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EVOLUTION OF WORK TEAMS IN THE MANUFACTURING INDUSTRY: A REVIEW OF THE LITERATURE

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Abstract: The purpose of this article is to examine the evolution of work teams (WT) in the manufacturing industry from their beginnings to the present by means of a literature review, summarizing and identifying the main differences and similarities of WT in the industry over time in order to achieve their effectiveness. Likewise, the methodology used and the main findings of the research are presented.
Keywords: Teamwork evolution; Teamwork; Manufacturing industry; Teamwork effectiveness.

INTRODUCTION

Nowadays, the term work team is usually used by most organizations to encourage and motivate workers to participate in work groups that allow them to increase their potential, through the sum of individual efforts, and thus achieve better performance and obtain better results. However, a work team is complex to describe and even more difficult to establish. In general, working in a team involves a process through which its members collaborate to achieve the objectives of a task, through the performance of activities that enable results, such as team effectiveness and satisfaction (Driskell et al., 2018)..

Likewise, work teams (WT) are one of the most important elements for the development of projects within the manufacturing industry, since they facilitate the exchange of information, in addition to providing contributions and creativity of each of the team members, which influences the correct resolution of problems. (Jaca et al., 2012).

According to the specialized literature, the most widely used concept for the evaluation of results in TE is effectiveness (Bayona Bohórquez and Heredia Cruz, 2012).which is defined as the reflection of the way in which the results achieved are related to those proposed, i.e., the ability of the team to activate its resources in favor of its objectives (Herrera et al., 2019).

Given that the information on TE found in the literature is diverse and scattered, this literature review aims to examine the evolution of TE in the manufacturing industry and provide information to organizations in human management, on the main differences and similarities of the characteristics and dynamics of TE in the manufacturing industry over time, and in turn provide a guide to achieve the effectiveness of future projects to be implemented in TE.

RESEARCH QUESTIONS

How have work teams evolved within the manufacturing industry?

What are the main characteristics and contributions to TE dynamics over time found in the literature?

METHODOLOGY

PROCEDURE

This literature review considers those studies and scientific articles such as: journals, congresses, book chapters, which are published in English and Spanish, since they are currently the most widespread languages internationally and are considered to be the most widely disseminated journals. Due to the nature of the research, exclusion criteria for years are not considered.

Initially, a preliminary search was carried out in Web of Science and Scopus, and no current or ongoing systematic reviews were identified, referring to the topic and specifically oriented to the manufacturing industry. The existing reviews consider the forms of teamwork applied to the areas of health, computing, education, among others, which allows this review to provide information focused on the industrial and manufacturing field.

The search strategy aims to locate only those studies that are currently published, using the Web of Science and Scopus databases, which were selected due to their high content of journals focused on social sciences and engineering. To perform the search in the selected databases, words related to: evolution of TE, manufacturing industry and effectiveness of work teams were used.

LITERATURE REVIEW

TEAMWORK AND ITS BEGINNINGS

Throughout history, human beings have been characterized as social beings, with teamwork being an important part of their nature. The American social psychologist, professor and author Theodore Mead Newcomb, who founded and directed the doctoral program in social psychology at the University of Michigan, wrote in 1949: "Humans are so thoroughly socialized that practically all their problems must be solved by reaching an agreement with other people". Likewise, several authors have emphasized that human beings have a basic need to establish relationships. Such is the case of Baumeister and Leary in 1995, who, in their research, expose the fundamental need of human beings to belong to their social environment. In this sense, the basic human need for relationships ranges from interpersonal bonds to bonds established with the aim of achieving shared objectives. (Driskell et al., 2018)..

In its beginnings, the challenges faced by humans drove individuals to organize themselves into groups where cooperation resulted in survival benefits. Humans learned that in groups they could share work, hunt more efficiently and defend themselves from dangers and enemies. In addition to this, not only were benefits found in the success of their outcomes or objectives, but cooperation brought reciprocity, which supported the emergence of social norms of interaction (Driskell et al., 2018)..

In 1947, Symbionese Liberation Army (S.L.A.) Colonel Marshall stated, "In a battle, soldiers can recover or fail, advance or retreat depending on the small circle of people they are surrounded by." Similarly, astronaut Douglas Wheelock stated in 2007: "The most important thing I have learned at NASA is the importance of teamwork". These statements allude to historical facts as well as future challenges. It is worth noting that although these statements are separated by 60 years, they both refer to the fact that regardless of the field, teamwork is vital to achieve important goals and objectives.

Cartwright and Zander in 1953 cited four reasons why teamwork should be studied scientifically: teams are ubiquitous, they mobilize powerful forces that produce important effects, these forces can have both positive and negative impacts, and understanding team dynamics ensures positive outcomes. This is why the study of TEs is so important, as they are considered building blocks for performing tasks in a wide variety of applied contexts: in the military, space development, healthcare, sports, industry, and other domains (Driskell et al. (Driskell et al., 2018)..

WHAT IS A WORK TEAM?

Over time, various definitions of groups, teams and other forms of collective work have been mentioned in the literature. Such definitions share many attributes and have subtle differences.

In order to make the right decisions about when and how to form a TE in an organization, it is vital that managers have a precise definition of what a work team is and what it is not. In general, organizations choose to work as a team, providing support and recognizing the interests and achievements of

Decade	Main Features and Contributions	References
Before 1950	TE arise as a consequence of the basic need of human beings to establish relationships and belong to their social environment, ranging from interpersonal links to links established to achieve shared objectives. The challenges faced by humans prompted individuals to organize themselves into groups where cooperation resulted in survival benefits. Humans learned that in groups they can share work, hunt more efficiently and defend themselves from dangers and enemies.	(Driskell et al., 2018)
1950 a 1959	The term "work team" was not used, but rather "work group" and working in groups was seen as a difficulty, as sometimes these groups led to negative results, such as low productivity, poor decisions and conflict. In order to ensure the effectiveness of ET, research and literature reviews are beginning to help boost ET results, increasing company productivity and employee satisfaction.	(Whyte, 1956), (Janis, 1972), (Hogg and Gaffney, 2018), (Campion et al., 1993)
1960 a 1969	Proposals for models to help achieve ET success and effectiveness began to be proposed. One of the most relevant is the input-process-output (IPO) model in 1964 by McGrath, which serves as a framework for studying ET effectiveness. They begin to classify the results obtained from the team's activity, concluding that it can be described in different terms: performance (e.g., quality and quantity) and the affective reactions of the members (e.g., satisfaction, commitment, viability).	(Mathieu et al., 2008)
1970 a 1979	Industrial and organizational psychologists adopted research emphasizing team results, based on theory, as a function of team effectiveness and productivity. Research is oriented to the ET members (who they are, how they interact, how they perform their tasks) to understand how these factors contribute to team performance. Four main categories of team performance functions are proposed: 1. Team orientation. 2. Organizational. 3. Adaptation. 4. Motivational.	(Driskell et al., 2018)
1980 a 1989	Since this decade, models for ET effectiveness continue to emerge, and many of these models and investigations use McGrath's IPO model as a basis. Likewise, ET performance continues to be measured qualitatively and not only quantitatively as in the past.	(Driskell et al., 2018)
1990 a 1999	TEs are beginning to gain importance in organizations, but they present risks and areas of opportunity. Efforts began to be oriented towards a work design perspective. It is considered very important to have an adequately sized ET whose members have complementary skills. The senior management team was often very small and less formalized (2 or 3 people). Efforts began to focus on the design of the assembly lines with the objective of increasing efficiency and productivity. The balance between production and worker satisfaction could not be found.	(Jon R. Katzenbach and Douglas K. Smith, 1993), (Campion et al., 1993)
2000 a 2009	Research focuses on why some teams were more effective than others, with emphasis on team composition, organizational and team structures, and the allocation and distribution of rewards. There was no consensus on the evaluation of the performance of the TEs and their projects. Lack of knowledge on the part of the managers about the particular projects developed by the TEs.	(Ilgen et al., 2005)
2010 a 2020	The term "global virtual teams" is introduced, who can work remotely and in different geographic spaces, without the need to be within the physical organizational establishment. There is talk of the "cascade effect" which states that if managers who supervise team leaders have overlapping values, it is more likely that the values of the team leaders will dominate the team dynamics, which favors and directly impacts their effectiveness and the development of projects within industrial companies.	(Min et al., 2010), (H. van Dun & Wilderom, 2016)

News	Organizations are choosing to implement a reward and recognition system, as it has been proven to be a means of motivation and positively influences ET performance and results. People today appreciate and value non-monetary intangibles such as learning and development, quality of work life, and work-life balance. As a result of research from the 2010s to 2020s, more attention is being given to top management commitment as well as reward systems that seek work-life balance.	(Müller, 2020)

Table 1. Comparison of the main characteristics of TEs found in the literature through

others. However, this is not enough to achieve effective team performance.

It is necessary to emphasize that a team is not just any group that works together, i.e., a distinction must be made between a team and other forms of work groups. The main distinction lies in the performance and results obtained by the team, which are a function of what its members do as individuals. Team performance includes both individual results and the results obtained from collective work. The collective work product reflects the joint and actual contribution of the team members. In this way, TEs differ from work groups in that they are governed by both individual and mutual accountability. Therefore, Jon R. Katzenbach and Douglas K. Smith (1993) define a work team as "the integration of the efforts of individuals toward the achievement of a shared goal".

RESULTS

Based on the literature review, the main characteristics of TEs and their evolution over time were found. Table 1 shows the main characteristics and similarities of TE by decade.

CONCLUSIONS

The analysis of the literature reviewed allows us to conclude that over time, research related to work teams (WT) in the manufacturing industry has focused on common elements, such as: team composition, task design, existence of a leader and management involvement, which to date are considered important to achieve the effectiveness of team projects.

However, it should be noted that nowadays management must be more involved with the projects, having leadership over the TEs, in order to motivate the other members and reflect in them the common objectives and goals. In addition, non-traditional TEs take advantage of technology to work virtually.

Finally, another major difference is that, nowadays, in order to achieve the effectiveness of TEs, greater attention must be paid to the human factor. That is, the motivation given to team members, mainly based on reward and recognition systems, in addition to providing them with opportunities for development and learning and allowing them to have a balance in their work-life relationship.

RECOMMENDATIONS FOR FUTURE LINES OF RESEARCH

Since the literature consulted in this review has shown that employee satisfaction has a positive impact on the development of projects, it is advisable to continue with the lines of research on this topic and it is recommended to continue analyzing the variables for the members of the TE to achieve this work-life balance.

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