VALUES, LEADERSHIP AND AUTONOMY IN TEAM'S PERFORMANCE ON THE SHOP FLOOR

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ABSTRACT

The growing number of studies about work teams and the variables that impact their performance have made important contributions to organizations. Nevertheless, an important gap can be found in the interplay of autonomy levels, leadership styles and consciousness levels, and their impact on teams' performance on the shop floor level. Filling this gap is the main focus of this research, which is a survey that seeks to correlate the four above mentioned variables. Four questionnaires were formulated and validated, three of them applied to teams' members (autonomy levels, leadership styles and consciousness levels) and one to the teams' leaders (team performance). Six different companies of Curitiba Metropolitan Area were selected to answer the questionnaires, but only two of them met the deadlines, which are mentioned in this work as "Company A" and "Company B" for confidentiality reasons. The research comprised 89 shop floor employees and 12 leaders, divided into twelve teams. After the data collection, a linear regression coefficient (Pearson's) was used to calculate the autonomy-performance and leadership-performance correlations, with the consciousness levels acting as a moderator between theses variables. Thus, the next step is to complete the study collecting additional data totalizing at least 30 teams) from six different companies.

Keywords*:* Team work. Consciousness Levels. Leadership. Autonomy.

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INTRODUCTION

From the Industrial revolution, studies and theories have been developed over the years to better understand how organizations work and what could be done to improve them (FLEURY & FLEURY, 1997).

Work teams began to gain prominence in these studies as of the 20th century to break the Fordist-Taylorist system paradigm (MARX, 2010). It was during this period that sociotechnical studies such as those of Eric Trist and the Japanese total quality movement depicted by Eiji Toyoda were developed, proposing that employees perform much more than simple routine tasks (COLENCI et al., 2000). From the important contribution of the Japanese organization model, work teams were created with the purpose of involving employees in different tasks, contributing with problem's solution and innovation in processes (MARX, 2010). This rupture is characterized by Bessant (2003) and Cordeiro et al. (2010) as a "rescue of employees' brains", "lost" during the Fordist-Taylorist period.

Defending the idea that workers can and should solve problems, Marx (2010) classified work teams into Enriched and Semi-autonomous groups, pointing out that Semi-autonomous groups, due to greater autonomy, are superior to Enriched groups (lower autonomy) because it has a greater potential to obtain satisfactory results. However, a question may be asked regarding work teams' autonomy: Does autonomy increase in groups relates positively with better results, improvements and raised productivity?

In addition to autonomy, leadership styles have also been an important subject within organizations studies, seeking to define styles that proved to be better than others (HUNTER, 2006). Much of the work teams research correlates autonomy and leadership and proposed models that would increase team performance. Recent theories, such as Beck and Cowan's (1996), Wilber's (2000) and Cordeiro et al.'s (2010) included worker's consciousness levels as a variable to be considered in those studies. Bastos and Cordeiro (2015) found a gap in the literature regarding the correlation of teamwork, autonomy and consciousness levels relationship with teams' performance, establishing a model, which was validated by specialists. Oliveira and Cordeiro (2018) used this model as a starting point to develop a construct, which was validated with Cronbach's Alpha coefficient, allowing to correlate autonomy degree, leadership styles and consciousness levels in quantitative terms with team's performance.

The current research aims to obtain data (through the Oliveira and Cordeiro's construct) that allow to show in practice these variables correlations on the shop floor of industrial organizations located in the Metropolitan Region of Curitiba, with the objective of characterize the relationship between leadership profiles, autonomy

degree and consciousness levels of work teams' members. This paper is composed by this introduction, followed by the theoretical framework, methods, results and analysis and conclusion.

1 THEORETICAL FRAMEWORK

This chapter presents four items. The first focuses on the work teams' aspects on the shop floor showing the evolutions on this subject, as well as the autonomy exercised by the teams and their classifications. The second addresses the leadership topic, showing the different types and theories about this variable. The third item shows the consciousness levels variable as an important tool to be considered in this study and its definition. The fourth item summarizes the three previous topics and correlates them with work team's performance, bringing the theoretical framework closure.

1.1 TEAMWORK ON THE SHOP FLOOR & TEAMS' AUTONOMY LEVELS

Different forms of work organization have been formed over the years aiming to increase and improve organizations productivity (VERGARA et al., 2006). According to Fleury & Fleury (1997), it began with handicrafts, which knowledge was focused on only one individual, who performed all the functions. However, over the years, the demand increase and new technologies introduction have resulted in the labor rationalization, making it necessary to have teamwork's to complete the tasks.

The term "work teams" is defined in different ways by several authors, although the vast majority synthetize that they are a group of people who exists to solve problems, with common goals, interacting socially and embedded in an organizational context (KOVACS, 2006).

One of the major contributions to the work teams' studies was developed by Fredrick Winslow Taylor, an American engineer that proposed scientific methods in administration field, based on a higher productivity, standardization of instruments and the study of workers time and movements (WOOD JR, 1992). Incorporating Taylor's concepts, Henry Ford created the conveyor belt, an innovation on the shop floor which allowed the mass production and increased productivity (HARVEY, 1996).

After World War II, studies related to work teams underwent a change: it went from a mechanistic view to a social vision (MARX, 1994). In the 50's, Tavistock Institute of Human Relations researchers proposed an alternative to work teams' models, naming

it of Sociotechnical School, introducing more flexibility, expanding the work activities scope and developing a favorable environment for professional growth, all characteristics presented in the Semiautonomous Groups (MARX, 2010).

Recently, Pruijt (2003) characterized work teams concept in two strands: neo-Tayloristic and anti-Tayloristic forms of organization. The first one is described by having a permanent supervisor as a leader, who is responsible for taking the majority decisions within the group, and the anti-Tayloristic teamworking is characterized by the lack of supervision, with all the members being able to contribute with decisions. According to Vazquez and García (2011) and Pruijt (2003), Toyotism's teamwork approach is a form of neo-Tayloristic teamworking. Both systems aim at reducing production time and resources, with a leader who is responsible for supervising, involving workers in organizations issues and promote employee activities, so that they will be able to stablish a better relationship among them and for the team. The anti-Tayloristic model resemble to Semiautonomous Groups, since both have less rigid rules, greater flexibility, without supervisors and with a greater employees' participation in the decisions (PRUIJT, 2003).

Due to quick changes in the business world, concerns about how organizations function to survive in this scenario, has led to an interest increase and studies of work organization based on autonomous teams (SIMONETTI, MARX, 2010).

Marx (1998) classified work teams regarding autonomy into two groups: Enriched and Semiautonomous. The author explained that the Enriched groups resemble to the Japanese form of organization, since the teams have greater flexibility and responsibility, controlled by a supervisor, as well as can perform different tasks, corroborating also with the neo-Tayloristic model proposed by Pruijt. In an adverse model, the Semiautonomous groups have full responsibility for production, with members having autonomy to divide tasks and methods that will be used, with the leader providing the necessary subsidies, but also charging for results.

EXHIBIT 1 – Framework for Enriched and Semiautonomous groups

Groups Type	Autonomy Levels	Definition
Enriched	Restricted Autonomy	Restrict autonomy, versatility, workers multifunctionality, supervisor control, competitive environments that have quality and low costs as a priority.
Semiautonomous	Autonomy and Flexibility	More autonomy, supervisor only to check the results, decentralization, member's participation and potentional for professional growth, innovation

SOURCE: The Authors (2018)

Wrzoreck and Cordeiro (2015) elaborated a research exploring both enriched and semi-autonomous groups in three companies in the auto parts industry in the state of Paraná. The authors concluded that the autonomy depends on training, formation, maturity and motivation, establishing a deepening Marx's studies, which made possible to form a framework to classify teams on the shop floor level, shown in Exhibits 2.

EXHIBIT 2 – Framework for Enriched and Semi-Autonomous Groups

Autonomy Type	Subtype	Autonomy Levels	Actual Case Examples
Enriched	Enriched	Restricted Autonomy	Controlled by supervisors, autonomy here is not a priority. Professional growth is restricted, the same way strategic contribution is
	Pre-Enriched Group	Without Autonomy	Employees are eventually involved in improvement groups (Quality Control Groups or Tasks Forces), without autonomy in decision making
	Enriched Group 1	Low Levels of Autonomy	Reasonable autonomy related to Production Management, with how levels of autonomy with Human Resources and Planning Management
	Enriched Group 2	High Levels of Autonomy and Flexibility	These groups are a transitional model to Semiautonomous Groups. Characterize by high levels of autonomy within Production Management
Semi-Autonomous	Semi-Autonomous	Autonomy and Flexibility	Great potential for professional member's growth, since focusing autonoym and flexibility. Members paticipation in projects, seeking enlargement and enrichment
	Semi-Autonomous Level 1		Still a transition type. The difference between Enriched Groups Level 2 refers to autonomy levels in HR Management
	Semi-Autonomous Level 2		The beginning of the appearance of a self-managed team's characteristics. Production and HR Management autonomy levels begins to increase. Autonomy in Planning Management begins to be present
	Semi-Autonomous Level 3		The apex os autonomy's level in work teams on the shop floor, which configures a self-managed team. Employees with a high level of autonomy in Production and HR Management and also a considerable autonomy in Planning Management

SOURCE: Adapted from Wzoreck e Cordeiro (2014)

Finally, work teams will be successful if motivated in the right way, with work importance awareness to the organization and willing to cooperate with each other, creating a collaborative environment that will allow everyone to achieve the goals (LUCA & TARRICONE, 2002).

1.2 LEADERSHIP STYLES

According to Kouzes and Posner (1991), leadership, although a controversial and difficult concept, can be interpreted as an art, in which a leader conquers and involves people in order to achieve a common goal. The mastery of this leadership art comes with self-knowledge, understanding its own motivation, desires, needs and expectations, in order to become a great leader and guide the employees (KOUZES AND POSNER, 1991).

Max Weber described the leader as a person who possesses "a certain quality of an individual personality by virtue of which he is separated from ordinary men" (1964, p. 329), and, in part because of their individual capacities, can articulate new goals, give directions, establish organizational frameworks and mobilize resources to achieve a goal.

Concerned with employees' satisfaction and motivation, companies today invest in people who can understand them, who know how to deal with conflicts, and who extract the best from each one, motivating them to do their tasks (HUNTER, 2006). Nowadays a fundamental piece in the organizations' management, leadership has changed over the years, with different theories to explain the leader role and the interrelationship between him and his subordinates (TEIXEIRA, 2013). One of the first theories on leadership was proposed by Lewin, White and Lippitt (1939), which separates leadership styles into three: *autocratic, democratic* and *laissez-faire*.

The Autocratic Style is the one in which the leader transmits to the workers what they have to do, and they obey. In this leadership style, leader and subordinate's relationship occurs for short periods of time, with simple and repetitive tasks (TEIXEIRA, 2013). The Democratic Style has in its leader an individual who tries do satisfy all his subordinates' interests, encouraging them to be a part of the decision making (VRIES, 1997). The Laissez-faire Style has no leader responsibility or involvement in decision making, since workers have full autonomy and freedom to make their decisions (TEIXEIRA, 2013).

EXHIBIT 3 – Framework's Autocratic, Democratic and Laissez-Faire Leadership

CHARACTERISTICS	AUTOCRATIC	DEMOCRATIC	LAISSEZ-FAIRE
Emphasis on	Leader	Leader and Team	Team
Decision Making	● Employees not involved; ● Leader take the decisions	● Leader and the employees takes the decisions.	● Employees take the decision, with Leader's responsability
Productivity	● High (when leader is present ● Low (when leader is absent)	● High (with or without leader's presence)	● Low (increased when leader is absent)

SOURCE: Oliveira e Cordeiro (2018)

According to Lewin, White and Lippitt's theory (1939), the most effective leadership style was the Democratic. The authors point out that Autocratic style could led to revolution, while the employees' freedom could impact team performance in the Laissez-faire approach.

A more recent theory, proposed by the psychologist Daniel Goleman (2000), characterize six different leadership styles, using emotional intelligence as the main variable. The leadership styles are:

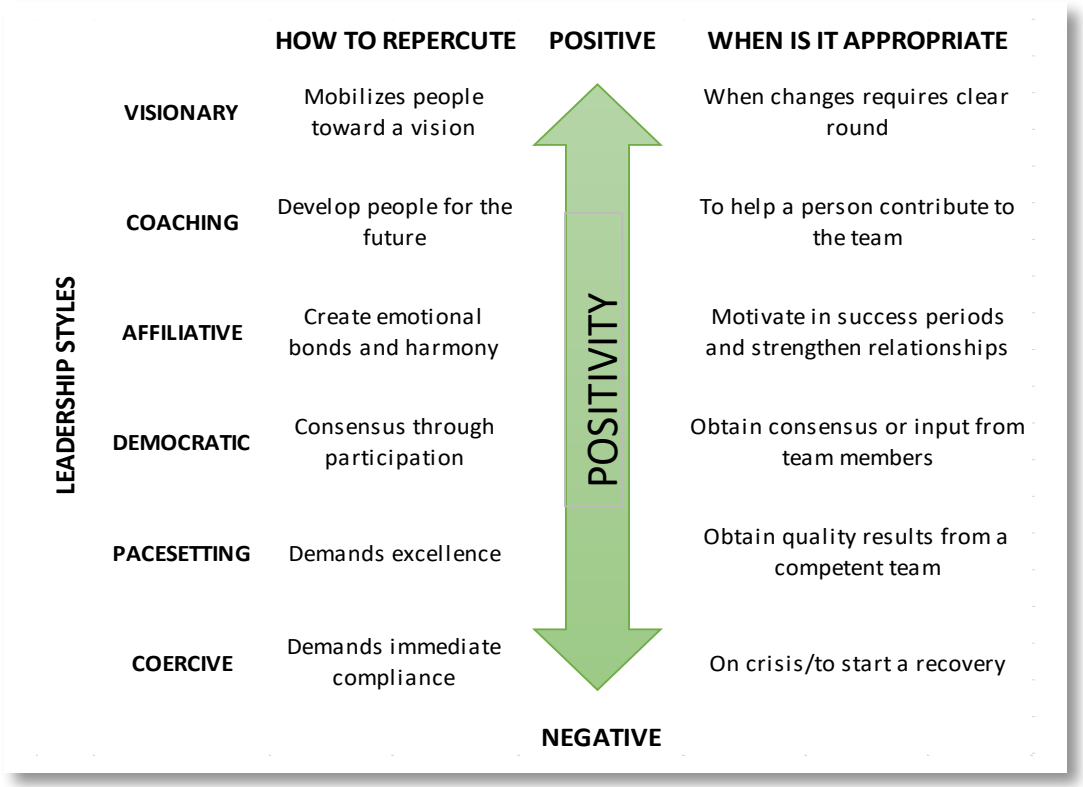
- Coercive/Commanding Style: the leader demands immediate compliance. The coercive leader needs to have emotional self-control, which can create the image of an insensitive person. This style is effective on crisis time.
- Authoritative/Visionary Style: the leader mobilize people toward a vision, promoting a enthusiasm spirit in the team to achieve the goals. The visionary leader possesses self-confidence and empathy. Goleman comments that this approach may not work if authoritarianism becomes excessive.
- Affiliative Style: the leader works to form bonds between the team and the organization, creating a sense of connection, harmony and belonging. It is a style used as a form of motivation and communication improvement. People have more freedom, although the liberty excess can weaken team performance.
- Democratic Style: the leader builds consensus through the participation of all, creating a trusting, respectful and participatory environment. In this style, moderation is very important to not diverge from the main objectives, not being recommended in emergency situations.

- Pacesetting Style: the leader creates difficult challenges and goals to achieve, imposing a high-performance standard. He/She demands his/her team's excellence and often uses himself/herself as a model do be followed. This style works when the team is qualified, otherwise, the leader may accuse his subordinates of poor performance, creating an unfavorable environment.
- Coaching Style: the leader develops his/her team for the future. This style works better when the leader truly wants to help team members become successful. Has empathy and self-awareness, making it clear to employees what is expected of them.

According to Goleman (2000) the more styles a leader displays, the better. The most effective leaders change between leadership styles when it needs, bringing with them a series of competences that help the ability do manage teams.

> An alternative approach, and one I would recommended more, is for leaders to expand their own style repertories. To do so, leaders must first understand which emotional intelligence competencies underlie the leadership styles they are lacking. They can then work assiduously to increase their quotient of them. (Goleman, 2000, p.90)

EXHIBIT 4 – Goleman's Leadership Styles



SOURCE: The Authors (2018)

For a leader to succeed with his/her team, it is necessary to create a strong identification with team members, coaching them and emphasize their strengths, establish standards, promote cooperation and correct when necessary (CHATMAN & KENNEDY, 2010). Zupan (2010), from an economic perspective, comments that "leadership involves the creation of a future and promotion of cooperative behavior by parties enrolled in an endeavor", establishing six essential aspects of leadership:

1. Vision: pay attention to what was going on, determined what events would be important for the organization future, set a new direction, concentrated the employee's attention on the objective.
2. Enrollment: selection processes, "getting the right people for the right seats, in the right bus".
3. Commitment: promote the collective good, set the example, convince others to achieve the goal, be willing to make sacrifices.
4. Integrity: honor promises, be trustworthy, have a good reputation to create a favorable environment, be ethical and moral.
5. Communication: inspire other people, capacity to deal with conflicts, promote freedom of expression, brainstorm ideas, promote interaction.
6. Authenticity: have a good character, be true to oneself.

According to Zupan (2010), these six identified aspects encompass only part of the great leadership characteristics, having much more variables remaining to be explored.

With globalization and quick changes in business environment, leadership is today an "upside-down" structure, involving self-organizing communities, internalizing society and creating bonds (KANTER, 2010). Today, according to Kanter (2010), top leaders seems to be more effective in leading their subordinates, stimulating innovation and challenges, trusting in other people on their team or organization, that is, leaders are concerned about giving the necessary tools for the employees find the solution, rather than just offering the answer.

1.3 HUMAN VALUES & CONSCIOUSNESS LEVELS

Over the centuries, humans have been adapting and evolving intellectually, accumulating information and knowledge that allowed them to survive, making individuals more curious, with different points of view, opinions, behavior and actions (DAMASIO, 2011). Like humans, companies have also been changing over time, increasingly their concerns with employees' well-being and often making them the most valuable assets (LINDHOLM, 2013).

In this sense, Trompenaars (1994) suggests that the basis of success would be to understand the organization own culture, premises and expectations about how people should think and act. In his work, Trompenaars suggests four types of organizational culture:

1. Family (power-driven culture): culture is focused on power, with an affectionate leader, who decides what the best actions. The "father" dictates and changes the organization course;
2. Eiffel Tower (function-oriented culture): focused on function, has a strong hierarchy inside the organization. Clear rules and procedures;
3. Guided Missile (project-oriented culture): focused on the project, is characterized by being egalitarian, doing what is necessary to perform the tasks. The company changes the objectives as it reaches its goals;
4. Incubator (satisfaction-oriented culture): focused on satisfaction, aims the personal fulfillment. The company improvises and innovates its production process;

The author highlights that many of these management applications may not work, especially in international companies, which each country/region has its own culture.

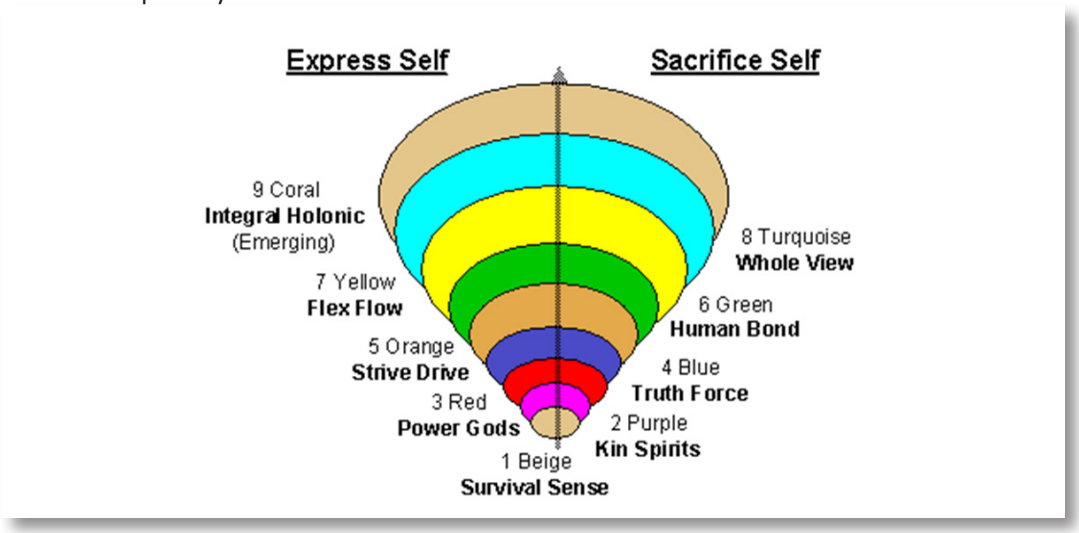
Opposing the Trompennar's thoughts, Geert Hofstede (1983), argues that culture and its dimensions are constructs used to explain and predict behaviors. In his survey research, carried out with 117 thousand observations during 1967 to 1973 in IBM company, Hofstede showed that more than half of the answers could be explained through six variables: individualism and collectivism, power distance, uncertainty avoidance, masculinity and long-term orientation. The individualism and collectivism refer to the degree individuals base their decisions on groups' norms. In individualistic societies, people tend to use rationality to make their day-by-day decisions whereas in collectivist societies people tend to align their decisions with the norms of the groups they belong to. The power distance represents the degree to which the less influential organization members accept inequality, since power and inequality are fundamental variables to society. The uncertainty avoidance explains how the members of society feel when dealing with unfamiliar and different situations. The unknow situation lead to anxiety and stress, which leads to some cultures to have greater resistance, since they prefer situations more a controlled environment (Japanese, Russian and Greece culture for example), while in other cultures (Singapore, Sweden and Jamaica), uncertainty is a part of people's lives and they feel more comfortable dealing with adverse situations. The masculinity reflects the tendency to separate values by sex, with men focused more on results and ambition – "live to work" – while women are focused on life quality and have compassion for others – "work to live". The long-term orientation indicates how

a society bases their traditions on the past or present events. Therefore, long-term orientation are the values that aims the future (savings, perseverance and efforts), while short-term orientations focus on the past and the present, wishing immediate results.

Deepening the issue around consciousness levels and organizational culture, Clare Graves (1952), proposed the "Theory of Levels of Human Existence", trying to explain the reason why people's reaction and motivation are so varied, using alphabet letters to show the life and mind capacities evolution.

Beck and Cowan (1996) amplified Graves' work, proposing the Spiral Dynamic Theory, using colors rather than alphabet letters, with each human consciousness levels having a specific color and the spiral to represent the evolution. The researches divided the colors in two groups: warm colors (beige, red, orange and yellow) associating to individual side, and cool colors (purple, blue, green and turquoise), related to communities (COWAN & TODOROVIC, 2005).

FIGURE 1 - Spiral Dynamic



SOURCE: Cowan and Todorovic (2005)

According to Cowan and Todorovic (2005) each color has unique characteristics. It is:

- Beige: large sense of survival. Here, food, water and safety are the priorities.
- Purple: loyalty sense to the clan in which it belongs. They are the first society models, worshiping symbols and rituals.
- Red: the individuals values emerge. Here, the individual is aggressive and impulsive.
- Blue: life begins to have meaning and purpose. Society has laws, principles and codes.
- Orange: the individual seeks the truth and life meaning, realizing that some situations can be manipulated and controlled.

- Green: the priority is the people's well-being. Individuals have more sensibility to others, with human bonds and community thinking.
- Yellow: knowledge and competence are more important than power and status. The individual here is spontaneous.
- Turquoise: multiple levels interconnected in a conscious system, using all the colors characteristics bellow to unite feelings and knowledge.

Nowadays, the Spiral Dynamic model has been used to better understand individual's consciousness levels, in order to be a tool that helps conflicts resolution, since each person has his/her own personality (COWAN & TODOROVIC, 2005).

1.4 TEAMS' PERFORMANCE

With a deep interest in work teams' theme, many studies were designed to verify the teams' effectiveness along the years (BARBOSA, 2009). Currently, managers use the work team's implementation as a strategy to optimize individual and collective performance, seeking better results for the companies and different ways to do the tasks (ALBUQUERQUE & PUENTE-PALACIOS, 2004).

According to Neuman and Wright (1999) those strategies do work, since the team's members interact frequently with each other, at the same time that they are interdependent, allowing to create interpersonal requirements to achieve success in performing tasks. Some authors (ALBUQUERQUE & PUENTE-PALACIOS, 2004; BRODBECK, 1996; GREENBERG & BARON, 1995) suggests that there are five development steps for work teams mature:

1. Forming: characterized by the first contact between members, what kind of contribution everyone could provide, and which are their responsibilities.
2. Storming: where it occurs the adjust and negotiation processes, stablishing formal leaderships and power dispute.
3. Norming: greater communication between members. This is only possible after roles, standards and performance procedures acceptance.
4. Performing: members focus on tasks execution.
5. Adjourning: happens when the companies objectives are fulfilled and the team undoes (if it is a temporary team) or remains (according to the teams effectiveness).

According to Albuquerque and Puente-Palacios (2004), studies related to team's performance are necessary and important, since they allow the creation of models that measure this variable in practice.

Performance indicators are important within organizations, as they measure efficiency and effectiveness company levels, their processes and their teams (DE ROLT, 1998). In relation to work teams, productivity indicators are commonly used at the team's evaluation time, since it allows to measure the relationship between results and used resources, besides allowing to include other variables such as deadlines, financial and quality (TOLEDO & OPRIME, 1996).

One of the most used indicators to measure production performance is the Overall Equipment Effectiveness (OEE) (HANSEN, 2006). Besides that, this indicator helps to identify losses in the manufacturing process, contributing to maximize the production system in the defective areas (NORD et al. 1997). These losses are divided into six groups:

- Downtime losses
  1. Adjustment and set ups losses;
  2. Identifiable stops; equipment failures and tools wear;
- Sped losses
  3. Losses with reduce speed;
  4. Downtime and small stops;
- Quality losses
  5. Quality defects;
  6. Process losses.

Salas et al. (2017) provided critical observations about measuring teams' performance, based on 30 years of experience assessing teams' performance in different situations. One of these observations is that "team performance measurement is not a perfect science", evolving over the past 30 years with relevant researches that provided helpful guidelines about teams' performance components. According to them, the literature on this area allowed to address methodological practices to test the reliability and validity of team performance metrics, developing constructs that analyze several variables that may impact the teams. In this sense, the authors highlighted that researchers had to be careful to take variables into account to define the constructs, aiming to reflect teams' contextualization and measurement processes.

1.5 TEAMS' PERFORMANCE, AUTONOMY, LEADERSHIP STYLES AND LEVEL OF CONSCIOUSNESS

The organizations' development over the centuries has allowed us to reach today's managerial conceptions, based on the principles of resource allocation, communication,

autonomy, teamwork, value creation, leadership, performance appraisals, among others (GONÇALVES, 2000). According to Hammer and Champy (1994), there are many controllable and non-controllable variables that can impact the work team's performance.

Therefore, autonomy degree, leadership styles and consciousness levels variables presented in this study can be related to companies and employee's performance. Recent investigations about the team's compositions variables and performance relationships provided preliminary support for the relationship between individuals members personality and team performance (BELL, 2007). Characteristics like organizational culture, employee motivation, job satisfaction, employee's performance, autonomy and leadership have been used on these studies in order to investigate the variables that impact team's performance (RACHMAWATI & MAULUDIN, 2018).

Using a meta-analytic technique, Bell (2007) established the affinity between team's variables, which she called "deep-level compositions" and team performance. The author used the most found variables in studies associated to work teams' performance (mental ability, personality, values, effectiveness, conscientiousness), which allowed her to verify that several variables, as agreeableness, conscientiousness and openness to experience, had a strength impact in teams performance.

The relationship between teamwork, autonomy and consciousness levels was first described by Bastos and Cordeiro (2015). In their research, the authors analyzed 131 papers in CAPES journal database, founding a gap in the literature that allowed them to establish a model that correlated these three variables. Later, Bastos and Cordeiro (2016), continuing with the research line, developed a questionnaire using Delphi Method to establish a theoretical-conceptual model relating leadership profiles, autonomy, team's consciousness levels and team's effectiveness. They selected 10 specialists to answer it, which resulted in a common sense that it is leaders' responsibility to identify teams' characteristics and explore their potential, prioritizing a particular type of leadership which better affects teams' performance. The specialists also agreed that the higher the complexity of team's members consciousness levels, the more effective are the work teams with higher autonomy. On Bastos and Cordeiro's (2015; 2016) research results, Oliveira and Cordeiro (2018) elaborated a construct that made possible to correlate the autonomy degree, leadership styles and consciousness levels in practical terms, using Sphinx Software to calculate the Cronbach's Alpha coefficient to validate the construct.

The current research proposes to use the results obtained from the previous researches, using the construct developed by Oliveira and Cordeiro (2018) to collect data aiming to identify the relationship between autonomy degree, leadership styles and consciousness levels with team's performance in practical terms, applying the questionnaires in industries in the metropolitan region of Curitiba.

2 RESEARCH METHODOLOGY

This research is a descriptive and quantitative study, which has the purpose of obtaining data through Oliveira and Cordeiro's (2018) construct, correlating the autonomy degrees, leadership styles and consciousness levels variables with work team's performance.

Kerlinger (1986) emphasizes that construct validation is important because allow to stablish "a set of interrelated concepts, definitions and propositions that present a systematic view of phenomena by specifying relationships among variables, with the purpose of explaining and predicting the phenomena". In his research already mentioned in bibliographic review, Brito (2009) used a case study to evaluate the multifunctional team's performance, in which he emphasizes that the questionnaire questions definition, along with the variables that one wishes to study, are fundamental to test the model and to verify if there are, in fact, relations.

Other studies (FORZA, 2002; HOSS & CATEN; 2010; VALENTINE et al. 2014) show that for surveys researches, first is carried out articles analyzes that have correlation with what has been studying, to elaborate a questionnaire that will be validated and put into practice in the future, precisely to verify if there is data correlation.

In the previous research, Oliveira and Cordeiro (2018) elaborated a construct that correlates leadership, autonomy and consciousness levels' variables, that will be apply in the current research. The construct was validated using two questionnaires (leadership and autonomy), both developed and released in Google Forms. The questionnaires were submitted into Microsoft Excel and then to Sphinx Program to data analysis and to validate the questionnaires reliability using Cronbach's Alpha Coefficient.

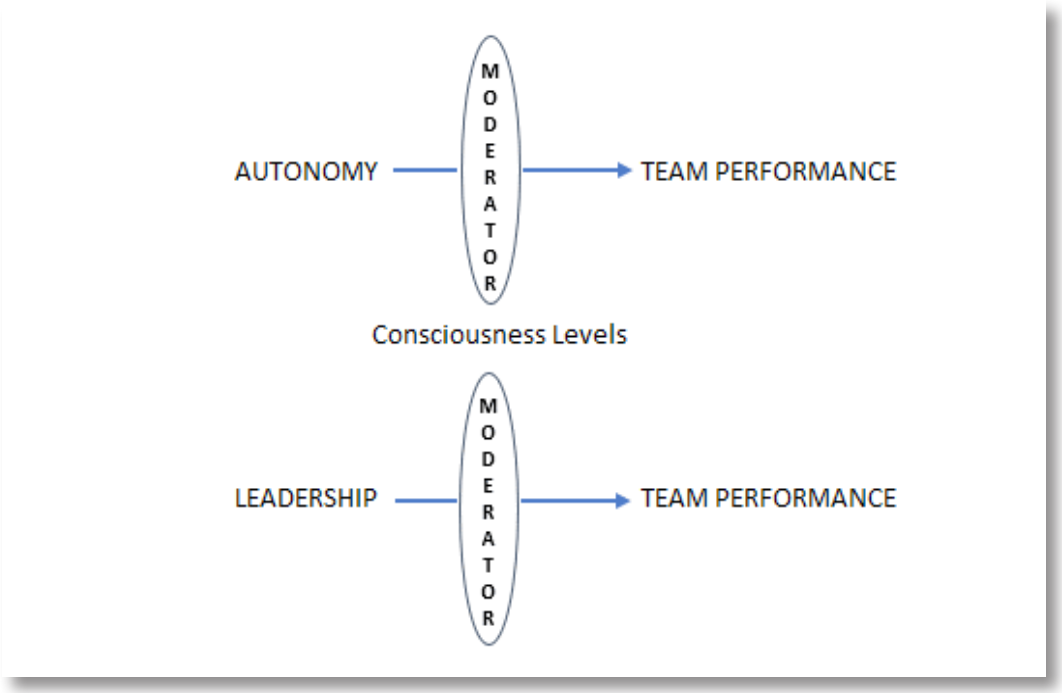
The consciousness levels variable was expected to act as a moderator between autonomy degree and leadership style (independent variables) and team's performance (dependent variable), as it show in Exhibit 5. The reason for using a moderator is related to the fact that the relationship between independent and dependent variables can be modified, allowing to correlate the variables in a more concrete way (SEKARAN, 2003).

Therefore, four hypotheses were formulated:

- H1: For teams with a less complex consciousness levels, greater autonomy is inversely correlated to team performance.
- H2: For teams with a less complex consciousness levels, democratic leadership is inversely correlated to team performance.
- H3: For teams with a more complex consciousness levels, greater autonomy is directly correlated to team performance.

- H4: For teams with a more complex consciousness levels, democratic leadership is directly correlated to team performance.

EXHIBIT 5 – Variables Correlation Model



SOURCE: The Authors (2019)

The research sample has as main objective to correlate the variables, therefore, there were no minimum or maximum number of samples. In similar studies, Van Vianen and De Breu (2001), Mohammed and Angell (2003), Stewart (2006) work's also aimed to verify their variable correlations, establishing a sample size between 80-150 individuals, or 30 work teams. Nevertheless, this study doesn't aim to infer populations characteristics, but to validate the above-mentioned hypothesis.

In total, four questionnaires were prepared, three of which were submitted to the teams' members (autonomy, leadership and consciousness levels) and one to be answered by the leaders (team's performance). The survey was conducted in two companies, both part of the automotive sector, which for data confidentially reasons, will appear in this research as "A" and "B" organizations. The collection data was performed within the two organizations and later spread out in Microsoft Excel to calculate the correlation between the dependent variables (autonomy and leadership) with the independent variable (team performance). In the "A" company, teams were divided according to the roles they performed, being 4 teams from the field 1 and 5 teams from the field 2. The correlations between the variables was calculated using Pearson's Correlation Coefficient (r), since it is a "measure of bivariate association (strength) of

relationship degree between two variables" (GARSON, 2009). The coefficient (r) ranges from -1 to 1, where a closer sample to -1 means a perfect negative correlation between the two variables, that is, if one variable grows, the other one always decreases, and a closer sample to 1 means that there is a perfect positively correlation between the two variables; a sample equal 0 shows that there is none linear correlation between the variables, and for that, other factors could been impacting the study (MOORE, 2007). Authors considered that values between +/- 0,10 and +/- 0,30 have small correlations; +/- 0,40 and +/- 0,60 medium correlations, and scores from +/- 0,70 to +/- have strong correlations (DANCEY & REIDY, 2005).

After correlations calculating, the results and its respective analyzes will be presented, seeking to validate the hypothesis formulated in this chapter.

3 RESULTS

The current research was applied into two automotive organizations in the metropolitan region of Curitiba – PR. The four questionnaires used in this research were applied in both companies, being the autonomy, leadership and consciousness levels questionnaires answered by the team members and the performance questionnaire answered by the leaders. For the "A" company, nine teams were selected to answered autonomy, leadership and consciousness levels questionnaires, totalizing 68 employees, plus 9 leaders that answered team's performance questionnaire. The "A" company was also divided into two groups, establish in this research as field 1 and field 2. For the "B" company, three teams answered the surveys, totalizing 21 employees and 3 leaders. At total, the research was fulfilled by 89 employees and 12 leaders. Although the survey had a satisfactory number of individuals, at a team level, the ideal sample would be at least 30 teams, so that the correlations would be stronger and could even be generalized.

The research's main objective is to correlate the autonomy, leadership and consciousness levels variables with team's performances. For this reason, a linear regression coefficient (Pearson's) was used to calculate the autonomy-performance and leadership-performance correlations. The consciousness level will act as a moderator between autonomy/leadership and team's performance, in order to establish a correlation of members value with their activity.

The data collection was spread out in Microsoft Excel, calculating teams average for each variable, as it shown below:

EXHIBIT 6 – Team's Results

	COMPANY "A"								
	Field 1				Field 2				
	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8	Team 9
Performance	4,50	4,13	4,63	4,25	3,63	3,88	3,13	4,25	3,63
Leadership	3,90	4,00	3,94	3,93	2,99	4,86	2,98	5,00	5,00
Autonomy	2,02	1,84	2,29	2,07	2,39	2,68	2,01	3,14	2,37
Consciousness Levels	**3,52**	3,29	2,65	3,46	**3,65**	**3,58**	3,46	3,39	3,37

	COMPANY "B"		
	Team 1	Team 2	Team 3
Performance	3,62	3,63	4,5
Leadership	2,95	2,07	1,04
Autonomy	1,86	1,89	1,91
Consciousness Levels	3,17	3,3	2,83

SOURCE: The Authors (2019)

A Likert scale was used to measure all the four variables in this research, being values next to 1 meaning worse results and next to 5, better results. The team's average shown a great performance in most of cases, with eleven teams being above average of 3,5 and only one below, showing that the performance was considered good/great by the leaders.

In the leadership variable, the closer to 5, the more democratic the leader is, considering Goleman's classification:

- 1 – 1,9: Coercive;
- 2 – 2,9: Pacesetting;
- 3 – 3,9: Authoritative/Visionary;
- 4 – 4,5: Democratic;
- 4,6 – 5: Affiliative;

The reason for democratic and affiliative leadership styles have a smaller scale is that both types are very similar, with few details differentiating them. After entering the team leadership results (Exhibit 6) in the scale above, what it has is:

EXHIBIT 7 – Team's Results Compiled

	"A" COMPANY			
	FIELD 1			
	Team 1	Team 2	Team 3	Team 4
Performance	4,5	4,13	4,63	4,25
Leadership	AUTHORITATIVE	DEMOCRATIC	AUTHORITATIVE	AUTHORITATIVE
Autonomy	2,02	1,84	2,29	2,07
Consciousness Levels	**3,52**	3,29	2,65	3,46

	"A" COMPANY				
	FIELD 2				
	Team 5	Team 6	Team 7	Team 8	Team 9
Performance	3,63	3,88	3,13	4,25	3,63
Leadership	PACESETTING	AFFILIATIVE	PACESETTING	AFFILIATIVE	AFFILIATIVE
Autonomy	2,39	2,68	2,01	3,14	2,37
Consciousness Levels	**3,65**	**3,58**	3,46	3,39	3,37

	"B" COMPANY		
	Team 1	Team 2	Team 3
Performance	3,63	3,63	4,50
Leadership	PACESETTING	PACESETTING	COERCIVE
Autonomy	1,86	1,89	1,91
Consciousness Levels	3,17	3,3	2,83

SOURCE: The Authors (2019)

The same goes for the autonomy variable (closer to 5, more autonomy people have). The consciousness levels were defined by the teams average, which is possible to identify two teams with a red consciousness levels, meaning that they have more individualistic thinking, while the other ten teams have a blue consciousness levels, and in some cases, it is possible to identify a transition from blue to orange (teams 1, 5 and 6). Through the values founded, it was possible do the correlations between autonomy/leadership with performance, as it shown below:

EXHIBIT 8 – Pearson's Correlation

	TEAM'S PERFORMANCE		
	"A" COMPANY		"B" COMPANY
VARIABLES	Field 1	Field 2	TEAMS
LEADERSHIP	-0,69	0,73	-0,89
AUTONOMY	0,84	0,99	0,80

SOURCE: The Authors (2019)

Analyzing the results, leadership is negatively correlated with team's performance in "A" Company Field 1 sector and in "B" Company, which means that the performance grows when democratic leadership decreases, that is, for these teams, a less democratic leadership is better than a more democratic one, while in the Field 2 sector the correlation is positive (performance grows with more democratic leadership). As expected, "A" Company Field 1 sector and "B" Company have the smallest consciousness levels average (3,2 and 3,1 respectively), characterizing a blue/red awareness level, while the Field 2 sector have the highest consciousness levels average (3,5), having a blue awareness level that can be in transition to the orange. These leadership results corroborates with the hypothesis H2 that teams with a low complex consciousness levels, the leader's performance in a more democratic way, is inversely correlated to team performance, that is, the leader must act in an authoritative/pacesetting way to have better results, as it show the research data, in which Field 1 sector had three of four teams with an authoritative leadership and "B" Company had pacesetting and coercive leadership styles. The hypothesis H4 is also validated by the results, since the Field 2 sector teams had the better consciousness levels average and their performance grows when the leaders acts in a more democratic way, being these variables directly correlated.

Regarding the data analysis correlation between autonomy and performance, all three groups presented a strong positive correlation, allowing to deduce that the autonomy level given to team members have a directly connection to their performance. In this scenario, it is possible to identify that none of the teams – except team 7 of Field 2 "A" Company – had a great autonomy to develop their tasks, attached to a low consciousness level complexity, it results in a good/great performance, which is remarkable in the "B" Company third team, which the red consciousness level combined with a low autonomy resulted in the second best performance in this study. The same goes for "A" Company Field 1 sector third team, that had a red consciousness level with a low autonomy and resulted in the best study performance. Both cases corroborate with the H1 hypothesis, that for teams with a less complex consciousness levels, greater

autonomy is inversely correlated to team performance. The hypothesis H3, which establish that for teams with a more complex consciousness levels, greater autonomy is directly correlated to team performance, was also validated, which can be seen in Field 2 “A” Company seventh team, when a blue consciousness level combined with a low autonomy level resulted in the fourth better research performance.

CONCLUSION

This study is one more step on Cordeiro’s researches about how the consciousness levels, attached with other elements, can impact team’s performance, proposing to correlate the autonomy, leadership and consciousness levels variables with team’s performance on the shop floor of industries in metropolitan region of Curitiba-PR in practical terms. The previous works given a rich data collection that allowed – in this research – quantify these correlations.

Initially, the main idea was to select thirty teams of different economy sectors to establish the correlation between the variables. However, due to research deadline along with each company availability, only twelve teams participated of this study. The initial hypothesis formulated by the authors were considered valid in both companies’ specific situations, for the sample size was smallest than the minimum requirement of 30 teams. So, it didn’t reach the external validation size. In order to continue the research object and achieve more consistent results, it will be necessary to reach the 30-team minimum sample size, divided – at least – in three different companies.

Nevertheless, the collected data during the research show that there is, indeed, a possible correlation between the variables presents in this study, even without reaching the minimum samples. In this sense, the research execution allowed to bring even more data and experience on this subject, which may help in any future projects, with a longer study horizon and seeking a larger number of different companies’ sample.

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