the discussions about leadership, innovation, sustainable development, entrepreneurship, finance, economics, marketing, and people development were all intellectually challenging and refreshing.

The dual role I played as a Professor at the ITESO University and the Managing Director at Testing House de Mexico facilitated not only the application of learnings during the Ph.D. courses, but also helped me to reflect that all teams, no matter if they belong to the academic or the private sector, could benefit from research related to humble leadership, innovation, and team performance.

By October 2019, I was able to submit my research proposal to the Internal Review Board of the Benedictine University, and a month later, I welcomed their approval to find answers to the below research questions.

- What is the impact of humble leadership on innovation and team performance?
- What is the impact of humble leadership on innovation and team performance while mediated by team predictors of innovation?

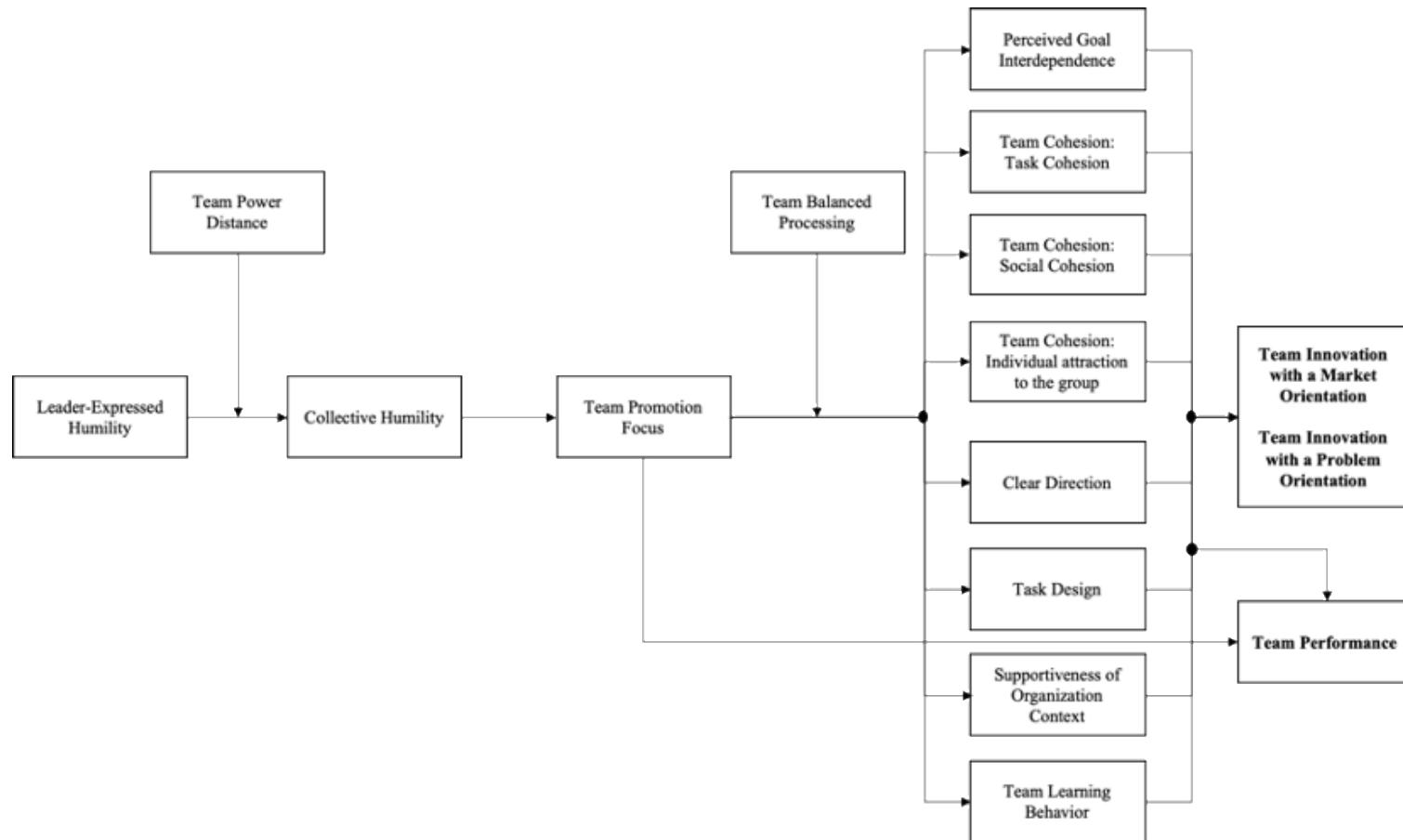
At this point in the present study, the first question has different answers. First, I was able to find that humble leadership does not positively influence team performance in a population (e.g., Mexican) usually found with elevated levels of power distance (Hofstede et al., 2010), and probably a more significant sample could replicate the findings of Owens and Hekman (2016). Secondly, while certain components of the humble leadership model developed by Owens and Hekman (2016) positively influenced team innovation with a problem orientation, and team innovation with a market orientation, to my surprise, only team feedback and support positively impacted team innovation with a problem orientation. Finally, team innovation with a problem orientation was positively influenced by collective humility.

Additionally, I initially hypothesized that the eight-team level predictors of innovation would also positively affect team performance, and I was wrong. However, now I know they do not influence team performance, and to my knowledge, it is a relationship not tested in earlier research. As a practitioner, more than many times, I heard people referring to team performance and innovation as similar constructs. Still, the findings of this research could provide some insights that

could lead to preliminarily conclude that team performance and team innovation with market and problem orientations are different constructs.

Regarding the second research question—due to multicollinearity issues found during the intercorrelation analysis among the study variables (see Table 6 for details), factor analysis was executed to manage the problems caused by multicollinearity. It prevented me from reaching conclusions about the effect of humble leadership in innovation and team performance by having each of the eight-team predictors as mediators of the model. However, the factor analysis executed and results reported with the three sets of team characteristics reveal valuable relationships at the factor level.

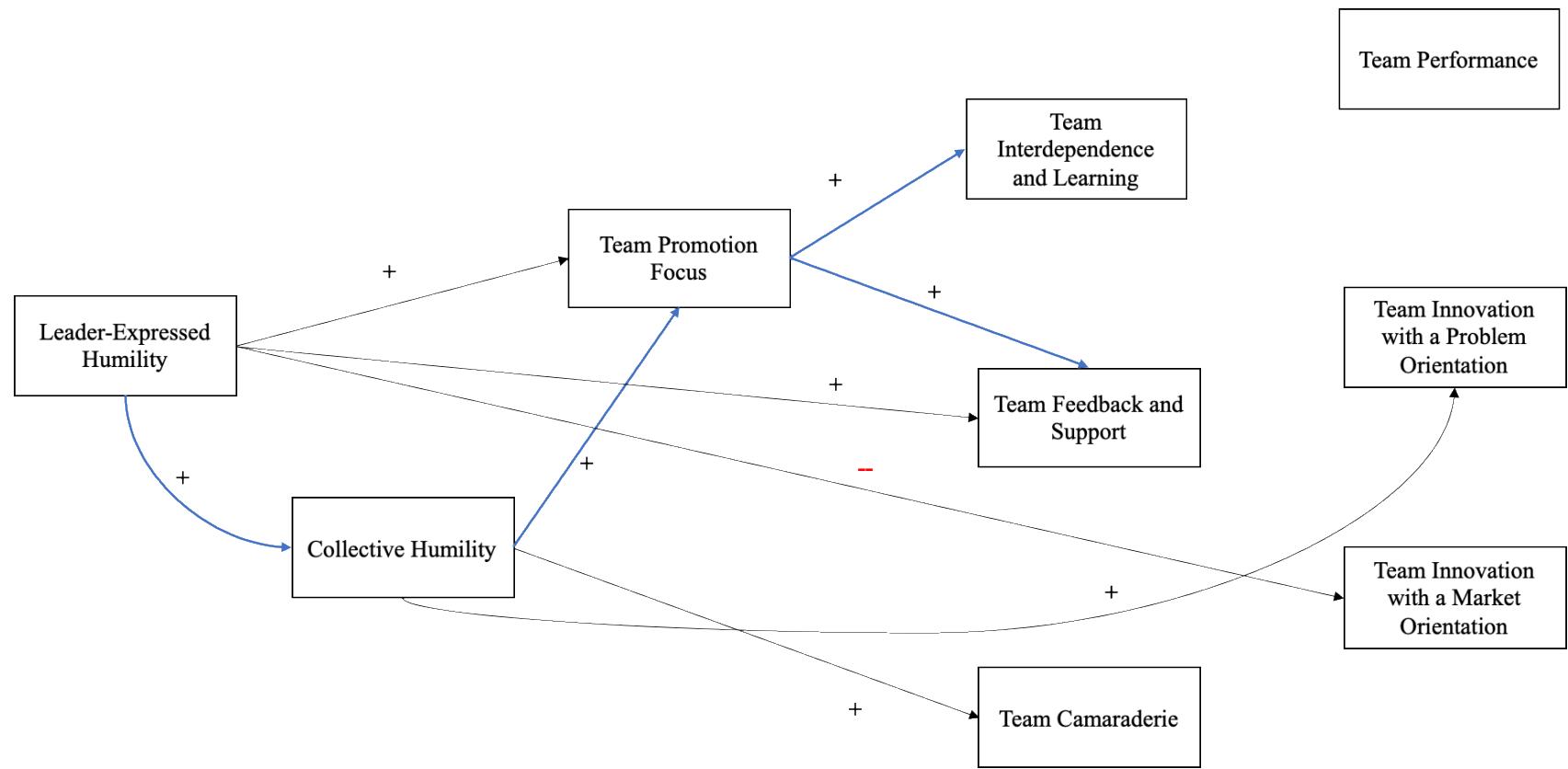
The initial proposed model (see Figure 8) hypothesized a causal model that resulted from bringing together several concepts and models from Burpitt and Bigoness (1997), Carless and De Paola (2000), Collins (2005), Edmondson (1996, 1999), Hu et al. (2018), Hülsheger et al. (2009), and Walumbwa et al. (2008) to expand the model developed by Owens and Hekman (2016).



**Figure 8. Original Proposed Model of Humble Leadership, Innovation and Team Performance**

Survey data allowed me to explore the feasibility of this model, and, using the trimmed path approach (Davis, 1985), simplify the model to a more lean version that suggested a viable path by which humble leadership may affect team innovation with market orientation, team innovation with a problem orientation, and team performance (see Figure 9 for details).

As shown in the Figure 9 and as Rosing et al. (2011) concluded in their findings, innovation is positively affected by a set of behaviors that could facilitate innovation to flourish instead of a single leadership style or theory. Based on the findings of the present study, it could be cautiously concluded, due to the limited sample size and measurement error of some dimensions (e.g., task design), that the behaviors of humble leadership do influence team characteristics related to the eight-team predictors of innovation, team innovation with a market orientation, and team innovation with a problem orientation.



**Figure 9. Revised Model of Humble Leadership, Innovation, and Team Performance**

So indeed, humble leadership matters for team performance in a Mexican context, but it also matters for teams that took part in this study and found in the US and Italy. Finally, humble leadership also matters for exploration and exploitation phases of innovation, market and problem orientations, respectively.

Nevertheless, it is crucial to consider this model and related relationships with caution due to the limited sample size ( $n = 87$  teams) and the path analysis method by which it was created.

I conclude this work by sharing my definition of leadership developed over the journey of the Ph.D. program in Values-Driven Leadership:

Leadership is about identifying social, environmental, and organizational challenges, envision sustainable solutions, and be humble enough to play different roles, especially those of follower and leader, towards collectively and ethically work on helping people and organizations flourish and leave this world better than it was before joining the team! (F. J. Vazquez, personal communication, April 2019)

## **Appendix A. Survey with Question Background**

Upon receiving approval from IRB, for those scales where the validated instrument of a specific dimension is only available in English (all except the dimension of Team Balance Processing), the instructions and all the questions listed below will be translated to Spanish by a certified translator, member of the American Translator's Association, and the translation will have the Certification by Translator document which is mandatory for United States Citizen Immigration Services acceptance, and other government or academic institutions.

### ***Participant Data***

*Demographic, background and team identifying questions*

- ID-0      What is the name of the organization you work for?
- ID-1      What is your gender? \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_ Other
- 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)

### ***Feedback Data***

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

### **Basic Team Information**

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

ID-4 Based on the organizational chart: What is the name of the team you belong to as a colleague or leader?

ID-5 Based on the organizational chart of your company: What is the full name of your leader (coordinator/supervisor/manager/director)?

- a. Last Name/Surname
- b. Name

*The answer to this question will support the researcher during the team classification process.*

ID-6 It is now important to assess the team you just described, but only from the perspective of the team leader.

- a. Are you a leader (coordinator/supervisor/manager/director) of the team you just described?

ID-7 What percentage of your work week 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-8 How long have you been working on this team?

- a. Less than six months
- b. 6 months to less than 1 year
- c. 1 year to less than 3 years
- d. 3 years to less than 5 years
- e. 5 years or more

ID-9 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-10 Do you work in:

- a. Same building as the majority of the team
- b. Different location in same building
- c. Different location in same city
- d. Different location in same region
- e. Different time zone in same country
- f. Different country?

ID-11 Based on the organizational chart of your company: What is the name of the team you lead?

- ID-12 Please indicate the name of the country and state where your work office is located
- a. Country
  - b. State

### ***Independent Variable***

Leader Expressed Humility (LEH): Validated measure replicating use of Owens and Hekman's measures exactly as used in Owens and Hekman (2016), as adapted from Owens et al. (2013). The alpha reliability for this scale is .95.

Owens and Hekman (2016) created a leader expressed humility model based on research that included three separate approaches: (1) manifested willingness to view oneself accurately, (2) a displayed appreciation of others' strengths and contributions, and (3) teachability. Their approach uses a measurement for Leader Expressed Humility that I would propose repeating in my survey exactly as they did. I would propose using the following questions exactly as they did to gauge leader expressed humility as perceived by the leader followers, and not as self-assessed by the team leader.

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

Using a 5-point Likert scale of 5 = Strongly Agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly Disagree.

- (1) Manifested willingness to view oneself accurately:
  - LEH-1 This leader actively seeks feedback, even if it is critical.
  - LEH-2 This leader admits it when he or she does not know how to do something.
  - LEH-3 This leader acknowledges when others have more knowledge and skills than him or herself.
- (2) A displayed appreciation of others' strengths and contributions:
  - LEH-4 This leader takes notice of others' strengths.
  - LEH-5 This leader often compliments others on their strengths.
  - LEH-6 This leader shows appreciation for the unique contributions of others.
- (3) Teachability:
  - LEH-7 This leader shows a willingness to learn from others.
  - LEH-8 This leader shows he or she is open to the advice of others.
  - LEH-9 This leader shows he or she is open to the ideas of others.

## ***Mediating Variables***

**Collective Humility (CH):** Validated measure replicating use of Owens and Hekman's measures exactly as used in Owens and Hekman (2016), as adapted from Owens et al. (2013). The alpha reliability for this scale is .92.

Owens and Hekman (2016) created a team humility model based on research that included three separate approaches. Their approach uses a measurement for Collective Humility that I would propose repeating in my survey exactly as they did. I would propose using the following questions exactly as they did to gauge collective (or team) humility.

Using a 5-point Likert scale of 5 = Strongly Agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly Disagree.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- (1) Manifested willingness to view members of the team accurately:
  - CH-1 Members of this team actively seek feedback, even if it is critical.
  - CH-2 Members of this team admit it when they do not know how to do something.
  - CH-3 Members of this team acknowledge when others have more knowledge and skills they do.
- (2) A displayed appreciation of others' strengths and contributions
  - CH-4 Members of this team take notice of others' strengths.
  - CH-5 Members of this team often complement one another on their strengths.
  - CH-6 Members of this team show appreciation for the unique contributions of other group members.
- (3) Teachability
  - CH-7 Members of this team are willing to learn from one another.
  - CH-8 Members of this team are open to the ideas of one another.
  - CH-9 Members of this team are open to the advice of one another.

**Team Promotion Focus (TPF):** Validated measure adapted from leader rating questions used in Owens and Hekman (2016) as adapted from Lockwood et al. (2002). The alpha reliability for this scale is .82.

Using a 5-point Likert scale of 5 = Strongly Agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly Disagree.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- TPF - 1 In general, our team is focused on attaining our ambitions.
- TPF - 2 In general, our team is focused on becoming the team we hope to become in the future.
- TPF - 3 In general, our team is focused on attaining the success we hope to achieve in the future.
- TPF - 4 In general, our team is focused on achieving our hopes and aspirations.

**Perceived Goal Interdependence (PGI):** Validated measure adapted from previous research tapped individual team members' perception of goal interdependence used in Van der Vegt and Janssen (2003) as adapted from Tjosvold (1984), and Van der Vegt, Emans and Van de Vliert, 1999. The alpha reliability for this scale was .83.

Using a 5-point Likert scale of 5 = Strongly Agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly Disagree.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- PGI - 1 Goal attainment for one team member facilitates goal attainment for the other team members.
- PGI - 2 Gain for one team member means a gain for the other team members.
- PGI - 3 Success for one team member implies success for the other team members.

**Team Cohesion Scale (TCS):** Validated measure adapted from team cohesion measure rating questions used in Carless and De Paola (2000). The alpha reliability for this scale was divided for the three components of task cohesion, which are listed below:

Task Cohesion: The alpha reliability for this scale is .74.

Social Cohesion: The alpha reliability for this scale is .81.

Individual Attraction to the Group: The alpha reliability for this scale is .63.

The response format of Carless and De Paola (2000) was a 9-point Likert scale for each, ranging from 1 (strongly disagree) to 9 (strongly agree). However, in this study

a 5-point Likert scale was adopted as to ensure consistency with the remaining of the variables assessed with a similar scale.

Using a 5-point Likert scale of 5 = Strongly Agree, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, and 1 = Strongly Disagree.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

(1) Task Cohesion

- TC - 1 Our team is united in trying to reach its goals for performance.
- TC - 2 I'm unhappy with my team's level of commitment to the task (Reverse scored).
- TC - 3 Our team members have conflicting aspirations for the team's performance (Reverse scored).
- TC - 4 This team does not give me enough opportunities to improve my personal performance (Reverse scored).

(2) Social Cohesion

- TC - 5 Our team would like to spend time together outside of work hours.
- TC - 6 Members of our team do not stick together outside of work time (Reverse scored).
- TC - 7 Our team members rarely party together (Reverse scored).
- TC - 8 Members of our team would rather go out on their own than get together as a team (Reverse scored).

(3) Individual attraction to the group

- TC - 9 For me, this team is one of the most important social groups to which I belong.
- TC - 10 Some of my best friends are in this team.

**Shared Vision/Clear Direction (SV-CD):** This dimension is referred as clarity of and commitment to objectives and also assesses the extent to which team members have a common understanding of objectives and display high commitment to those team goals (Hülsheger et al., 2009). Pearce and Ensley (2004) also considered shared vision as "...how well team members shared in the development, creation, communication, and reinforcement of a common vision for the goals and desired future state of the team" (p. 266). The dimension of Clear Direction from Edmondson (1999) is considered to cover the Shared Vision dimension referred on Hülsheger et al. (2009). The alpha reliability for this scale is .73 (Edmondson, 1996)

Using a 7-point Likert scale of 7 = Very Accurate, 6 = Accurate, 5 = Moderately Accurate, 4 = Neither Inaccurate nor Accurate, 3 = Moderately Inaccurate, 2 = Inaccurate, and 1 = Very Inaccurate.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- SV-CD - 1      It is clear what this team is supposed to accomplish.
- SV-CD - 2      This team spent time making sure every team member understands the team objectives.
- SV-CD - 3      The team has invested plenty of time to clarify our goals.

**Task Orientation/Task Design (TO-TD):** Describes "a shared concern with the excellence of quality of task performance in relation to shared vision or outcomes" (Hülsheger et al., 2009, p. 1131)). For this study the Task Orientation dimension is assessed through the Task Design dimension of Edmondson (1999). This is because the content of the survey questions could provide information about the teams striving for the highest standards of performance achievable, or mutual performance monitoring toward achieving superior performance as a team (Hülsheger et al., 2009). The alpha reliability for this scale is .50 (Edmondson, 1996).

Using a 7-point Likert scale of 7 = Very Accurate, 6 = Accurate, 5 = Moderately Accurate, 4 = Neither Inaccurate nor Accurate, 3 = Moderately Inaccurate, 2 = Inaccurate, and 1 = Very Inaccurate.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- TO-TD - 1      The work that this team does makes a difference for the people who receive or use it.
- TO-TD - 2      The work we do on this team itself provides us with plenty of feedback about how the team is performing.
- TO-TD - 3      Those who receive or use this team's output rarely give us feedback about how well our work meets their needs (Reverse scored to keep consistency with the negative statement and the rest of the survey questions).

**Support for Innovation/Supportiveness of Organization Context (SI-SOC):** describes the "expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment" (Hülsheger et al., 2009, p. 1131). For this study Support for Innovation dimension is assessed through Supportiveness of Organization Context component of Edmondson (1999). This is because the content of the survey questions could provide information about the

teams attempts to introduce new and improved ways of doing things through having access to information, obtain expert assistance, being exposed to current developments, proper access to training and related rewards. The alpha reliability for this scale is .65 (Edmondson, 1996).

Using a 7-point Likert scale of 7 = Very Accurate, 6 = Accurate, 5 = Moderately Accurate, 4 = Neither Inaccurate nor Accurate, 3 = Moderately Inaccurate, 2 = Inaccurate, and 1 = Very Inaccurate.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

SI-SOC - 1 This team gets all the information it needs to do our work and plan our schedule.

SI-SOC - 2 It is easy for this team to obtain expert assistance when something comes up that we don't *know* how to handle.

SI-SOC - 3 This team is kept in the dark about current developments and future plans that may affect its work (Reverse scored to keep consistency with the negative statement and the rest of the survey questions).

SI-SOC - 4 This team lacks access to useful training on the job (Reverse scored to keep consistency with the negative statement and the rest of the survey questions).

SI-SOC - 5 Excellent work pays off in this company/organization.

#### **Internal communication and External Communication/Team Learning**

**Behaviors (IC-EC-TLB):** is essential for the generation of new ideas; and External communication relates to the interpersonal relations with people outside one's organization, both components could be related to the Team Learning Behaviors (TLB) component of Edmondson (1999), and such validated instrument is adopted for this study. The alpha reliability for this scale is .78.

Using a 7-point Likert scale of 7 = Very Accurate, 6 = Accurate, 5 = Moderately Accurate, 4 = Neither Inaccurate nor Accurate, 3 = Moderately Inaccurate, 2 = Inaccurate, and 1 = Very Inaccurate.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

IC-EC-TLB - 1 We regularly take time to figure out ways to improve our team's work processes.

IC-EC-TLB - 2 This team tends to handle differences of opinion privately or off-line, rather than addressing them directly as a group (Reverse scored to

keep consistency with the negative statement and the rest of the survey questions).

- IC-EC-TLB - 3 Team members go out and get all the information they possibly can from others—such as customers, or other parts of the organization.
- IC-EC-TLB - 4 This team frequently seeks new information that leads us to make important changes.
- IC-EC-TLB - 5 In this team, someone always makes sure that we stop to reflect on the team's work process.
- IC-EC-TLB - 6 People in this team often speak up to test assumptions about issues under discussion.
- IC-EC-TLB - 7 We invite people from outside the team to present information or have discussions with us.

### ***Moderating Variables***

**Team Power Distance (TPD):** Adapted from power distance rating questions used in Hu et al. (2018) as adapted from Lee et al. (2000). The alpha reliability for this scale is .82.

Using a 5-point Likert scale (reverse coded) of 1 = Strongly Agree, 2 = Agree, 3 = Neither agree nor disagree, 4 = Disagree, and 5 = Strongly Disagree.

Instructions: The following question items refer to the team you belong to as a colleague or leader.

Please rate the team on the extent to which:

- TPD - 1 When a performance appraisal made by the supervisor does not fit with subordinates' expectations, the employees should feel free to discuss it with the supervisor.
- TPD - 2 In order to have efficient work relationships, it is often necessary to bypass hierarchical lines.
- TPD - 3 It is all right for young people to be critical of their (teachers and) supervisors.

**Team Balance Processing (TBP):** Adapted from team balance processing rating questions used in Walumbwa et al. (2008). The use approval of the questions listed below was obtained through the researchers site ([www.mindgarden.com](http://www.mindgarden.com)), and an official Spanish version was also made available for each of the questions. The alpha reliability for this scale is .81.

Instructions: The following question items refer to the style of your leader, as you perceive it. Judge how frequently each statement fits his or her leadership style:

Using a 5-point Likert scale of 5 = Frequently, if not always, 4 = Fairly Often, 3 = Sometimes, 2 = Once in a while, and 1 = Not at all.

- TBP - 1 Solicits views that challenge his or her deeply held positions, or in Spanish “*Mi jefe inmediato pide puntos de vista que se contraponen a sus posturas más arraigadas*”.
- TBP - 2 Analyzes relevant data before coming to a decision, or in Spanish “*Mi jefe inmediato analiza datos relevantes antes de tomar decisiones*”.
- TBP - 3 Listens carefully to different points of view before coming to conclusions, or in Spanish “*Mi jefe inmediato escucha cuidadosamente diferentes puntos de vista antes de sacar conclusiones*”.

## **Outcome Variables**

**Team Innovation (TINN):** Adapted from team innovation measure rating questions used in Burpitt and Bigoness (1997). Scale used by the team leader to evaluate their respective team. The nine items are divided into two groups, (1)market orientation which is distinguished by an external orientation focused on innovation that can enhance the teams’ ability to meet the demands of the market place, and a second dimension (2) problem orientation focused on innovation, that enables the group to become more adept in solving problems. The alpha reliability for the market orientation scale is .87, and the alpha for the problem orientation scale is .89.

Using a 5-point Likert scale of 5=Strongly Agree, 4=Agree, 3=Neither agree nor disagree, 2=Disagree, and 1=Strongly Disagree.

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

(1) Team Innovation with a Market Orientation:

TINN - 1 Using skills they already possess; this team learns new ways to apply those skills to develop new products that can attract and serve new people<sup>1</sup>/markets.

TINN - 2 This team seeks out information about new markets, products, and technologies from sources outside the organization.

TINN - 3 This team identifies and develops skills that can improve their ability to serve existing business needs.

TINN - 4 This team identifies and develops skills that can help attract and serve new business needs.

(2) Team Innovation with a Problem Orientation:

TINN - 5 This team learns new ways to apply their knowledge of familiar products and techniques to develop new and unusual solutions to familiar, routine problems.

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<sup>1</sup> “people” added to the original questions as to cover surveyors belonging to the academic sector

- TINN - 6 This team seeks out information on products and techniques that are new to the operation and learns how to apply them to develop new solutions to routine problems.
- TINN - 7 This team identifies and learns skills and technologies that may be useful in solving unfamiliar problems.
- TINN - 8 This team seeks out and acquires information that may be useful in developing multiple solutions to problems.
- TINN - 9 This team seeks out and acquires knowledge that may be useful in satisfying needs unforeseen by the client.

**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 Owens and Hekman (2016) asking the leader reduces the issues of common method bias. 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?

## Appendix B. Sworn Translator Signed Document

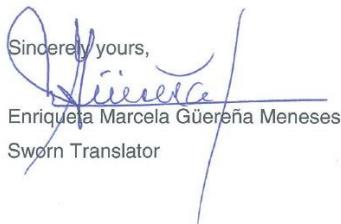
ENRIQUETA MARCELA GÜEREÑA MENESES  
SWORN TRANSLATOR AUTHORIZED BY THE SUPREME COURT OF JUSTICE OF JALISCO STATE  
AV. NACIONES UNIDAS 6361 CASA 9  
COL. PARQUES DE LA CASTELLANA  
ZAPOPAN, JALISCO, MEXICO Z.C. 45117

Guadalajara, Jalisco, January 6<sup>th</sup>, 2020

Institutional Review Board of the Benedictine University of Chicago and thesis director PhD Michael Manning,

I, ENRIQUETA MARCELA GUEREÑA MENESES, authorized by the Supremo Tribunal de Justicia del Estado de Jalisco (Supreme Court of Justice of Jalisco State) as a Translator in English-Spanish and vice versa, with Register No. GMEM300499-515, dated April 30<sup>th</sup>, 1999, CERTIFY that I have revised the translation from English into Spanish of the survey "Humble Leadership: Enabling Innovation and Team Performance", and suggested some changes.

Having revised and validated the translation on the SurveyMonkey platform, I verified that the suggested changes were implemented, therefore, I certify that the Spanish version is correct.

Sincerely yours,  
  
Enriqueta Marcela Güereña Meneses  
Sworn Translator



## Appendix C. ANOVA Test per Scale Item

**Table 14. One-way ANOVA Test per Scale Item**

		Sum of Squares	Pctg.	df	Mean Square	F	Sig.
<b>Leader-Expressed Humility</b>							
LEH-1	Between Groups	208.254	41%	86	2.422	2.391	.000
	Within Groups	298.712	59%	295	1.013		
	Total	506.966		381			
LEH-2	Between Groups	117.648	32%	86	1.368	1.619	.002
	Within Groups	249.305	68%	295	.845		
	Total	366.953		381			
LEH-3	Between Groups	99.805	27%	86	1.161	1.272	.074
	Within Groups	269.129	73%	295	.912		
	Total	368.935		381			
LEH-4	Between Groups	112.010	35%	86	1.302	1.875	.000
	Within Groups	204.869	65%	295	.694		
	Total	316.880		381			
LEH-5	Between Groups	129.084	32%	86	1.501	1.644	.001
	Within Groups	269.327	68%	295	.913		
	Total	398.411		381			
LEH-6	Between Groups	96.131	32%	86	1.118	1.619	.002
	Within Groups	203.681	68%	295	.690		
	Total	299.812		381			
LEH-7	Between Groups	160.739	44%	86	1.869	2.719	.000
	Within Groups	202.748	56%	295	.687		
	Total	363.487		381			
LEH-8	Between Groups	133.400	38%	86	1.551	2.078	.000
	Within Groups	220.223	62%	295	.747		
	Total	353.623		381			

		Sum of Squares	Pctg.	df	Mean Square	F	Sig.
LEH-9	Between Groups	113.268	30%	86	1.317	1.473	.010
	Within Groups	263.729	70%	295	.894		
	Total	376.997		381			
<b>Team Power Distance</b>							
TPD-1	Between Groups	80.476	29%	86	.936	1.403	.021
	Within Groups	196.801	71%	295	.667		
	Total	277.277		381			
TPD-2	Between Groups	140.330	29%	86	1.632	1.371	.029
	Within Groups	350.982	71%	295	1.190		
	Total	491.312		381			
TPD-3	Between Groups	94.035	37%	86	1.093	1.996	.000
	Within Groups	161.580	63%	295	.548		
	Total	255.615		381			
<b>Collective Humility</b>							
CH-1	Between Groups	102.249	29%	86	1.189	1.435	.015
	Within Groups	244.410	71%	295	.829		
	Total	346.660		381			
CH-2	Between Groups	108.468	35%	86	1.261	1.822	.000
	Within Groups	204.194	65%	295	.692		
	Total	312.662		381			
CH-3	Between Groups	105.327	34%	86	1.225	1.760	.000
	Within Groups	205.272	66%	295	.696		
	Total	310.599		381			
CH-4	Between Groups	71.170	26%	86	.828	1.211	.124
	Within Groups	201.513	74%	295	.683		
	Total	272.683		381			
CH-5	Between Groups	79.485	29%	86	.924	1.368	.030
	Within Groups	199.314	71%	295	.676		
	Total	278.798		381			

		Sum of Squares	Pctg.	df	Mean Square	F	Sig.
CH-6	Between Groups	94.645	32%	86	1.101	1.581	.003
	Within Groups	205.410	68%	295	.696		
	Total	300.055		381			
CH-7	Between Groups	105.278	36%	86	1.224	1.934	.000
	Within Groups	186.680	64%	295	.633		
	Total	291.958		381			
CH-8	Between Groups	97.314	38%	86	1.132	2.066	.000
	Within Groups	161.558	62%	295	.548		
	Total	258.872		381			
CH-9	Between Groups	90.919	36%	86	1.057	1.895	.000
	Within Groups	164.568	64%	295	.558		
	Total	255.487		381			
<b>Team Promotion Focus</b>							
TPF-1	Between Groups	80.837	32%	86	.940	1.630	.002
	Within Groups	170.085	68%	295	.577		
	Total	250.921		381			
TPF-2	Between Groups	141.345	39%	86	1.644	2.190	.000
	Within Groups	221.370	61%	295	.750		
	Total	362.715		381			
TPF-3	Between Groups	124.827	37%	86	1.451	2.000	.000
	Within Groups	214.126	63%	295	.726		
	Total	338.953		381			
TPF-4	Between Groups	110.270	34%	86	1.282	1.761	.000
	Within Groups	214.812	66%	295	.728		
	Total	325.081		381			
<b>Team Balance Processing</b>							
TBP-1	Between Groups	134.044	25%	86	1.559	1.124	.238
	Within Groups	409.150	75%	295	1.387		
	Total	543.194		381			

			Sum of Squares	Pctg.	df	Mean Square	F	Sig.
TBP-2	Between Groups	110.784	27%	86	1.288	1.285	.065	
	Within Groups	295.627	73%	295	1.002			
	Total	406.411		381				
TBP-3	Between Groups	165.658	38%	86	1.926	2.098	.000	
	Within Groups	270.878	62%	295	.918			
	Total	436.537		381				
<b>Perceived Goal Interdependence</b>								
PGI-1	Between Groups	107.064	32%	86	1.245	1.633	.001	
	Within Groups	224.926	68%	295	.762			
	Total	331.990		381				
PGI-2	Between Groups	110.437	30%	86	1.284	1.500	.007	
	Within Groups	252.498	70%	295	.856			
	Total	362.935		381				
PGI-3	Between Groups	102.211	28%	86	1.189	1.308	.053	
	Within Groups	267.948	72%	295	.908			
	Total	370.160		381				
<b>Team Cohesion/Task Cohesion</b>								
TC-1	Between Groups	140.522	41%	86	1.634	2.358	.000	
	Within Groups	204.452	59%	295	.693			
	Total	344.974		381				
TC-2	Between Groups	139.217	28%	86	1.619	1.309	.052	
	Within Groups	364.681	72%	295	1.236			
	Total	503.898		381				
TC-3	Between Groups	154.650	35%	86	1.798	1.847	.000	
	Within Groups	287.216	65%	295	.974			
	Total	441.866		381				
TC-4	Between Groups	124.185	28%	86	1.444	1.336	.041	
	Within Groups	318.967	72%	295	1.081			
	Total	443.152		381				

			Sum of Squares	Pctg.	df	Mean Square	F	Sig.
<b>Task Cohesion: Social Cohesion</b>								
TC-5	Between Groups	156.061	39%	86	1.815	2.179	.000	
	Within Groups	245.670	61%	295	.833			
	Total	401.730		381				
TC-6	Between Groups	142.629	33%	86	1.658	1.675	.001	
	Within Groups	292.033	67%	295	.990			
	Total	434.662		381				
TC-7	Between Groups	145.199	30%	86	1.688	1.437	.014	
	Within Groups	346.699	70%	295	1.175			
	Total	491.898		381				
TC-8	Between Groups	181.085	43%	86	2.106	2.567	.000	
	Within Groups	241.965	57%	295	.820			
	Total	423.050		381				
<b>Task Cohesion: Individual Attraction to the Group</b>								
TC-9	Between Groups	148.929	31%	86	1.732	1.507	.007	
	Within Groups	339.050	69%	295	1.149			
	Total	487.979		381				
TC-10	Between Groups	105.853	20%	86	1.231	.853	.808	
	Within Groups	425.564	80%	295	1.443			
	Total	531.416		381				
<b>Clear Direction (Shared Vision)</b>								
SV-CD-1	Between Groups	223.662	30%	86	2.601	1.482	.009	
	Within Groups	517.636	70%	295	1.755			
	Total	741.298		381				
SV-CD-2	Between Groups	222.404	30%	86	2.586	1.480	.009	
	Within Groups	515.313	70%	295	1.747			
	Total	737.717		381				
SV-CD-3	Between Groups	215.379	33%	86	2.504	1.670	.001	
	Within Groups	442.370	67%	295	1.500			
	Total	657.749		381				

		Sum of Squares	Pctg.	df	Mean Square	F	Sig.
<b>Task Design (Task Orientation)</b>							
TO-TD-1	Between Groups	194.414	37%	86	2.261	2.044	.000
	Within Groups	326.248	63%	295	1.106		
	Total	520.662		381			
TO-TD-2	Between Groups	211.702	33%	86	2.462	1.716	.001
	Within Groups	423.180	67%	295	1.435		
	Total	634.882		381			
TO-TD-3	Between Groups	287.635	27%	86	3.345	1.281	.068
	Within Groups	770.323	73%	295	2.611		
	Total	1057.958		381			
<b>Supportiveness of Organization Context (Support for Innovation)</b>							
SI-SOC-1	Between Groups	180.899	26%	86	2.103	1.233	.104
	Within Groups	503.292	74%	295	1.706		
	Total	684.191		381			
SI-SOC-2	Between Groups	322.626	34%	86	3.751	1.780	.000
	Within Groups	621.835	66%	295	2.108		
	Total	944.461		381			
SI-SOC-3	Between Groups	311.439	32%	86	3.621	1.583	.003
	Within Groups	674.720	68%	295	2.287		
	Total	986.160		381			
SI-SOC-4	Between Groups	335.468	33%	86	3.901	1.668	.001
	Within Groups	689.694	67%	295	2.338		
	Total	1025.162		381			
SI-SOC-5	Between Groups	433.642	40%	86	5.042	2.309	.000
	Within Groups	644.204	60%	295	2.184		
	Total	1077.846		381			
<b>Team Learning Behavior (Internal and External Communication)</b>							
IC-EC-TLB-1	Between Groups	239.051	29%	86	2.780	1.433	.015
	Within Groups	572.365	71%	295	1.940		
	Total	811.416		381			

		Sum of Squares	Pctg.	df	Mean Square	F	Sig.
IC-EC-TLB-2	Between Groups	281.526	29%	86	3.274	1.393	.023
	Within Groups	693.188	71%	295	2.350		
	Total	974.715		381			
IC-EC-TLB-3	Between Groups	222.881	31%	86	2.592	1.576	.003
	Within Groups	485.205	69%	295	1.645		
	Total	708.086		381			
IC-EC-TLB-4	Between Groups	202.015	35%	86	2.349	1.835	.000
	Within Groups	377.577	65%	295	1.280		
	Total	579.592		381			
IC-EC-TLB-5	Between Groups	245.022	31%	86	2.849	1.523	.005
	Within Groups	551.777	69%	295	1.870		
	Total	796.798		381			
IC-EC-TLB-6	Between Groups	277.124	34%	86	3.222	1.787	.000
	Within Groups	532.070	66%	295	1.804		
	Total	809.194		381			
IC-EC-TLB-7	Between Groups	364.482	33%	86	4.238	1.698	.001
	Within Groups	736.157	67%	295	2.495		
	Total	1100.639		381			

## **Appendix D. Employer Acknowledgment Form**

The following template will be used to obtain employer acknowledgment of the survey process for their employees as well as permission for use of company name in subsequent study publications. The final letter that is ultimately distributed within a given organization 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 Leader and Collective Humility on Innovation and Team Performance

---

**Background Information:** The purpose of this study is to develop a better understanding of the effect of team leader humility and team collective humility on innovation and team performance. The study utilizes surveys based on scientifically validated instruments from previous studies.

**Procedures:** With your approval, employees may be contacted by invitation managed by your People Department or Human Resources Director to participate in the survey (Online 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: an opportunity for employees to reflect upon what makes teams innovative and effective; to obtain aggregate feedback to better understand what you may be able to do as a leader and organization to more effectively support a team culture development fostering innovation and 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 that will 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 course of the study. At the conclusion of the project, all data will be transferred to Dr. Michael Manning, Professor at the Center for Values-Driven Leadership at Benedictine University of Chicago, for secure and ultimate disposal after a period of 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

surveys through SurveyMonkey. Copies of these consent forms are attached herein for your reference.

**Contacts and Questions:** The researcher conducting this study is Francisco Javier Vazquez Jr., (Ph.D., candidate) with his thesis Director, Ph.D., Michael Manning, Professor at the Center for Values Driven Leadership at Benedictine University. 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 Francisco Javier Vazquez Jr at [Francisco\\_Vazquez@ben.edu](mailto:Francisco_Vazquez@ben.edu) or 52 (33) 3115-9288 or to Ph.D., Michael Manning [MManning@ben.edu](mailto:MManning@ben.edu) or (575) 621-4052. Questions and concerns may also be addressed to Alandra Devall, Ph.D., Chair, Institutional Review Board, Benedictine University, 5700 College Road, Lisle, IL 60532, 630-829-6295 or [adevall@ben.edu](mailto:adevall@ben.edu).

The research project is also part of the Formal Research Program of the Department of Economics, Administration and Marketing of the Western Institute of Technology and Higher Education A.C. (ITESO: [www.iteso.mx](http://www.iteso.mx)).

**Statement of Consent:**

By signing below, you have agreed to the above information in its entirety and I hereby 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 E. Consent Form for Survey Research**

The following template will be used to obtain informed consent via email from participants. The final letter that is distributed within a given organization 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 Leader and Collective Humility on Innovation and Team Performance

---

**Background Information:** The purpose of this study is to develop a better understanding of the effect of team leader humility and team collective humility on innovation and team performance. The study utilizes surveys based on scientifically validated instruments from previous studies.

**Procedures:** Upon your agreement to participate in this study, you will respond to a brief survey that generally should take not more than 20-30 minutes to complete. There are no right or wrong answers to the questions. The intention is to administer the survey in a variety of team environments so that the data can be used to assess the causality between the leader and collective humility on innovation and team performance.

**Risks and Benefits Associated with the Study:** This study does not have any known risks. The potential benefits in this study include an opportunity for employees to reflect upon what makes teams innovative and effective; to obtain aggregate feedback to better understand what you may be able to do as an organization to more effectively support a team culture focused on innovation and 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 that will 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 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 course of the study. At the conclusion of the project, all data will be transferred to Dr. Mike Manning, Professor at the Center for Values-Driven Leadership at Benedictine University, for secure and ultimate disposal after a period of 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 whether or not to participate is voluntary and will not affect your current or future relations with your employer, this

Benedictine University student researcher or with Benedictine University faculty. You are free to withdraw at any time without affecting your relationship with your employer, the researcher, or Benedictine University.

**Contacts and Questions:** The researcher conducting this study is Francisco Javier Vazquez Jr., (Ph.D. candidate) with Mike Manning, Professor at the Center for Values-Driven Leadership at Benedictine University. 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 Francisco Javier Vazquez Jr., at [Francisco\\_Vazquez@ben.edu](mailto:Francisco_Vazquez@ben.edu) or 52 (33) 3115-9288 or to Dr. Mike Manning [MManning@ben.edu](mailto:MManning@ben.edu) or (575) 621-4052. Questions and concerns may also be addressed to Alandra Devall, Ph.D., Chair, Institutional Review Board, Benedictine University, 5700 College Road, Lisle, IL 60532, 630-829-6295 or [adevall@ben.edu](mailto:adevall@ben.edu).

The research project is also part of the Formal Research Program of the Department of Economics, Administration and Marketing of the Western Institute of Technology and Higher Education A.C. (ITESO: [www.iteso.mx](http://www.iteso.mx)).

**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 that you have agreed to participate.

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

## **Appendix F. Analyses of the Moderating Effects**

### ***Regression Analysis: Leader-Expressed Humility, Team Power Distance, Collective Humility, and Team Promotion Focus***

I will now test the path analysis for the first part (left to right) of the model depicted in Figure 4, this implies testing that:

- Leader-Expressed Humility will be positively related to Collective Humility;
- Collective Humility will be positively related to Team Promotion Focus;
- Team Power Distance will have a moderating effect between Leader-Expressed Humility and Collective Humility, the less power distance, the more positive impact of Leader-Expressed Humility on Collective Humility.

I will first assess if the moderating effect of Team Power Distance is significant. At the same time, I will assess if Leader-Expressed Humility predicts Collective Humility. For these purposes, I used a step-wise approach (Norcross, 2019; Motowidlo et al., 1986) through multiple linear regression analyses. Control variables were integrated into the model as covariates; these are Organization, Team Size, Participant Age, and Percentage of Females in the team. Table 15 presents steps one, two, and three executed in the step-wise regression approach.

For steps one and two the standardized regression coefficients considering Collective Humility as the outcome variable are reported, and for step three the unstandardized coefficients are reported because they are the only ones available at the IBM SPSS reports when having a moderating effect under analysis. While step one considered assessing the influence of only the control variables in Collective Humility, step two adds to the model the effect of Leader-Expressed Humility. Finally, step three incorporated both, Leader-Expressed Humility and the moderator effect of Team Power Distance into the group of variables to assess the moderation effect.

While the delta of .142 between coefficients of determination between steps one and two could be considered acceptable and significant at  $p < .01$ , the delta between steps two and three represents a small increase (.016) in the variance explained by having Team Power Distance as a moderator of the model. Based on these results, I decided to drop Team Power Distance as the moderator of the effect between Leader-Expressed Humility and Collective Humility.

Finding an interaction term with no effect in a model could be related to several factors like a limited sample size, no correlation between the variables under study, and unreliability of scale dimension related to the interaction term. For this study, the sample size could be considered limited (87 teams) to be able to detect a potential influence of the moderating effect of Team Power Distance. Another explanation for

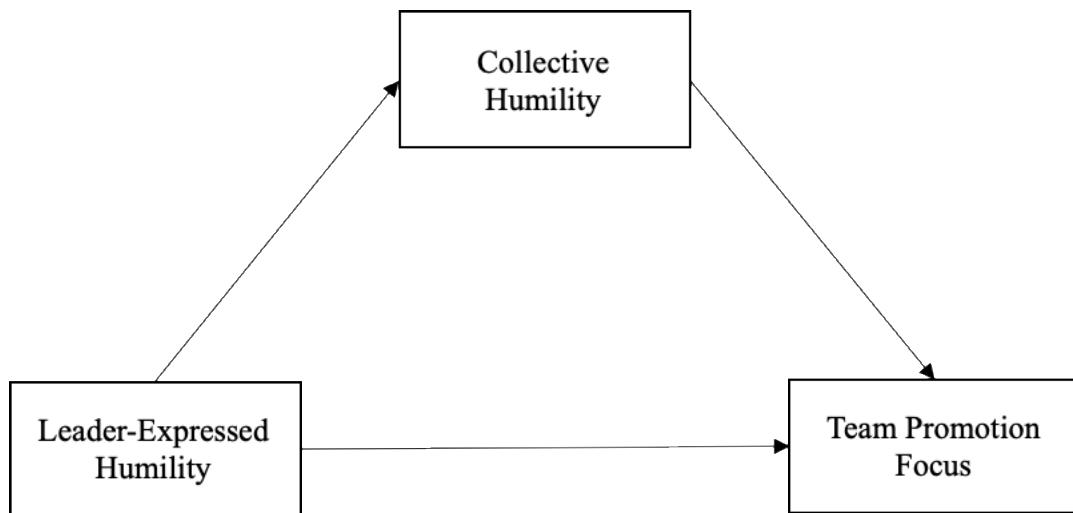
the limited effect is related to the absence of a statistically significant correlation between Team Power Distance and the other variables shown in Table 9. This moderating relationship should be explored in future research with a bigger sample. Another explanation could be related to the higher value of measurement error (.782) that could limit the possibility of reliably detecting significant variations (Table 4).

**Table 15. Standardized Regression Coefficients for Collective Humility as Outcome Variable and Team Power Distance as Moderator**

Variable	Step 1		Step 2		Step 3			
	SRC	R <sup>2</sup>	SRC	R <sup>2</sup>	ΔR <sup>2</sup>	USRC	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Control Variable</b>								
Team Size	-.018		-.035			.006		
Female Percentage	.152		.043			.094		
Participant Age	-.112		.060			.038		
<b>Organization<sup>a</sup></b>								
BI	-.034		.058			.127		
CI	-.549*		-.286			-.291		
DK	-.261		-.099			-.115		
EL	.007		.069			.178		
FN	-.329		-.122			-.135		
GS	.039		.164			.466		
HV	-.355	.277**	-.195			-.242		
<b>Predictor Variable</b>								
Leader Expressed Humility			.442**	.419**	.142**	.662		
Team Power Distance						.382		
Leader-Expressed Humility X Team Power Distance					.	-.135	.435**	.016**

<sup>a</sup> There are eight organizations in the study but for regression analyses purposes I dummy coded only seven and considered Organization AA as the reference group. USRC = Unstandardized coefficient of determination. SRC = Standardized coefficient of determination. \* $p < .05$ . \*\* $p < .01$ .

After removing the variable Team Power Distance from the model of Figure 4, I analyzed the next phase of the model where I consider Collective Humility as a mediator between Leader-Expressed Humility and Team Promotion Focus as the outcome variable. The covariates (Team Size, Female Percentage, and Participant Age) and one dummy coded covariate variable (Organization) were also part of the models. Figure 10 depicts the model path to be analyzed.



**Figure 10. Path Model: Leader-Expressed Humility, Collective Humility and Team Promotion Focus<sup>2</sup>**

Table 16 presents the standardized regression coefficients considering Collective Humility as the mediator between Leader-Expressed Humility and Team Promotion Focus. While step one considered assessing the influence of the control variables in Team Promotion Focus, step two incorporated the predictors into the group of variables to assess the influence of Leader-Expressed Humility and Collective Humility on Team Promotion Focus. The delta between coefficients of determination is considered acceptable and significant at  $p < .01$ .

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<sup>2</sup> The effect of Organization has been controlled for all variables

**Table 16. Standardized Regression Coefficients for Team Promotion Focus as Outcome Variable**

Variable	Step 1		Step 2		$\Delta R^2$
	Standardized Regression Coefficient	$R^2$	Standardized Regression Coefficient	$R^2$	
<b>Control Variable</b>					
Team Size	.060		.060		
Female Percentage	.271*		.105		
Participant Age	-.165		.015		
<b>Organization</b>					
BI	-.144		-.064		
CI	-.673**		-.156		
DK	-.238		.031		
EL	-.117		-.083		
FN	-.377		-.037		
GS	-.142		-.088		
HV	-.418	.272**	-.090		
<b>Predictor Variable</b>					
Leader Expressed Humility			.277**		
Collective Humility			.642**	.739**	.467**

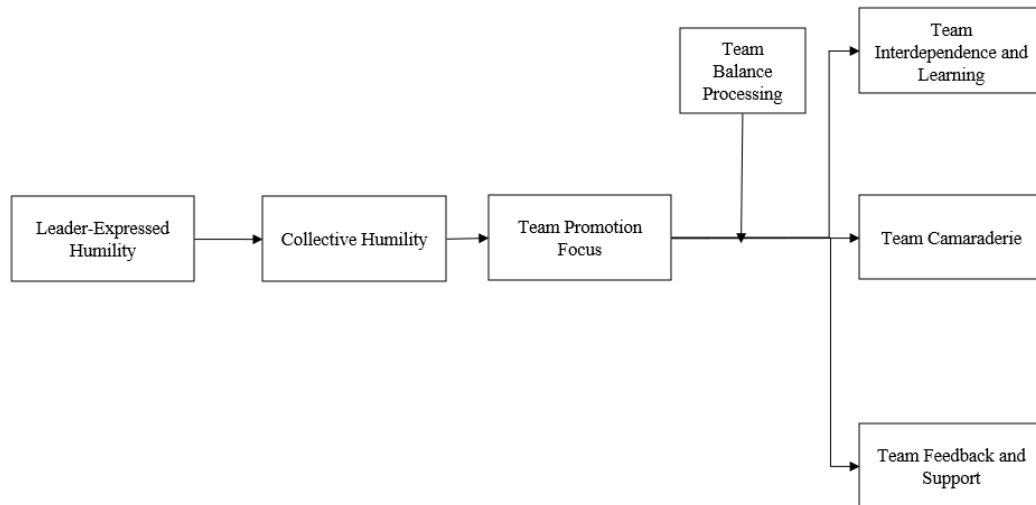
\* $p < .05$ . \*\*  $p < .01$ .

Furthermore, the indirect effect of Leader-Expressed Humility on Team Promotion Focus through Collective Humility is computed by multiplying the standardized regression coefficient between Leader Expressed Humility (.442 at  $p < .01$ : see Table 11 for details) and Collective Humility with the regression coefficient (.642 at  $p < .01$ ) between Collective Humility and Team Promotion Focus. The resulting standardized indirect effect is .283 at  $p < .01$ , which supports the findings of Owens and Hekman (2016) that indicated there is a significant indirect effect of Leader-Expressed Humility on Team Promotion Focus. Finally, based on these results, I concluded that Collective Humility would be positively related to Team Promotion Focus, and statistically significant at  $p < .01$  level.

## **Regression Analysis: Leader-Expressed Humility, Collective Humility, Team Promotion Focus, Team Balanced Processing, and Team Characteristics**

I will now continue to test the path analysis for the second part of the model where the three Team Characteristics together with Team Balanced Processing as a moderator, become part of the path. Figure 11 depicts the model with these three factors that will be tested using regression analysis as part of the path analysis. This model implies testing that Team Balanced Processing has a moderating effect between Team Promotion Focus and each of the three Team Characteristics. In addition, it means the validation of the effect of Team Promotion Focus on each of the Team Characteristics when Team Balance Processing is not part of the path model.

I will first assess if the moderating effect of Team Balanced Processing statistically significant. For these purposes I used a step-wise approach (Motowidlo et al., 1986; Norcross, 2019) and adopted linear regression analysis. Control variables were integrated into the model as covariates, these are Organization, Team Size, Participant Age, and Percentage of Females in the team. Table 17, Table 18 and Table 19 presents the regression analyses results from the step-wise regression approach for Team Interdependence and Learning, Team Camaraderie and Team Feedback and Support, respectively..



**Figure 11. Path Model: Team Balance Processing as Moderator and Team Characteristics as Output Variables**

For steps, one and two the standardized regression coefficients considering each of the three Team Characteristics as the outcome variables are reported, and for step three, the unstandardized coefficients for the moderating effects are reported. While step one considered assessing the influence of only the control variables in each of the Team Characteristics, step two is adding to the model the effect of Leader-Expressed Humility, Collective Humility, and Team Promotion Focus as predictors of each of the Team Characteristics variables. Finally, step three incorporated all the predictors, which are Leader-Expressed Humility, Collective Humility, Team Promotion Focus, Team Balance Processing, and the interaction term being the moderating effect.

The added variance explained by incorporating the moderating effect of Team Balance Processing on each of the three Team Characteristics was minimum (ranging from .011 to .030 of difference between  $R^2$ ) and not statistically significant at  $p < .05$ . Based on these results, I decided to drop Team Balance Processing as the moderator between Team Promotion Focus and each of the three Team Characteristics. Furthermore, finding an interaction term with no effect in a model could be related to several factors like limited sample size, no correlation between the variables under study, and unreliability of the interaction term.

For this study, as can be seen in Table 9, there was a correlation between Team Balance Processing and Team Characteristics variables (ranging from .380 and .462 at  $p < .01$ ). Still, despite this correlation, the interaction term resulted not statistically significant. The issue of not finding a statistically significant moderating effect could be related to the limited sample size (87 teams) that does not allow to detect a potential influence of the moderating effect of Team Balance Processing. This moderating relationship should be explored in future research with a bigger sample.

**Table 17. Standardized Regression Coefficients for Team Interdependence and Learning as Outcome Variable and Team Balance Processing as Moderator**

Variable	Step 1		Step 2			Step 3		
	SRC	R <sup>2</sup>	SRC	R <sup>2</sup>	ΔR <sup>2</sup>	USRC	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Control Variable</b>								
Team Size	.016		-.017			-.010		
Female Percentage	.094		-.071			-.215		
Participant Age	-.082		.051			.052		
<b>Organization</b>								
BI	-.025		.072			.428		
CI	-.687**		-.275			-.481		
DK	-.103		.066			.219		
EL	-.039		.034			.228		
FN	-.271		-.021			-.026		
GS	-.014		.090			.360		
HV	-.226	.368**	.030			.085		
<b>Predictor Variable</b>								
Leader Expressed Humility			.137			.587		
Collective Humility			.032			.047		
Team Promotion Focus			.465**	.611**	.243**	.787		
Team Balanced Processing						-.476		
Team Promotion Focus X Team Balanced Processing						.024	.622**	.011**

Note: USRC = Unstandardized coefficient of determination. SRC = Standardized coefficient of determination. \*p < .05. \*\* p < .01.

**Table 18. Standardized Regression Coefficients for Team Camaraderie as Outcome Variable and Team Balance Processing as Moderator**

Variable	Step 1		Step 2		Step 3			
	SRC	R <sup>2</sup>	SRC	R <sup>2</sup>	ΔR <sup>2</sup>	USRC	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Control Variable</b>								
Team Size	-.029		-.020			-.012		
Female Percentage	.131		.059			.249		
Participant Age	-.167		-.070			-.073		
<b>Organization</b>								
BI	.073		.106			.176		
CI	.025		.275			.407		
DK	.173		.319			.915		
EL	.287		.294			1.044		
FN	.024		.198			.479		
GS	.073		.089			.212		
HV	.169	.172	.329			.876		
<b>Predictor Variable</b>								
Leader Expressed Humility			.186			-.147		
Collective Humility			.427*			1.040**		
Team Promotion Focus			-.142	.307**	.134**	.702		
Team Balanced Processing						1.674		
Team Promotion Focus X Team Balanced Processing						-.313	.337**	.030**

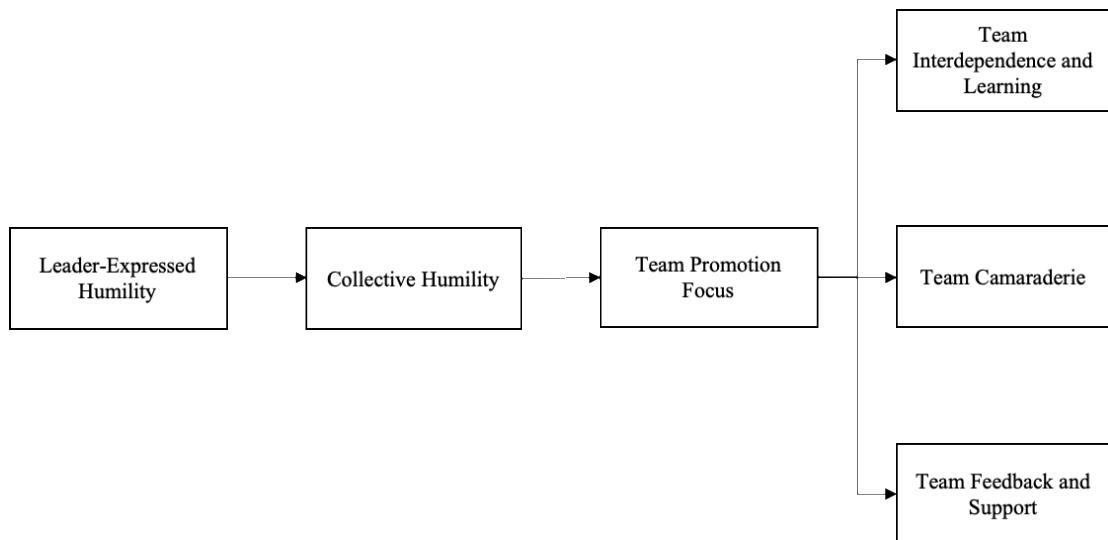
Note: USRC = Unstandardized coefficient of determination. SRC = Standardized coefficient of determination. \*p < .05. \*\*p < .01.

**Table 19. Standardized Regression Coefficients for Team Feedback and Support as Outcome Variable and Team Balance Processing as Moderator**

Variable	Step 1		Step 2			Step 3		
	SRC	R <sup>2</sup>	SRC	R <sup>2</sup>	ΔR <sup>2</sup>	USRC	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Control Variable</b>								
Team Size	.007		-.036			-.018		
Female Percentage	.154		-.035			-.019		
Participant Age	.069		.272*			.351*		
Organization								
BI	.023		.159			.399		
CI	.055		.494*			.879*		
DK	-.170		.035			.034		
EL	-.059		.044			.081		
FN	-.196		.098			.162		
GS	.026		.198			.619		
HV	-.468*	.223*	-.200			-.647		
<b>Predictor Variable</b>								
Leader Expressed Humility			.379**			.274		
Collective Humility			-.128			-.131		
Team Promotion Focus			.421*	.507**	.284**	1.643*		
Team Balanced Processing						1.556		
Team Promotion Focus X Team Balanced Processing						-.301	.532**	.025**

Note: USRC = Unstandardized coefficient of determination. SRC = Standardized coefficient of determination. \*p <.05. \*\* p < .01.

After removing the variable Team Balanced Processing from the model of Figure 11, I analyzed the reduced model for the effect of Team Promotion Focus on each of the three Team Characteristics. The covariates (Team Size, Female Percentage, and Participant Age) and one dummy coded covariate variable (Organization) were also part of the models. Figure 12 depicts the model path to be analyzed.



**Figure 12. Path Model: Team Promotion Focus as a Mediator and Team Characteristics as Output Variables**

Table 20 presents the standardized regression coefficients considering Team Interdependence and Learning as the outcome variable. While step 1 considered assessing the influence of the control variable in Team Interdependence and Learning, step 2 incorporated the predictors into the group of variables to assess the influence of Leader-Expressed Humility, Collective Humility, and Team Promotion Focus on Team Interdependence and Learning. The delta of .243 between coefficients of determination between steps one and two is considered acceptable and significant at  $p < .01$ . Therefore, it is concluded the variance explained by the predictors on the first factor as represented by Team Interdependence and Learning is acceptable.

**Table 20. Standardized Regression Coefficients for Team Interdependence and Learning as Outcome Variable**

Variable	Step 1		Step 2		
	Standardized Regression Coefficient	R <sup>2</sup>	Standardized Regression Coefficient	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Control Variable</b>					
Team Size	.016		-.017		
Female Percentage	.094		-.071		
Participant Age	-.082		.051		

Variable	Step 1		Step 2		
	Standardized Regression Coefficient	R <sup>2</sup>	Standardized Regression Coefficient	R <sup>2</sup>	ΔR <sup>2</sup>
<b>Organization</b>					
BI	-.025		.072		
CI	-.687**		-.275		
DK	-.103		.066		
EL	-.039		.034		
FN	-.271		-.021		
GS	-.014		.090		
HV	-.226	.368**	.030		
<b>Predictor Variable</b>					
Leader-Expressed Humility			.137		
Collective Humility			.032		
Team Promotion Focus			.465**	.611**	.243**

\**p* < .05. \*\**p* < .01.

Table 21 presents the standardized regression coefficients considering Team Camaraderie as the outcome variable. While step one considered assessing the influence of the control variable in Team Camaraderie, step two incorporated the predictors into the group of variables to assess the influence of Leader-Expressed Humility, Collective Humility, and Team Promotion Focus on Team Camaraderie.

The delta of .134 between coefficients of determination between steps one and two is considered acceptable and significant at *p* < .01. Therefore, it is concluded the variance explained by the predictors on the first factor as represented by Team Camaraderie is appropriate. However, it is worth remarking that Team Promotion Focus is not significantly influencing this factor, but instead, the direct effect of Collective Humility resulted statistically significant.

Despite these findings, the factor Team Camaraderie will remain in the model to understand if it influences any of the three outcome variables represented by Team Innovation with a Market Orientation, Team Innovation with a Problem Orientation, and Team Performance.

**Table 21. Standardized Regression Coefficients for Team Camaraderie as Outcome Variable**

Variable	Step 1		Step 2		$\Delta R^2$
	Standardized Regression Coefficient	$R^2$	Standardized Regression Coefficient	$R^2$	
<b>Control Variable</b>					
Team Size	-.029		-.020		
Female Percentage	.131		.059		
Participant Age	-.167		-.070		
<b>Organization</b>					
BI	.073		.106		
CI	.025		.275		
DK	.173		.319		
EL	.287		.294		
FN	.024		.198		
GS	.073		.089		
HV	.169	.172	.329		
<b>Predictor Variable</b>					
Leader-Expressed Humility			.186		
Collective Humility			.427*		
Team Promotion Focus			-.142	.307**	.134**

\* $p < .05$ . \*\*  $p < .01$ .

Table 22 presents the standardized regression coefficients considering Team Feedback and Support as the outcome variable. While step one considered assessing the influence of the control variable in Team Feedback and Support, step two incorporated the predictors into the group of variables to assess the influence of Leader-Expressed Humility, Collective Humility and Team Promotion Focus on Team Feedback and Support.

The delta of .284 between coefficients of determination between steps one and two was considered acceptable and significant at  $p < .01$ . Therefore, it is concluded the variance explained by the predictors on the third factor as represented by Team Feedback and Support is appropriate.

**Table 22. Standardized Regression Coefficients for Team Feedback and Support as Outcome Variable**

Variable	Step 1		Step 2		$\Delta R^2$
	Standardized Regression Coefficient	$R^2$	Standardized Regression Coefficient	$R^2$	
<b>Control Variable</b>					
Team Size	.007		-.036		
Female Percentage	.154		-.035		
Participant Age	.069		.272*		
<b>Organization</b>					
BI	.023		.159		
CI	.055		.494*		
DK	-.170		.035		
EL	-.059		.044		
FN	-.196		.098		
GS	.026		.198		
HV	-.468*	.223*	-.200		
<b>Predictor Variable</b>					
Leader-Expressed Humility			.379**		
Collective Humility			-.128		
Team Promotion Focus			.421*	.507**	.284**

\* $p < .05$ . \*\*  $p < .01$ .

## Appendix G. Factor Analysis on Restricted Model

**Table 23. Exploratory Factor Analysis on Final Set of Model Variables**

	Rotated Component Matrix					
	1	2	3	4	5	6
1. Collective Humility	<b>0.910</b>	0.267	0.157	-0.056	0.169	0.210
2. Leader-Expressed Humility	0.254	<b>0.947</b>	0.055	-0.053	0.046	0.176
3. Team Performance	0.137	0.058	<b>0.953</b>	0.103	0.233	0.062
4. Team Innovation: Market Orientation	-0.050	-0.051	0.097	<b>0.967</b>	0.222	0.002
5. Team Innovation: Problem Orientation	0.203	0.066	0.326	0.334	<b>0.852</b>	0.107
6. Team Promotion Focus	0.541	0.408	0.112	0.011	0.153	<b>0.710</b>

*Note:* Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Components loading factors with more than .600 are in boldface

Rotation converged in 6 iterations.

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# Vita

## Francisco Javier Vazquez Jr.

Circuito del Valle 623. Condominio Vistas del Valle. El Cielo Country Club • Tlajomulco de Zuñiga, Jalisco, Mexico 45643  
+52 1 333.115.9288 • ma40802@me.com

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## EDUCATION

### **Ph.D., Values Driven Leadership**

Benedictine University, Center for Values-Driven Leadership, Lisle, Illinois.  
Dissertation: The Impact of Humble Leadership on Innovation and Team Performance.

### **M.B.A., Innovation, New Product Development and Finance Management**

ITESO University, Tlaquepaque, Jalisco Mexico (2010), Graduated with honors.

### **Master's Degree on Engineering for Quality**

ITESO University, Tlaquepaque, Jalisco Mexico (2005).

### **B.S., Electronics and Telecommunications Engineering**

University of Guadalajara, Cambridge, Guadalajara, Jalisco, Mexico (1997).

### **Continuing Education:**

What, how and when to evaluate students, workshop taken to improve teaching practice, ITESO University (2014).

Designing and applying learning activities, workshop taken to improve teaching practice, ITESO University (2014).

Diploma Course: Human Development and Communication Certificate, ITESO University (2013).

Case Methodology, workshop taken to improve teaching practice, ITESO University (2011).

**Languages:** native Spanish; functional English.

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### **Teaching Interests**

Leadership and Management - Innovation - Sustainability - Strategic Planning

### **Research Interests**

Humble Leadership, Humility in Leadership, Followership, Virtue-Based Leadership, Values-Driven Leadership, Appreciative Inquiry, Team Performance, Innovation Performance, Servant Leadership, Transformational Leadership, Authentic Leadership, Business Ethics.

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## **PROFESSIONAL EXPERIENCE**

**ITESO A.C., University**, Tlaquepaque, Jalisco, Mexico.

(University with a Christian inspiration, entrusted to the Society of Jesus. It sees itself as a community of people in constant growth).

**Professor of graduate students and Coordinator of the Accompaniment System, 2017–Present**

- Professor of Management of Innovation and Sustainable Development & Growth of the Enterprise.
- Coordinator of the Accompaniment System: To manage the tutorial system, developed through collective and individual strategies, seeks to promote a balance in the student-professor relationship, in a way that favors the construction of bridges between the research, innovation and development interests of students, and the lines of generation and application of knowledge of each particular graduate program and their connection to other graduate programs. The academic accompaniment offered by this person-oriented system gives priority to collective production scenarios. It promotes interaction between students and professors as a collaborative learning space where the dissonance created by constructive criticism can foster the reflective process and the collective construction of knowledge.

**Testing House de México S. de R.L de C.V.**, Tlaquepaque, Jalisco, Mexico.

(Creatively Engineer Sustainable and Innovative Test and Measurement Solutions for the Electronics Industry, as a means to produce happy customers).

**Cofounder, Partner, and Managing Director, 2002–Present**

As a Managing Director, I diagnose situations, identify opportunities, design business strategies, develop business plans, implement them and lead/encourage my team, coworkers, and partners to accomplish the company's vision.

Achievement:

1. Structured a top-notch team and partner with great people through which we:

- Designed and deployed a unique company philosophy and organizational culture that leverage the company innovation capacity through the emphasis on human and technology development, all towards company sustainable growth.
- Managed to avoid the bankruptcy of Testing House de Mexico during the years of 2009 and 2010 due to liquidity problems caused by the bankruptcy of Nortel Networks, Inc.
- Established technological and commercial partnerships with world-class companies.
- Increased & diversified the customer base from two in 2002 to more than sixty customers located worldwide.
- Developed new products and engineering services requiring systematic market research, business intelligence, customer needs, and resource capacity analysis, translation of needs into product specifications, new product development, test

product concepts, structure of marketing strategy, and product commercialization worldwide.

- We were honored with the Jalisco State Export Award on two editions: 2010 and 2016, handed by the State Secretary of Economic Mr. Alonso Ulloa Velez and State Governor of Jalisco Mr. Jorge Aristoteles Sandoval Diaz.
- We were honored with the National Export Award 2011, handed by the Mexican President Mr. Felipe Calderón Hinojosa.
- We were honored with the National Prize for Technology and Innovation [XII](#) and [XVI Editions](#).
- Managed a Merge between 20018 and 2019 with the Interlatin (major competitor) applications team that has endowed Testing House de Mexico with complementary technology and market competencies towards positioning the company as the leader in the Mexican market.
- Over 2015, we implemented Project Management processes & technology ([CLARIZEN](#)) based on the [PMI](#) practices and ERP system based on the SAP Business One Software Platform.
- As of August 2016, Testing House de Mexico is an ISO 9001:2015 certified company.

#### **GenRad / Test Technology Associates, Zapopan, Jalisco, Mexico**

(Teradyne, Inc., (formally GenRad, Inc.) founded in 1915, provides their customers with the hardware, software and engineering services to increase productivity by optimizing product design, manufacturing and after-market service).

#### **Account Manager & Managing Director of Mexican business unit, 1999–2002**

Business plan structure and company establishment in Mexico based on the different stakeholders' expectations. Manage the operational, legal, and financial aspects of the organization as well as supplier evaluation, and selection process. Analyze customer needs and define strategic objectives towards exceeding their requirements and expectations.

Achievement:

- Together with my team we set up the Test Development Services in Mexico.

#### **Lucent Technologies, Tlaquepaque, Jalisco, Mexico.**

A business dedicated to the design and manufacture Wireless, Corded, Cordless telephones, answering machines and ISDN phones.

#### **Test Technician & Test Engineer, 1996–1999**

- As a **test technician** (1996-1998) my job was to support the test engineers with printed circuit board design, test system assembly, validation, and installation at the manufacturing line.
- As a **test engineer** (1998-1999) I engineered, designed, developed, implemented, and validated new test strategies and test systems fabricated to test AT&T and Lucent Technologies corded and cordless phones functionally. We based our test development on the company property test technology as well as Geneva VXI technology and LabWindows CVI software. I have also developed In-Circuit Test programs and fixtures based on the 18XX Teradyne test platform. I have structure

and provided training to test technicians and process engineers for proper new product introduction to the manufacturing line.

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## PUBLICATIONS

### Book Chapters

Vázquez-Villaseñor, F.J., y Pedroza-Zapata, Á.R. (2016). Vinculación U-E para la promoción de la Cultura de Innovación de Base Tecnológica: El caso ITESO – Testing House de México. En, C. Garrido-Noguera y D. García-Perez-de-Lema. (Coords.). Vinculación de las universidades con los sectores productivos. Casos en Iberoamérica, vol. 1 - Cap. 21, (pp. 249-261). Ciudad de México, México: UDUAL y la REDUE-ALCUE.

### Papers

Vázquez-Villaseñor, F.J., López Monsalvo, Carlos, Schmitt Christophe. "Articulación para la Dirección de una MIPYME: Uso del Método del Caso para el Éxito Empresarial". 2º Congreso Internacional sobre la MIPYME en México. UNIVA, AIREPME. 2011.

### Dissertations

Vázquez, F. J. (2010). Propuesta de un modelo de gestión que facilite el desarrollo humano y crecimiento sustentable de una organización perteneciente a la industria de alta tecnología. (Tesis de maestría inédita). ITESO, Tlaquepaque, México.

## ACADEMIC CONFERENCES

Doctoral Consortium: "*The Impact of Team Leader and Team Member Humility on Team and Organization Performance*" as part of the symposium, "Organization, Development and Change Doctoral Consortium," Academy of Management, Chicago, 2018.

Symposium Presentation: "*Humbly Behaviors by Leaders and their Impact on Team Performance*" as part of the symposium, "Non-Conformist Approaches to Executive Development & Renewal Amidst the Tyranny of the Urgent" International Leadership Academy, Palm Beach, Florida, 2018.

## KEYNOTES AND WORKSHOPS CONFERENCES

Lecturer at the 20th anniversary of the MBA program at the Central American University of Nicaragua. November 21st, 2015.

Lecturer on the XIV International Congress of Quality on October 11th, 2012.

Lecturer at the XIV International Congress of Quality, Cd. De Mexico, in October 2012.

Lecturer at the Export Management and International Trade for MARCUS EVANS on June 2012.

Lecturer at the Mexico Electronics & Embedded Developers Forum, Guadalajara, Jalisco, México, March 29th and 30th, 2011. Conference Title: Organizational resilience, innovation and technology development: The value of Test Engineering.

## **PROFESSIONAL AFFILIATIONS**

### **Professional Affiliations**

Academy of Management.  
International Leadership Academy.