# A MANAGEMENT INSTRUMENT FOR TEAM PERFORMANCE EVALUATION

**Luiz Henrique da Silva(https://orcid.org/0000-0002-7076-831X) [1*], luizhenrique301@hotmail.com**
**Tatiana Ghedine (https://orcid.org/0000-0002-4006-3917) [2], tghedine@univali.br**
**Christiane Mendes Drozdek Pereira (https://orcid.org/0000-0002-6990-4812)[2], christiane.drozdek@gmail.com**
**Sônia Regina Lamego Lino (https://orcid.org/0000-0001-9178-8064)[3], sonia.lino@ifc.edu.br**
**Alessandra Yula Tutida (https://orcid.org/0000-0002-5768-5835)[2], sachatutida@hotmail.com**

1 University of São Paulo, 05508-900, São Paulo-SP, Brazil
2 University of Vale do Itajaí, 88161-064, Biguaçu-SC, Brazil
3 Federal Institute Catarinense, 88340-055, Camboriú-SC, Brazil

*luizhenrique301@hotmail.com

**ABSTRACT**
**Purpose:** This article aims to develop an instrument to assess the collective performance of work teams' production. Associated with this, this evaluation instrument is applied to two production teams from the same company in Santa Catarina, to validate it.

**Methodology:** The study is characterized as descriptive, quantitative and survey strategy. To develop the performance evaluation instrument, the literature review presented was taken as a starting point to guide the selection of the 10 indicators and 30 evaluation criteria enabling the elaboration f the questionnaire.

**Results:** In general, it is possible to observe that the teams performed "good" in most of their indicators, and none of the indicators showed "poor", "bad" or "regular" evaluations. It is suggested to develop some strategies to overcome the weakness shown by the communication indicator in both teams. Regarding the use of the instrument, it proved to be adequate to assess the collective performance, pointing out its strengths and weaknesses.

**Limitation:** Singularity of application in a single company, not allowing generalizations to be made to other production teams.

**Originality:** The proposal of an instrument to evaluate production teams 'performance, indicating the team's strengths and weaknesses.

**KEYWORD:** performance evaluation, team performance, evaluation instrument, production teams.

## UM INSTRUMENTO DE GESTÃO PARA AVALIAÇÃO DE DESEMPENHO DE EQUIPES

**RESUMO**
**Objetivo:** Este artigo tem como objetivo desenvolver um instrumento para avaliar o desempenho coletivo de equipes de trabalho de produção. Associado a isto, aplica-se este instrumento de avaliação em duas equipes de produção de uma mesma empresa catarinense, com intuito de validá-lo.

**Metodologia:** O estudo caracteriza-se como descritivo, quantitativo e survey. Para desenvolver o instrumento de avaliação de desempenho, a revisão da literatura foi tomada como ponto de partida para seleção de 10 indicadores e 30 critérios de avaliação, possibilitando a elaboração do questionário.

**Resultados:** De forma geral observou-se que as equipes apresentaram desempenho "bom" em grande maioria de seus indicadores, e nenhum dos indicadores manifestou avaliações "péssimo", "ruim" ou "regular". É sugestivo o desenvolvimento de algumas estratégias com o propósito de superar a fragilidade demonstrada pelo indicador comunicação nas duas equipes. Sobre a utilização do instrumento, mostrou-se adequado para avaliar o desempenho coletivo, apontando suas potencialidades e fragilidades.

**Limitação:** Singularidade de aplicação em uma única empresa, não permitindo que sejam feitas generalizações para outras equipes de produção.

**Originalidade:** A proposição de um instrumento para avaliar o desempenho de equipes de produção, indicando para as equipes da empresa analisada, suas potencialidades e fragilidades.

**PALAVRAS-CHAVE:** avaliação de desempenho, desempenho de equipe, instrumento de avaliação, equipes de produção.

# 1. INTRODUCTION

The performance evaluation system is an important measurement tool used as a support mechanism for various areas of the organization, aiming to analyze the performance of professionals, ensuring the balance of the current reality versus the organization's planning (Guilherme et al., 2019), and allow the assessment of organizational effectiveness (Staedele, et al., 2019).

A new perspective that has been discussed within this theme, addresses that performance evaluation facilitates team integration and management, making it possible to analyze not only the individual but also the collective performance (Santos et al. 2019). The objective behind team performance assessment is focused on generating research, providing feedback, training development, and long-term planning (Salas et al., 2017), as work teams need to work in complex and dynamic environments (Reis & Puente-Palacios, 2016).

Team performance evaluation has gained importance in recent decades (Marriage & Kinnear, 2016) with the increase in interest in academic and professional studies, claiming that the relevance of the result of team performance is superior to the result of the performance of each employee (Aybas & Uyargil, 2017). Above all, national and international literature still lack empirical and theoretical studies that advance knowledge on the theme of performance evaluation (Calvetti et al., 2019; Matos et al., 2019).

Due to the wide dissemination of work teams in organizations, there is a natural growth in demand for reliable tools to assess the desired results (Puente-Palacios et al., 2016). Soares et al. (2019) highlight the relevance of the application of instruments that identify gaps that can be improved and developed, through teaching-learning methodologies with employees, aiming at improving professional performance.

Since performance evaluation is fundamental for the management of an organization, research is needed to reflect on this theme, to contribute scientifically to the identification and search for solutions to the practical problems experienced in organizations (Matos *et al*., 2019). Considering the above, the article aims to develop an instrument to assess the collective performance of work teams' production. Associated with this, this evaluation instrument is applied to two production teams from the same company in Santa Catarina, to validate it.

The object of this study is production teams due to the production administration, focused on the way a service is treated, has taken on great importance in organizations (Silva, 2019), since the lack of knowledge, qualification, or training of professionals can cause failures in the production process, generating high costs for the organization (Mello & Carvalho, 2017). Productivity can then be considered a critical success factor in measuring the performance of a company's manufacturing system (Rocha & Gonçalves, 2018), and in most cases, it can hold the most significant resources for the organization (Silva, 2019).

To address the topic, this article initially presents the literature review, portraying the performance evaluation, the team performance evaluation, and the production team evaluation indicators. Then, the methodological procedures, and finally, the research main results and the final considerations are exposed.

## 2. LITERATURE REVIEW

The literature review presents the performance evaluation, the team performance evaluation, and the production team evaluation indicators.

### 2.1 Performance evaluation

The concept of evaluating performance and productivity in organizations emerged in positivist ideals, gaining greater significance through the emergence of capitalism and large industries, where mathematics would serve as a support to experiment and validate organizational processes (Cunha & Corrêa, 2013). With the advent of Taylorism, research for the rationalization of work gave rise to the first scales of merit assessment, applied to discipline the worker, and intervene in his way of carrying out work activities. Subsequently, based on the need for organizations to have an instrument to encourage workers to adopt or intensify certain attitudes, performance evaluation techniques were improved (Brandão & Guimarães, 2001), causing an increase in performance management in companies. past decades (Van Camp & Braet, 2016; Cuccurullo et al., 2016).

The performance evaluation system started to be perceived as a balanced and dynamic system, formed by indicators capable of sustaining the decision process through the collection, treatment, and analysis of information (Neely et al., 2002). In the field of business administration, performance evaluation contributes to the improvement and strengthening of professionals' knowledge, skills, and attitudes, in addition to broadening the managers' view of organizational reality (Soares *et al*., 2019).

For a performance appraisal to work properly, it is necessary to have a system based on goals, rewards, and compensations consistent with a proposal to improve the company's operations and processes and forecast the organizational future, that is, there is a need to have an alignment strategic, tactical and operational so that everything works to provide better results for the company (Santos et al., 2019).

Thus, some considerations regarding performance evaluation can be highlighted:

a)  it aims to promote management improvement, the communication of results and generate information to support decision support (Choong, 2014; Franco-Santos et al., 2012);
b)  assists in management, since it provides an understanding of the positive aspects and critical factors that can be improved in the work environment (Klein et al., 2019);
c)  influences people's behavior, being able to transform the way they orient their learning to tasks (Matos *et al*., 2019);
d)  it can be improved with training received by employees, who assist in the development of their activities (Menegon & Zambarda, 2019);
e)  it can be used to guide organizational efforts to control and correct their strategies, determining goals and the desired level of performance (Melnyk et al., 2014);
f)  its models aim to provide its users with information about the performance of a given unit, as well as to provide the alignment between strategies, goals, and actions (Gonzaga et al., 2017).

It is observed that the performance evaluation can involve three dimensions: individual, collective, and organizational. Individual performance assessment is the most used model (Pires et al., 2019), as it influences people's behavior in work activities (Franco-Santos et al., 2012), to the

employee gets feedback on how his work is being done. In the collective performance evaluation, teams are informed about their performance. This information can be used to provide guidance and motivate performance, and team members must participate in the evaluation process, as they are aware of the contributions of each member of the team (Levi, 2017).

The assessment of organizational performance arises from the need to establish links between planning, decision, action, and result, which generate interest in measuring organizational performance (Micheli & Mari, 2014), providing a comprehensive view of the company's processes and results (Cardoso & Guimarães, 2014). However, the type of assessment used will depend on the interdependence between the tasks of the employees, and/or mainly, on how the organization operates (Levi, 2017).

The main challenge of performance evaluation is that it becomes part of the organizational culture, with the involvement of people in the evaluation processes (Valmorbida & Ensslin, 2016). Organizations must also take precautions to avoid errors in an individual assessment and to obtain results that do not match the reality of a particular sector (Klein *et al*., 2019). An evaluation carried out by only one individual brings the common occurrence of distortions, whereas an evaluation carried out by several actors is considered more valuable and authentic, since those involved share responsibilities for the process and possible distortions in the perception of one of the evaluators, which may be diluted in the evaluations carried out by the others (Brandão *et al*., 2008).

## 2.2 Team performance evaluation

The interest in teamwork in Brazil is linked to the expansion of multinational companies in the 90s, as well as to the movement of quality certification that is needed to certify the quality of exported products (Bonfim & Hastenreiter, 2010). Subsequently, with the increase in the use of teams in organizations, methods of assessing team performance started to be emphasized (Aybas & Uyargil, 2017).

Teams represent a group of people in a common situation, whose tasks and results are interdependent, with the articulation of actions and the interaction of professionals. Teamwork generates positive synergy through a coordinated effort, in which individual efforts result in a level of performance greater than the sum of individual contributions (Ciampone & Peduzzi, 2000; Puente-Palacios & Brito, 2017). Teamwork is a way of life in organizations, effective teamwork makes it possible to create knowledge, promote innovation, minimize errors, increase productivity, and job satisfaction, in addition to ensuring success.

However, assuring that it performs, learns, develops, and matures is not an easy task for organizations, it is necessary to create tools that accurately determine the strengths and weaknesses of teams (Salas, Reyes, & Woods, 2017). The team's performance can be characterized as a set of interrelationships that aim to achieve the desired products in the face of each context presented (Rodríguez-Ponce et al., 2017). It results from an emergency process in which several contributions made by its members are integrated and combined, in a dynamic and complex way, giving rise to a characteristic of the team (Puente-Palacios et al., 2016).

Individuals interact bringing a range of skills and information that contribute to the strategic objectives proposed for the team. Its effectiveness is directly related to the performance of all members, in their cooperation and coordination to achieve the established objectives (Rodríguez-Ponce et al., 2017). Assessing team performance is essential to understanding how teams work, and subsequently so that processes can be improved to achieve better results. Understanding how processes are achieved provides team members with guidance on the impact of their specific compartments, as well as on their collective transactional behaviors (Marriage & Kinnear, 2016).

Teams can use performance evaluations feedback to identify and correct problems in operations, in addition to supporting training and development (Levi, 2017). Marriage and Kinnear

(2016) emphasize the importance of self-assessment of team performance, stating that self-assessment potentially overcomes the deficiency of not being able to observe tacit behaviors and cognitions, and allows team members to assess unobservable elements of collective work. Self-assessment can be performed by providing staff with general questions about their performance and further facilitating discussion during feedback.

Some works were carried out with a focus on team performance, most of them addressing performance models and few portraying assessment instruments. Leite *et al*. (1999) analyzed the performance evaluations' records of the elements of a nursing team. Wiese et al. (2015) and Salas et al. (2017) pointed out guidelines and recommendations for measuring team dynamics. Ensslin et al. (2015) built a performance evaluation model for health teams, using a multicriteria methodology to support constructivist decisions. Puente-Palacios, Martins and Palumbo (2016) obtain evidence of the validity of a scale of job performance in educational teams. Aybas and Uyargil (2017) developed a conceptual model for assessing team performance and Zin et al. (2018) adapted the BCG matrix method to assess the performance of sales teams.

It is important to note that not all teams are equal, they have explicit behaviors and implicit qualities, which can be difficult to capture. However, one must be alert to the excessive use of dimensions or measures, a frequent team assessment can disrupt the dynamics or change their normative behavior, in which discrete measures must be used to not disturb the workflow of its members (Salas et al., 2017).

Some challenges remain in organizations when assessing the performance of teams, which determine what to measure, developing safe instruments that are diagnostic and ensure that these instruments can be performed throughout the life of the team, at the same time, in which emphasis should be placed practicality (Salas et al., 2017). However, one of the problems that arise during teams' performance evaluation is the poor measurement of several items. It is important to have a complete performance evaluation system that assesses the individual characteristics of the team, both in their work processes and in their results, to better understand the nuances of their performance as a way to improve organizational success (Wiese et al., 2015).

## 2.3 Production team evaluation indicators

The use of performance indicators provides organizations with a precise level of knowledge about their work activities, making it possible to monitor and manage their results (Senna et al., 2016). The indicators are the measures that allow comparing the real performance with the desired performance. Utilizing a quantification, they indicate good or bad performance to guide the organization's management to improve actions to achieve the expected performance (Melnyk *et al*., 2014). Performance measurement systems undergo evolutions to adapt to different scenarios, which makes their choice and evaluation complex, considering the range of available indicators, from the specific ones to the most generic ones (Gonçalves & Tortoli, 2015). The greatest difficulty in selecting indicators is to select those that can be managed and that facilitate the decision-making process (Lebas, 1995; Neely et al., 1995).

Production planning and control have a significant impact on company management, and its activities need to interact and communicate in some way. Production and performance management is part of a modern measurement system that aims to meet aspects of production, quality, and maintenance necessary for strategic alignment. The objective of performance management in this process is to relate quantitative and qualitative elements that allow customer satisfaction and cost reduction. To obtain results, it is necessary: a) support from top management; b) listen to employees' opinion about improvements and customer satisfaction; c) define data that allow employees' evaluation; d) measure different performances according to the location; e) certify that the data to be collected will provide a basis for investigating improvements in performance, both for employees in the workplace, and relevant management actions (Galvão et al., 2016).

Therefore, to assess the performance of production teams, the indicators listed in Table 1 were defined, as it is believed that these represent the aspects proposed by the previously presented authors.

**Table 1:** Production teams' performance evaluation indicators

| Indicators | Definition |
|---|---|
| Productivity | It is related to the team's production capacity of goods and services; it refers to the balance between the need and the accomplished. It is the result of how input resources are used, and from them, customer value is generated (Rocha & Gonçalves, 2018). |
| Commitment | It is the link generated between the organization and its employees. The level of commitment is fundamental to teams' performance and the highest operational efficiency and effectiveness (Silva, Oliveira, Bona, Oliveira, & Pinheiro, 2020). |
| Knowledge | It is the combination of team members' experiences, values, information that they acquire in the experienced different contexts and in their ability to reinvent and improve. To measure knowledge, it is essential to understand prior knowledge, development, and its role in relation to what is being performed, its interactions, and its continuous learning process (Senna *et al.*, 2016). |
| Compliance with standards | They are created with the objective of avoiding conflicts in social life. Its purpose is to regulate and formalize the rules and principles to be followed by the teams (Zanatta, Campos, Moreira, Silva, & Souza, 2019). |
| Interpersonal relationship | It is based on a set of relationships built based on respect and trust by the team. It is a complex relationship that involves verbal and non-verbal communication, conflicts, rewards, and motivation (Novato & Nunes, 2019). |
| Initiative | Considered the ability to have or develop ideas and put them into practice (Bohlander & Snell, 2015). |
| Quality and quantity | Quality serves for monitoring, is related to the control indexes for conducting processes, that is, they are the results of activities and actions, they are attributes that generate a degree of satisfaction (Veras *et al.*, 2016). The quantity is related to the execution of work activities, the amount of work completed in a certain period (Andrianto, 2019), the completion of work objectives, and the fulfillment of delivery schedules (Epiquén, 2014). |
| Responsibility | Set of obligations of a professional nature, which involves interest to the client and the team's needs in general (Fenwick, 2016). |
| Communication | The process of exchanging information in the team aims to equalize the information. The communication process is influenced by several factors, including team composition, power relationships, location, environmental factors, among others (Nadae & Carvalho, 2019). |
| Organization | It concerns skills, autonomy at work, job rotation, participation in decisions, teamwork to achieve results (Neto & Moura, 2019). |

It is observed that it is essential to define performance indicators to carry out an adequate assessment, as they are items that assist in management and control, necessary to understand whether the objectives proposed by the organization were achieved, thus supporting the decision-making process (Oliveira *et al*., 2020). Its definition also provides better knowledge about products and services (Pereira Junior et al., 2018), and when aligned with organizational objectives, they lead to improvement initiatives in the short, medium, and long term, which subsidize the changes in a sustainable way, being the basis for the organizational strategy (Bassi et al., 2020).

## 3. METHODOLOGICAL PROCEDURES

The study is characterized as descriptive, quantitative, with a cross-sectional survey strategy. In order to develop the performance evaluation instrument, the literature review presented was taken as a starting point to guide the selection of the indicators shown in Table 1. Based on this selection, it was possible to elaborate on the performance evaluation questionnaire by the team, which was validated by two professors with Ph.D. degrees in the field and by the company owners, who answered the questionnaire, to verify its alignment with the strategic and organizational objectives. There were no suggestions to be included in any other items.

The questionnaire was conducted based on 10 performance indicators, considered essential to describe the teams' performance. Each indicator presents 3 statements for each of the selected indicators, totaling 30 evaluation criteria. All questionnaire criteria were designed with a focus on what the team does and not on each employee's performance. The questionnaire used a 5-point Likert scale (great, good, regular, bad, and very bad) because the graphic scales are simpler and allow the evaluator to express their perceptions gradually (Dalmau & Benetti, 2009).

The research was performed in an aluminum frames company located in the city of Camboriú/SC, in which it operates in the civil construction market. The company has approximately 70 employees, distributed in the areas of sales, assembly, placement, maintenance, repairs, and administration. The sample consisted of two production teams, appointed by the company owner considering a sampling by judgment, the assembly team has 16 employees, and the placement team has 12 employees, totaling 28 respondents.

To revise the questionnaire, testing the data collection and treatment, a pre-test of the questionnaire was performed with 4 employees, different from the selected sample. Respondents reported that they had no difficulty with interpretation, or ambiguity, and did not suggest changes to the questionnaire. With the aim of revising the questionnaire, testing the data collection and treatment, a pre-test of the questionnaire was performed with 4 employees, different from the selected sample. Respondents reported that they had no difficulty with interpretation, or ambiguity, and did not suggest changes to the questionnaire.

In September 2019, the employees were made aware, through a meeting held with the Human Resources department, in which the importance of performance evaluation and clarification of the indicators and evaluation criteria for better completion of the questionnaire. Then, the questionnaires were made available for filling in printed form. The company's employees were instructed to evaluate the team's performance and not their performance.

Finally, data analysis was performed using data obtained from the 28 responses from the questionnaires, dividing them into two teams, and using descriptive statistical techniques (mean, standard deviation, coefficient of variation, minimum value, maximum value, and amplitude) that allowed data to be obtained for analysis and conclusions which are drawn from them (Creswell, 2010). To assist in statistical techniques, Microsoft Excel software was used.

## 4. PRESENTATION AND RESULTS ANALYSIS

Through the developed evaluation instrument, the employees of Team 1 and Team 2 were able to evaluate the 30 criteria related to the performance evaluation of their teams using the 10 selected indicators. For each indicator, three criteria should be analyzed by selecting only one of the proposed assessment levels: excellent, good, fair, poor, and very bad. The results obtained for each evaluation criterion were transformed into averages for a better interpretation of the data. An evaluation scale for the instrument is also proposed, to standardize the results' analysis. The proposed scale for classifying the teams' performance is shown in Table 2.

**Table 2:** Performance classification

| Terrible | Bad | Regular | Good | Great |
|----------|----------|----------|----------|----------|
| 0 a 1 | 1,01 a 2 | 2,01 a 3 | 3,01 a 4 | 4,01 a 5 |

Thus, the averages between 0 to 1 are classified as "terrible"; between 1.01 to 2 as "bad"; between 2.01 to 3 as "regular"; between 3.01 to 4 as "good"; and between 4.01 to 5 as "great". Table 3 presents the questionnaire results, with the mean and standard deviation of each evaluation criterion, divided into Team 1 and Team 2.

**Table 3:** Questionnaire results

| Indicators | Team 1 | | Team 2 | |
|---|---|---|---|---|
| **Productivity** | Mean | Std Dev. | Mean | Std. Dev. |
| (1) Team production capacity | 3,94 | 0,77 | 3,92 | 0,58 |
| (2) Speed and coordination in the development of work | 3,94 | 0,40 | 3,75 | 0,65 |
| (3) Use of available material resources in an appropriate manner to perform the work | 4,25 | 0,50 | 3,75 | 0,65 |
| **Commitment** | Mean | Std. Dev. | Mean | Std. Dev. |
| (4) Attention and dedication to work | 3,69 | 0,87 | 4,33 | 0,62 |
| (5) Fulfillment of the commitments established by the team in the execution of activities | 4,25 | 0,58 | 3,83 | 0,62 |
| (6) Execution team's work according to the company's objectives | 3,94 | 0,68 | 4,00 | 0,51 |
| **Knowledge** | Mean | Std. Dev. | Mean | Std. Dev. |
| (7) Team knowledge of the organization's objectives | 4,13 | 0,72 | 3,75 | 0,65 |
| (8) Team knowledge of the work to be performed | 4,38 | 0,79 | 4,25 | 0,83 |
| (9) Execution of work in accordance with defined standards and instructions | 3,94 | 0,77 | 4,00 | 0,67 |
| **Compliance with standards** | Mean | Std. Dev | Mean | Std. Dev |
| (10) Knowledge of procedural rules related to team assignments | 3,38 | 0,62 | 4,08 | 0,74 |
| (11) Execution of work in accordance with the rules of procedure related to team assignments | 3,63 | 0,62 | 4,00 | 0,51 |
| (12) Execution of team's work in accordance with the rules of conduct related to the company's principles | 3,94 | 0,57 | 4,17 | 0,67 |
| **Interpersonal relationship** | Mean | Std. Dev | Mean | Std. Dev |
| (13) Collaboration between team members | 3,69 | 1,08 | 4,08 | 0,74 |
| (14) Interaction between team members | 4,19 | 0,83 | 3,92 | 0,72 |
| (15) Relationship with the company, managers, colleagues, and customers | 3,63 | 0,89 | 3,92 | 0,83 |
| **Initiative** | Mean | Std. Dev. | Mean | Std. Dev |
| (16) Team initiative to learn the work, as well as to solve situations outside of day-to-day routine | 4,06 | 0,82 | 4,00 | 0,79 |
| (17) Ability to have or develop ideas and put them into practice | 4,00 | 0,89 | 4,17 | 0,79 |
| (18) The team has collective will and effort | 3,75 | 0,77 | 3,75 | 0,62 |
| **Quality and quantity** | Mean | Std. Dev | Mean | Std. Dev |
| (19) Accuracy, attention, and order in the work performed by the team | 3,56 | 0,96 | 3,75 | 0,65 |
| (20) Amount of work that the team does | 3,56 | 0,73 | 3,83 | 0,62 |
| (21) Staff perfection, care, and precision | 3,63 | 0,96 | 3,92 | 0,83 |
| **Responsibility** | Mean | Std. Dev | Mean | Std. Dev |
| (22) Seriousness, dedication and interest in performing work | 3,88 | 0,96 | 4,17 | 0,79 |
| (23) Team commitment to assume responsibilities | 3,94 | 1,06 | 3,67 | 1,00 |
| (24) Team willingness to remedy any flaws and not repeat the same mistakes | 3,88 | 1,02 | 3,33 | 0,97 |
| **Communication** | Mean | Std. Dev. | Mean | Std. Dev. |
| (25) Communication between management and the team, receiving clear and objective guidelines to perform work | 2,88 | 1,02 | 3,92 | 0,72 |
| (26) Communication between co-workers | 3,75 | 1,13 | 3,58 | 1,00 |
| (27) The company is open to receiving and recognizing contributions, opinions, and criticisms from the team | 3,19 | 1,47 | 3,42 | 1,14 |
| **Organization** | Mean | Std. Dev. | Mean | Std. Dev. |
| (28) Control of team tasks by the manager | 3,75 | 0,58 | 4,25 | 1,04 |
| (29) Team organization in work activities | 3,81 | 0,91 | 4,00 | 0,67 |
| (30) Organization of work environment by the team | 3,63 | 0,89 | 4,08 | 0,95 |

Based on the results shown in Table 3, it is possible to observe the 30 evaluation criteria within the 10 selected indicators. In Team 1, regarding the evaluated criteria, the highest average presented was 4.38. As for the criterion (8) team knowledge about the work to be performed. Cooke et al. (2000) argued that in teams, knowledge is an essential factor for a series of theoretical foundations about their performance, from decision making to awareness of the team's situation.

Both individuals and teams have the knowledge, which is reflected in their actions and behaviors, in which their performance will be maximized to the extent that the team knowledge is accurate, appropriate among members, and structured as a form of support and task development.

Other criteria were also evaluated as "excellent", which were: the criteria (3) use of available material resources in an appropriate way to perform the work and (5) fulfillment of the commitments established by the team in the execution of activities, with averages 4.25; criterion (14) interaction between team members, with an average of 4.19; and the criterion (16) initiative of the team in learning the work, as well as solving situations outside of day-to-day the routine, with an average of 4.06.

On the other hand, the lowest average (2.88) was for criterion (25) communication between management and the team, receiving clear and objective information, the only criterion evaluated as "regular", was related to the communication indicator. Communication is used in teams to provide opportunities for the distribution and execution of tasks, to make creative and quick decision-making (Giansante et al., 2015), and as a channel where team members can distribute crucial information to other members. Understanding and using the information received is fundamental to the team's performance, as well as having communication focused on knowledge and information sharing (Marlow et al., 2018).

Regarding the standard deviation, the smallest deviation (0.40) presented was for the criterion (2) speed and coordination in the work development, demonstrating equivalence in the answers to this criterion. And the biggest deviation (1.47) was for the criterion (27) the company is open to receiving and recognizing contributions, opinions, and criticisms from the team, manifesting a disparity between the team responses.

Regarding Team 2, the highest average presented (4.33) was for the criterion (4) attention and dedication to work, followed by (8) team knowledge about the work to be performed and (28) leadership control of the teams' task, averaging 4.25. It was observed that in Team 1, the criterion (8) was also considered as "excellent", demonstrating that in both production teams, knowledge was a positive factor for their performance.

However, Team 2 did not obtain criteria evaluated as "terrible", "bad" or "regular", the lowest averages were for criteria (24) the team's willingness to remedy eventual failures and not repeat the same mistakes, (27) The company is open to receiving and recognizing contributions, opinions, and criticism from the team, and (26) communication between co-workers, with averages classified as "good" performance. However, for both teams the criteria communication indicators were those that received the lowest averages. Silva and Ruas (2014) pointed out the importance of teams' communication where information is shared, the noise minimized, the people's knowledge, and participation maximized concerning the organization and other areas.

Regarding the standard deviation, the smallest deviation (0.51) is observed for the criteria (6) work execution of the team according to company objectives, and (11) work execution under the rules of procedures related to team assignments, expressing congruence in the responses of Team 2. The biggest deviation (1.14) was for the criterion (27) the company is open to receiving and recognizing contributions, opinions, and criticisms from the team, demonstrating that the employees opted for different classifications for this performance criterion.

From the 30 evaluated criteria, an average was calculated for each of the 10 selected indicators, as well as standard deviation, coefficient of variation, minimum value, maximum value, and amplitude, and at the end, a general average for the performance of each team. Table 4 shows the results obtained for Team 1.

**Table 4:** Team 1 performance

| Indicators | Average | Standard Deviation | Coefficient of variation | Minimum Value | Maximum Value | Amplitude |
|---|---|---|---|---|---|---|
| Productivity | 4,04 | 0,56 | 13,86 | 3,94 | 4,25 | 0,31 |
| Commitment | 3,96 | 0,71 | 17,93 | 3,69 | 4,25 | 0,56 |
| Knowledge | 4,15 | 0,76 | 18,31 | 3,94 | 4,38 | 0,44 |
| Compliance with standards | 3,65 | 0,60 | 16,44 | 3,38 | 3,94 | 0,56 |
| Interpersonal relationship | 3,83 | 0,93 | 24,28 | 3,63 | 4,19 | 0,56 |
| Initiative | 3,94 | 0,83 | 21,07 | 3,75 | 4,06 | 0,31 |
| Quality and quantity | 3,58 | 0,88 | 24,58 | 3,56 | 3,63 | 0,07 |
| Responsibility | 3,90 | 1,01 | 25,90 | 3,88 | 3,94 | 0,06 |
| Communication | 3,27 | 1,21 | 37,00 | 2,88 | 3,75 | 0,87 |
| Organization | 3,37 | 0,79 | 23,44 | 3,63 | 3,81 | 0,18 |

Some points can be highlighted in Team 1, of the 10 indicators evaluated, 8 were considered as "good" performance, and 2 as "excellent" performance, being the highest average for the knowledge indicator. Senna *et al*. (2016) address the importance of knowledge for teams, in which a network of knowledge that connects can collaborate so that its members develop themselves with greater potential different from those who work only individually. Productivity was the second indicator that obtained the highest average (4.04), with the lowest standard deviation (0.56) and variation coefficient (13.86), a fact that shows homogeneity of responses for this indicator. In contrast, the communication indicator obtained the lowest average (3.27), the highest standard deviation (1.21), the highest coefficient of variation (37.00), and the highest amplitude (0.87), which emphasizes the heterogeneity of responses, indicating a discrepancy in responses among respondents. To assess the overall performance of Team 1, an average of the 10 indicators assessed by the team was calculated, with an average of 3.76 considered as "good" performance.

**Table 5: presents the results obtained for Team 2.**

| Indicators | Mean | Std. Deviation | Coefficient of variation | Minimum Value | Maximum Value | Amplitude |
|---|---|---|---|---|---|---|
| Productivity | 3,81 | 0,63 | 16,54 | 3,75 | 3,92 | 0,17 |
| Commitment | 4,06 | 0,58 | 14,29 | 3,83 | 4,33 | 0,50 |
| Knowledge | 4,00 | 0,72 | 18,00 | 3,75 | 4,25 | 0,50 |
| Compliance with standards | 4,08 | 0,64 | 15,69 | 4,00 | 4,17 | 0,17 |
| Interpersonal relationship | 3,97 | 0,76 | 19,14 | 3,92 | 4,08 | 0,16 |
| Initiative | 3,97 | 0,73 | 18,39 | 3,75 | 4,17 | 0,42 |
| Quality and quantity | 3,83 | 0,70 | 18,28 | 3,75 | 3,92 | 0,17 |
| Responsibility | 3,72 | 0,92 | 24,73 | 3,33 | 4,17 | 0,84 |
| Communication | 3,64 | 0,95 | 26,10 | 3,42 | 3,92 | 0,50 |
| Organization | 4,11 | 0,89 | 21,65 | 4,00 | 4,25 | 0,25 |

In Team 2, of the 10 indicators evaluated, 7 were evaluated as "good" performance, and 3 as "excellent" performance, the highest average was for the organization indicator. Neto and Moura (2019) pointed out that in a work organization, tasks are adjusted and redefined through teamwork, a fact that can justify the best assessment by the team.

The commitment indicator received the lowest standard deviation (0.58) and the lowest variation coefficient (14.29), indicating homogeneity between the responses, that is, the team members' responses are congruent. The communication indicator obtained the lowest average (3.64), the highest standard deviation (0.95), and the highest coefficient of variation (26.10),

demonstrating the heterogeneity of responses. The lowest amplitude was 0.16 for the interpersonal relationship indicator, which obtained an average of 3.97, demonstrating that most of the team believes that the relationship between the members is a positive factor for their performance.

## 5. DISCUSSION OF RESULTS

Novato and Nunes (2019) express the importance of the interpersonal relationship built within the team for the motivation of its members. Assessing the Team 2 overall performance, there was an average of 3.91 considered as "good" performance. Compared to Team 1, both teams rated their performance as "good", but Team 2 had a higher overall average. To compare the results of the performance evaluation by the two teams. Figure 1 presents a comparative graph of the average of the 10 indicators evaluated.
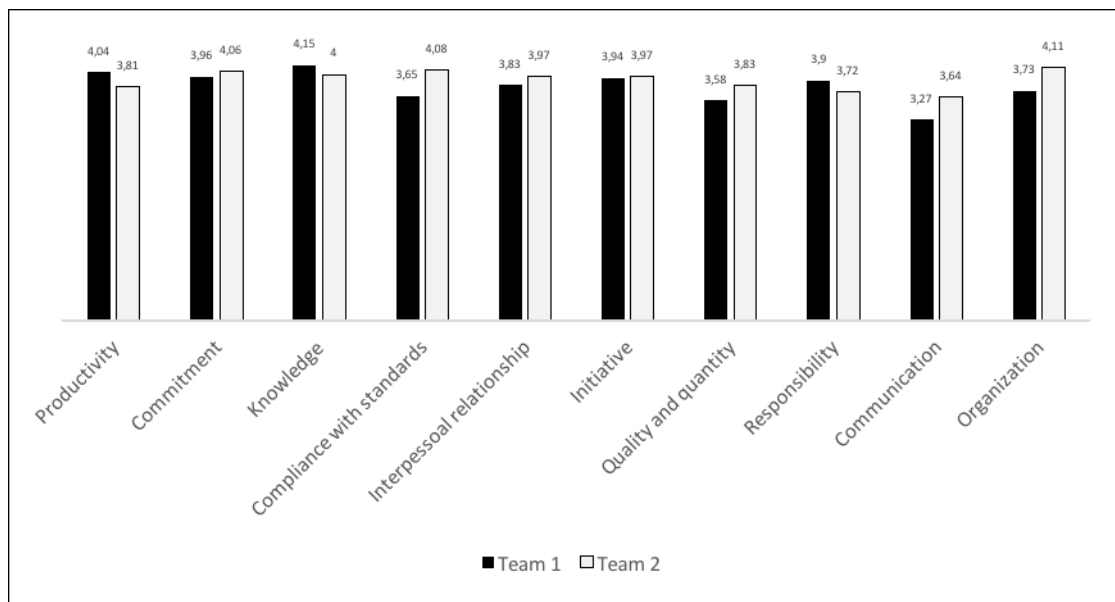


**Figure 1**. Performance indicator averages

In general, it is possible to observe that the teams performed "good" in most of their indicators, and none of the indicators showed "poor", "bad" or "regular" evaluations. In Team 1, the favorable indicators to its performance were knowledge (4.15), productivity (4.04), and commitment (3.96), while in Team 2, the favorable indicators to its performance were the organization (4,11), compliance with standards (4.08) and commitment (4.06).

A commitment was considered a relevant indicator for both teams, Levi (2017) considered that production teams control their work processes, usually involving the predictable and efficient creation of quality products, in which teams focus on minimizing variations in the production process through standardized procedures, which consequently may require a greater commitment from team members.

Finally, there was a divergence depending on the relevance of the indicators in the teams, this fact can be explained by the manifestation of collective performance being present in the sharing results from individual contributions that were transformed and united, constituting a characteristic of the team (Puente-Palacios, Martins, & Palumbo, 2016), that is, each team was integrated and combined uniquely, with different individual contributions, which results in different collective performances.

## 6. FINAL CONSIDERATIONS

This study aimed to develop an instrument to assess the performance of production work teams, seeking to contribute to the advancement of studies on teams' performance, since studies on this theme are still scarce. To validate the proposed instrument, the questionnaire was applied to two teams from the same company in Santa Catarina.

The evaluation instrument was composed of 10 performance indicators and 30 evaluation criteria. They were formulated based on a theoretical review, validation by specialists, and company owners. The performance evaluation demonstrated, in general, a classification of "good" performance for the two evaluated teams. However, there were some discrepancies in the analyzed indicators. While Team 1 presented knowledge, productivity, and commitment as the most favorable indicators for its performance, Team 2 expressed organization, compliance with standards, and commitment as the most favorable indicators.

In this sense, the proposed evaluation instrument proved to be opportune to identify the potentials to be valued in the teams and the weaknesses that demanded greater attention by the company.

Based on the results, it is suggested to develop some strategies to overcome the weakness shown by the communication indicator in both teams, because communication is an essential factor for the teams since to act collectively towards common goals, people need to share and exchange information. Regarding the use of the instrument, it proved to be adequate to assess the collective performance, pointing out its strengths and weaknesses. Through the calculated averages and the graphic expression, it was obtained an easy understanding to synthesize the performance classification of the 10 indicators.

Along these lines, it is possible to affirm that performance evaluation allows organizations to analyze the development of their collaborators and teams, in the search for improvements to the work environment and organizational results. Team evaluation makes it possible to understand through a collective dimension, the positive and negative performance factors, which often could not be perceived through an individual evaluation. Still, it is possible to consider that this study presented two contributions: first, a theoretical contribution to team performance evaluation and the proposal of an instrument to evaluate production teams 'performance. Second, a managerial input, indicating the team's strengths and weaknesses, allowing the company to work on actions to improve its performance.

As a limitation of this study, there is the singularity of application in a single company, not allowing generalizations to be made to other production teams. As future work, research suggests advancing the theoretical framework on team performance assessment, as well as the application of the proposed instrument in larger samples and companies from other areas, to obtain a more in-depth understanding of team dynamics assessment.

## 6. REFERENCES

Andrianto, A. (2019). Impact of enterprise resource planning (erp) implementation on user performance: studies at university of jember. *Journal of Physics: Conference Series, 1211*, 1-9. http://dx.doi.org/10.1088/1742-6596/1211/1/012040

Aybas, M. & Uyargil, C. (2017). An integrated model recommendation about team performance measurement and evaluation. *International Journal of Business and Management, 12*(2), 92-102. http://dx.doi.org/10.5539/ijbm.v12n2p92

Bassi, E., Valente, C. M. O., Amaral, C. S. T., & Campanini, L. (2020). Fatores de sustentação dos resultados do kaizen na produtividade: estudo de caso múltiplo. *Revista de Produção Online, 20*(1), 247-274. http://doi.org/10.14488/1676-1901.v20i1.3523

Bohlander, G. W., & Snell, S. A. (2015). *Administração de recursos humanos.* São Paulo: Cengage.

Bonfim, D. F., & Hastenreiter, F. (2010). Desenvolvimento de liderança e equipes para representantes de turma de uma ies de belo horizonte. *Revista Gestão & Tecnologia, 10*(2), 1-15. http://doi.org/10.20397/2177-6652/2010.v10i2.73

Brandão, H. P., & Guimarães, T. A. (2001). Gestão de competências e gestão de desempenho: tecnologias distintas ou instrumentos de um mesmo construto? *Revista de Administração de Empresas, 41*(1), 8-15. http://doi.org/10.1590/S0034-75902001000100002

Brandão, H. P., Zimmer, M. V., Pereira, C. G., Marques, F., Costa, H. V., Carbone, P. P., . . . Almada, V. F. (2008). Gestão de desempenho por competências: integrando a gestão por competências, o balanced scorecard e a avaliação 360 graus. *Revista de Administração Pública, 42*(5), 875-898. http://doi.org/10.1590/S0034-76122008000500004

Calvetti, E. S., Lacerda, R. T. O., & Bernardes, M. L. B. (2019). Um estudo bibliométrico sobre avaliação de desempenho no processo de desenvolvimento ágil de software sob a perspectiva do construtivismo. *Revista Brasileira de Gestão e Inovação, 6*(3), 1-28. http://doi.org/10.18226/23190639.v6n3.01

Cardoso, M. V., & Guimarães, R. G. (2014). Modelo de avaliação de desempenho para pmes de desenvolvimento de videojogos de animação. *Reuna, 19*(5), 137-160.

Choong, K. K. (2014). Has this large number of performance measurement publications contributed to its better understanding? a systematic review for research and applications. *International Journal of Production Research, 52*(14), 4174-4197. http://doi.org/10.1080/00207543.2013.866285

Ciampone, M. H. T., & Peduzzi, M. (2000). Trabalho em equipe e trabalho em grupo no programa de saúde da família. *Revista Brasileira de Enfermagem, 53*, 143-147. http://dx.doi.org/10.1590/S0034-71672000000700024

Cooke, N. J; Salas, E., Cannon-Bowers, J. A., & Stout, R. J. (2000). Measuring team knowledge. *Human Factors, 42*(1), 151-173. http://doi.org/10.1518%2F001872000779656561

Creswell, J. W. (2010). *Projeto de pesquisa*: métodos qualitativo, quantitativo e misto. 3. ed. Porto Alegre.

Cuccurullo, C., Arias, M., & Sarto, F. (2016). Foundations and trends in performance management: a twenty-five years bibliometric analysis in business and public administration domains. *Scientometrics, 108*, 595-611. http://doi.org/10.1007/s11192-016-1948-8

Cunha, J. A. C., & Corrêa, H. L. (2013). Avaliação de desempenho organizacional: um estudo aplicado em hospitais filantrópicos. *Revista de Administração de Empresas, 53*(5), 485-499. http://doi.org/10.1590/S0034-75902013000500006

Dalmau, M. L., & Benetti, K. C. (2009). *Avaliação de desempenho*. Curitiba: IESDE Brasil.

Ensslin, S. R., Ensslin, L., Matos, L. S., Dutra, A., & Ripoll-Feliu, V. M. (2015). Research opportunities in performance measurement in public utilities regulation. *International Journal of Productivity and Performance Management, 64*(7), 994-1017. http://doi.org/10.1108/IJPPM-05-2014-0067

Epiquén, A. C. (2014). Gestión del desempeño en las organizaciones educativas. *Horizonte de la Ciencia, 4*(6), 75-81. https://doi.org/10.26490/uncp.horizonteciencia.2014.6.94

Fenwick, T. (2016). *Professional responsibility and professionalism*: a sociomaterial examination. New York: Routledge.

Franco-Santos, M., Lucianetti, L., & Bourne, M. (2012). Contemporary performance measurement systems: A review of their consequences and a framework for research. *Management Accounting Research, 23*(2), 79-119. http://doi.org/10.1016/j.mar.2012.04.001

Galvão, E. M., Cotrim, S. L., Leal, G. C., & Galdamez, V. C. (2016). Resultados preliminares da implementação de indicador de desempenho de produção em uma indústria de nutrição animal. *Revista Espacios, 37*(16).

Giansante, C. C. B., Venelli-Costa, L., Vieira, A. M., & Dutra, J. S. (2015). Competências coletivas e desempenho coletivo: um estudo com equipes de gastronomia. *Revista Alcance, 22*(4), 457-473. https://doi.org/10.14210/alcance.v22n4.p457-473

Gonçalves, R. C. M. G., & Tortoli, J. P. (2015). Características de indicadores de desempenho em sistemas de incentivo do setor automotivo. *Revista de Produção Online, 15*(3), 999-1020. http://doi.org/10.14488/1676-1901.v15i3.1946

Gonzaga, R. P., Frezatti, F., Ckagnazaroff, I. B., & Suzart, J. A. S. (2017). Avaliação de desempenho no governo mineiro: alterações dos indicadores e metas. *Revista de Administração Contemporânea, 21*, 1-21. http://doi.org/10.1590/1982-7849rac2017150331

Guilherme, M. M., Cruz, A. P. C., & Barbosa, M. A. G. (2019). O papel da avaliação de desempenho humano em uma instituição pública de ensino. *ConTexto, 19*(41), 29-42.

Pereira Junior, E. F. Z., D'Avila, L. C., & Pereira, F. S. (2018). Indicadores de desempenho em serviços e produção: proposta de mapeamento da produção científica à luz da bibliometria. *Sinergia, 22*(2), 61-73. http://doi.org/10.17648/sinergia-2236-7608-v22n2-7529

Klein, L. L., Pereira, B. A. D., Feitosa, C. M. C., & Filho, A. C. F. (2019). Análise do processo de avaliação de desempenho individual em uma universidade pública: proposição de melhorias. *Revista de Gestão e Planejamento, 20*, 545-562. http://doi.org/10.21714/2178-8030gep.v20.5575

Lebas, M. J. (1995). Performance measurement and performance management. *International Journal of Production Economics, 41*(1), 23-35.

Leite, M. M. J., Gualda, D. M. R., Gonçalves, V. L. M., Castilho, V., Ortiz, D. C. F., Fugulin, F. M. T., . . . Coan, T. C. M. (1999). Análise do instrumento utilizado no processo de avaliação de desempenho da equipe de enfermagem do hospital universitário da USP. *Revista da Escola de Enfermagem da USP, 33*(3), 265-78. https://doi.org/10.1590/s0080-62341999000300008

Levi, D. (2017). *Group dynamics for teams*. 5. ed. Thousand Oaks, CA: Sage Publications.

Marlow, S. L., Lacerenza, C. N., Paoletti, J., Burke, S., & Salas, E. (2018). Does team communication represent a on-size-fits-all approach? a meta-analysis of team communication and performance. *Organizationak Behavior and Human Decision Processes, 144*, 145-170. http://doi.org/10.1016/j.obhdp.2017.08.001

Marriage, B., & Kinnear, J. (2016). Assessing team performance - markes and methods. *Trends in Anesthesia and Critical Care, 7-8*, 11-16. http://doi.org/10.1016/j.tacc.2016.05.002

Matos, L. S., Valmorbida, S. M. I., Martins, V. A., & Ensslin, S. R. (2019). Development of performance evaluation theme: a systematic analysis of the literature. *Contextus - Revista Contemporânea de Economia e Gestão, 17*(2), 63-97. http://dx.doi.org/10.19094/contextus.v17i2.40146

Mello, J. A. V. B., & Carvalho, N. G. S. (2017). Redução da não conformidade como planejamento para a melhoria de desempenho em uma fábrica no estado do rio de janeiro. *Journal of Globalization, Competitiveness & Governability, 11*(3), 38-57.

Melnyk, S. A., Bititci, U. S., Platts, K., Tobias, J., & Andersen, B. (2014). Is performance measurement and management fit for the future? *Management Accounting Research, 25*(2), 173-186. http://doi.org/10.1016/j.mar.2013.07.007

Menegon, E. M. P., & Zambarda, A. B. (2019). Percepção dos colaboradores sobre as ações de treinamentos em uma indústria têxtil. *NAVUS - Revista de Gestão e Tecnologia*, 9(1), 7-20. http://dx.doi.org/10.22279/navus.2019.v9n1.p7-20.720

Micheli, P., & Mari, L. (2014). The theory and practice of performance measurement. *Management Accounting Research, 25*, 147-156. http://dx.doi.org/10.1016/j.mar.2013.07.005

Nadae, J., & Carvalho, M. M. (2019). Communication management and knowledge management in complex projects: a literature review. *Revista de Gestão e Projetos, 10*(1), 19-36. http://doi.org/10.5585/GeP.v10i1.10910

Neely, A. D., Adams, C., & Kennerley, M. (2002). *The performance prism*: the scorecard for measuring and managing business success. London: Financial Times/Prentice Hall.

Neely, A., Gregory, M., & Platts, K. (1995). Performance measurement system design - a literature review and research agenda. *International Journal of Operations and Production Management, 15*, 80-116. https://doi.org/10.1108/01443579510083622

Conceição Neto, V. L., & Moura, G. L. (2019). Liderança e autonomia nas novas formas de organização do trabalho: comparando empresas do porto digital de pernambuco. *Revista Gestão Organizacional, 12*(4), 63-93. http://dx.doi.org/10.22277/rgo.v12i4.4803

Novato, D. S., & Nunes, E. C. D. A. (2019). As relações interpessoais na enfermagem: Influência da liderança na motivação da equipe técnica. Revista Saúde-UNG-Ser, 13(1/2), 8-16. https://doi.org/10.33947/1982-3282-v13n1-2-3686

Oliveira, L. T., Oliveira, C., Barros, D., Reis, A. C., Dias, A. C., & Silveira, H. (2020). Product variety management: a proposal of metrics and indicators for the cosmetic industry. *Revista Brasileira de Gestão e Inovação, 7*(2), 1-28. http://dx.doi.org/10.18226/23190639.v7n2.01

Pires, P. A. S., Ensslin, S. R., Somensi, K., & Bornia, A. C. (2019). Transparência pública sob a perspectiva da avaliação de desempenho: revisão da literatura e proposição de pesquisas futuras. *Revista de Administração, Sociedade e Inovação*, 5(3), 75-97. http://doi.org/10.20401/rasi.5.3.296

Puente-Palacios, K., & Brito, L. S. (2017). Impacto das competências de equipes sobre o desempenho. *Psicologia: Teoria e Pesquisa, 33*, 1-10. http://dx.doi.org/10.1590/0102.3772e3352

Puente-Palacios, K., Martins, M. C. F., & Palumbo, S. (2016). Team performance: evidence for validity of a measure. *PsicoUSF, 21*(3), 513-525. http://dx.doi.org/10.1590/1413-82712016210306

Reis, D. P., & Puente-Palacios, K. E. (2016). Identidade com equipes de trabalho: teoria e medida. *Estudos de Psicologia, 21*(2), 167-178. http://doi.org/10.5935/1678-4669.20160017

Rocha, A. L. S., & Gonçalves, A. T. P. (2018). Application of factorial analysis in productivity indicators of indentification in a company of red ceramic industry. *Revista Produção e Desenvolvimento, 4*(2), 92-110. http://doi.org/10.32358/rpd.2018.v4.260

Rodríguez-Ponce, E., Pedraja-Rejas, L., & Ganga-Contreras, F. (2017). La relación entre los estilos de liderazgo y el desempeño de los equipos de dirección intermedia: un estudio exploratorio desde Chile. *Contabilidad y Negocios, 12*(23), 129-144. https://doi.org/10.18800/contabilidad.201701.009

Salas, E., Reyes, D. L., & Woods, A. L. (2017). The assessment of team performance: observations and needs. In A. A. Von Davier, M. Zhu, & P. C. Kyllonen, (Eds.) *Innovative assessment of collaboration* (pp. 21-36). Switzerland: Springer.

Santos, V., Beuren, I. M., & Issifou, M. (2019). Efeitos da avaliação de desempenho na performance gerencial mediada pelo feedback e sistema de recompensas. *Revista Contabilidade, Gestão e Governança, 22*(1). 38-58. http://dx.doi.org/10.21714/1984-3925_2019v22n1a3

Senna, V., Noro, G. B., Junior, A. V. L., & Souza, A. M. (2016). O uso de indicadores de desempenho na gestão do conhecimento em projetos de um curso de graduação. *Reuna, 21*(2), 63-76.

Silva, C. P. (2019). *Administração da produção para administradores*. São Paulo: Editora Senac.

Silva, C. R. M., Oliveira, L. V. C., Bona, D. O., Oliveira, J. A. N., & Pinheiro, T. C. A. (2020). Comprometimento organizacional e comportamento sustentável no trabalho: evidências do setor público. *Revista de Carreiras e Pessoas, 10*(2), 279-296. http://dx.doi.org/10.20503/recape.v10i2.44550

Soares, M. I., Leal, L. A., Resck, Z. M. R., Terra, F. S., Chaves, L. D. P., & Henrique, S. H. (2019). Avaliação de desempenho por competências em enfermeiros hospitalares. *Revista Latino-Americana de Enfermagem, 27*, 1-8. http://dx.doi.org/10.1590/1518-8345.3173.3184

Staedele, A. E., Ensslin, S. R., & Forcellini, F. A. (2019) Knowledge building about performance evaluation in lean production: an investigation on international scientific research. *Journal of Manufacturing Technology Management, 30*(5), 798-820. http://doi.org/10.1108/JMTM-12-2017-0277

Valmorbida, S. M. I., & Ensslin, L. (2016). Construção de conhecimento sobre avaliação de desempenho para gestão organizacional: uma investigação nas pesquisas científicas internacionais. *Revista Contemporânea de Contabilidade, 13*(28), 123-148. http://dx.doi.org/10.5007/2175-8069.2016v13n28p123

Van Camp, J., & Braet, J. (2016). Taxonomizing performance measurement systems' failure. *International Journal of Productivity and Performance Management, 65*(5), 672-693. http://dx.doi.org/10.1108/IJPPM-03-2015-0054

Veras, D. C., Santos, S. R., Costa, M. B. S., Holmes, E. S., Nóbrega, C. C., & Barboza, R. A. (2016). Indicadores de qualidade: a percepção dos docentes de administração em enfermagem. *Revista de Enfermagem UFPE, 10*(9), 3335-3343. http://doi.org/10.5205/reuol.9571-83638-1-SM1009201619

Wiese, C. W., Shuffler, M. L., & Salas, E. (2015). Teamwork and team performance measurement. In J. Wright, (Ed.), International Encyclopedia of the Social & Behavioral Sciences (pp. 96–103). Oxford: Pergamon.

Zanatta, C., Campos, L. A. M., Moreira, C. B., Silva, J. C. T., & Souza, M. A. (2019). As leis, o trânsito e o comportamento social dos motoristas. *Lex Humana, 11*(2), 24-36.

Zin, R. A., Bombana, L. P., & Barcellos, P. F. P. (2018). Avaliação das equipes de vendas de duas empresas com a matriz bcg utilizando lucro e margem de contribuição. *Gestão & Produção, 25*(4), 825-838. http://doi.org/10.1590/0104-530x634-18

# DECLARATION OF CONTRIBUTIONS TO THE ARTICLE - CRediT

| ROLE | LSilva | T Ghedine | CDrozdek | SLino | ATutida |
|------|--------|-----------|----------|-------|---------|
| Conceptualization – Ideas; formulation or evolution of overarching research goals and aims. | X | X | X | X | |
| Data curation – Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use. | X | X | X | | |
| Formal analysis – Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data. | X | X | | | |
| Funding acquisition - Acquisition of the financial support for the project leading to this publication. | X | | | | |
| Investigation – Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection. | X | | | | |
| Methodology – Development or design of methodology; creation of models. | X | X | X | X | |
| Project administration – Management and coordination responsibility for the research activity planning and execution. | X | | | | |
| Resources – Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools. | X | | | | |
| Software – Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components. | X | | | | |
| Supervision – Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team. | X | | | | |
| Validation – Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs. | X | | | | |
| Visualization – Preparation, creation and/or presentation of the published work, specifically visualization/data presentation. | X | | | | |
| Writing – original draft – Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation). | X | X | X | X | X |
| Writing – review & editing – Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages. | X | X | X | X | X |