PROCESS MANAGEMENT AND IMPROVEMENT OF PRODUCTION TASKS IN THE CONSTRUCTION INDUSTRY

GESTIÓN DE PROCESOS Y MEJORA DEL TRABAJO PRODUCTIVO EN LA INDUSTRIA DE LA CONSTRUCCIÓN

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Summary

The main objective carried out in this document is to state the management by processes and improvement of the productive tasks in the construction, being this fundamental part for the obtaining of favorable results in the diverse activities that are developed in this wide industry. The management by processes is the simplest way to optimize the productive tasks, because having a global vision about the construction gives place to understand its structure and functioning. The methodology of the 5s is a fundamental strategic tool to put into practice the processes that are called: classification, order, cleanliness, standardization and discipline. These are basically the first steps for a continuous improvement in the way the activities are carried out, at the same time it also highlights which add value to the desired product, allowing changes to be made to the processes that have shortcomings, resulting in an excellent organization.

Keywords: Process Management, Construction, Productive Works.

Resumen

El objetivo principal que se realiza en este documento es establecer la gestión por procesos y la mejora de las tareas productivas en la construcción, siendo esta parte fundamental para la obtención de resultados favorables en las diversas actividades que se desarrollan en esta amplia industria. La gestión por procesos es la forma más sencilla de optimizar las tareas productivas, ya que tener una visión global sobre la construcción da lugar a comprender su estructura y funcionamiento. La metodología de los 5 es una herramienta estratégica fundamental para poner en práctica los procesos que se denominan: clasificación, orden, limpieza, estandarización y disciplina. Estos son básicamente los primeros pasos para una mejora continua en la forma en que se llevan a cabo las actividades, al mismo tiempo que también destaca cuáles agregan valor al producto deseado, lo que permite realizar cambios en los procesos que tienen deficiencias, lo que resulta en una excelente organización.

Palabras clave: Gestión de Procesos, Construcción, Obras Productivas.

Introduction

A process is the set of several actions that allow us to obtain results to improve the organization and allow the final product to have more value than it was initially estimated. In other words, a process is the step-by-step form of the activities carried out in the company. The production models increase the vision and strategy for the increase of the products in its final stage, these processes must be perfectly adequate having a correct management in its processes. (Maldonado, 2011)

The processes have remained over time, forming part of the organization in general and establishing the order of what is done and how it is executed (Sánchez 2016).

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Process management is mainly based on allowing the flow between tasks to be correct, since when an action is interrupted the entire process chain is affected.

By obtaining an overview that indicates productive and non-productive tasks, the operation and development of the service is evaluated, thus allowing positive results thanks to the application of tools that improve the efficiency of the service; Usually the processes are distributed among all levels of the company, moving from department to department or from individual to individual, however, there may be shortcomings due to communication and as a result the external client does not receive his order with the desired or agreed terms at the time the order was placed (Sánchez 2016).

This delay in the processes generates an extra cost that at the end the client is not obliged to pay therefore in the company internally they must have clear the processes to carry out so much in the distribution of the work, purchase of raw materials and detailed logistic elaboration for the obtaining of the final product; making deliveries on time, with quality and without generating extra costs by disadvantages that can appear before and during the elaboration of the project.

The processes have authorized the evolution of a series of techniques to manage and improve, these are mentioned in the systematic method of improvement and reengineering, one and the other have specific application to specific processes used in the company. In another place are the management models that play a fundamental role as the basis of the organization and its structure in the system of indicators mentioned above. (Zaratiegui, 1999)

Process-based Management appears as a central form of attention on the activities of the organization to improve them. (Mallar, 2010). Organizations that want to be competitive must be guided by efficient and effective mechanisms or operational processes, which must have a structured and ordered database according to the population taken, with the aim of obtaining the best materials for a perfect elaboration of the final product, in this way it is necessary to work together to meet customer demands that must be the fundamental reason to fill in any organization.

Functional management is responsible for finding various activities that do not add or generate value in performance or service, and therefore do not produce customer satisfaction, which leads to the waste of resources and inconsistencies between departmental and general objectives. Through process management, the various areas work in a coordinated and interrelated manner, improving aspects such as internal communication and avoiding unnecessary activities. (Alabarta y Martínez 2011).

Performance of Productive Labors

Alluding to the organization and administration of a work, we refer to the requirements in time estimate that entails the execution of the proposed activities and the determination of the activities with the productivity. (Porras and Diaz, 2015) Productive tasks are directly interconnected with the distribution and performance of the work carried out, therefore, they play a fundamental role when it comes to meeting the objectives initially agreed upon (Cárdenas 2018).

Having a clear concept about the productive tasks, the complete analysis can be made, showing details of the company and its dynamism with the processes. The evaluation of the current performance in the production, becomes the initial point to adapt the system to the continuous improvement that is constantly sought (Cárdenas - Gutiérrez 2020). The identification of losses by means of observations is fundamental because the work can be qualified and quantified by means of surveys of delays and balance charts in the crews, in this way the causes of losses in time and materials that affect the construction are known, improving its productivity (Deming y Medina 1989).

The need is pointed out to carry out a survey identifying the fulfillments in the constructive projects, through measurement of losses, cycle time value and variability

(koskela 1992), these losses are of great importance whether it is a small or large scale work, due to the quantity of processes that are carried out in a work it is necessary to inspect meticulously to have a balance of the activities set in motion generating positive results in the established chronogram.

The rest of these productivities is recognized as loss, to everything different from materials, machines and labor needed in construction (Alarcón 2002). The continuous improvement of productive tasks allows for greater efficiency in the company and at the same time generates better profitability since these factors work together. In 1990 Thomas presented an efficient tool to account for productivity in the work given to be done in construction, this being one of the ways of approaching the other industry conceptualized as the way to leave an open system according to (Drawin 1985).

There are elements that are pillars to improve the performance of construction projects in which it includes: effectiveness, efficiency, quality, productivity, innovation, profitability and quality of work life of employees (Sink 1985). At the moment of increasing the production to a high limit the companies must not implement in their structure a specialization of the functions, which only with takes to a systematized process which generates many errors, because each sector focuses in making a specific task without considering the other sectors involved in the elaboration of the product.

The best results have not been obtained by working in this way because information is scarce and there is no tendency towards continuous improvement. It is necessary to create in an organization an interdisciplinary group where they work together under the same objective to achieve the best level of quality and standardization to meet customer needs (Barrientos 2018).

The Construction Industry as a Global Activity

The construction industry is one of the fundamental pillars that move the world. The products and by-products of construction affect society in a directly proportional way, either positively or negatively. It is spoken of positively because it promotes the development of society and its members, and negatively because it is very susceptible to the changes experienced by economic cycles. The economic sector of the construction is one of the sectors that has more problem in recovering during a crisis, its vulnerability exceeds the expectations with respect to the other economic sectors that move the global system. (Duhart 1984).

In construction, information and materials must be efficient and true in order to have coherence in what is designed and what is materialized. For this reason, specialized construction professionals put management systems and processes in the center along with production processes. (Ballard, G & Howell, G. 1994). The construction industry in its global development integrates an interdisciplinary group of professionals capable of responding to the demand of the project to be planned, evaluated and executed. These groups and the role that each one plays according to their specialty will be soon known.

Owners or Plaintiffs

They are responsible for selecting the area, land, make the organizational chart of how the project will be conducted in all its stages including financing, also are responsible for applying for permits to the state for the implementation of the project and are responsible for coordinating the recruitment of suitable personnel. Depending on their skills in selecting personnel and their way of leading their work group, the increase in productivity and the quality of the construction will be a success or a failure. That is why this group is the most important of all (Barrientos-Monsalve 2020).

Designers

They are in charge of materializing the owners' or clients' guidelines in a three-dimensional and real plane, where the results expected by the owners are evident. This group is mostly composed of expert engineers and architects specialized in the construction sector, where they combine their knowledge to present an exceptional design as a final product.

Construction (Contractors and Subcontractors)

They are in charge of materializing all the work of the owners and designers, taking plans and documents to practice, their function is characterized by adopting all the measures recommended by the designers, the final construction work depends on this select group of engineers. A company materializing works with the desired quality, becoming the objective of this work to obtain rank in the labor scope and determining the most suitable weighting (Saaty, 1980) The construction industry is not only part of the economic sector, it is also involved in the environment in a direct way.

Research shows that waste resulting from the construction of any type of building represents 45% and 65% of the waste deposited in landfills. Solid construction waste does not have a reuse that benefits a specific sector if the opposite generates a fatal deterioration for the environment, many studies from universities and laboratories are currently oriented to how to take advantage of this waste in an environmentally responsible way. (Aldana, J & Serpell, A. 2016).

The construction industry is one of the most accident-prone sectors in the world, which is why today's construction managers and engineers have demonstrated that management efforts reduce accidents and improve product quality. Already in a construction site, workers' awareness has been evolving, where they are able to identify by themselves if their life is exposed to risk or danger and how they should assess the risk. An objective drawn up by this guild is under the slogan "ZERO INJURY", being a positive initiative with great roots in the sector due to its effectiveness. "Zero injuries" is today a great beacon for all industries worldwide.

The 5 S

The 5S movement is a concept linked to the guide to overall quality that originated in Japan under the guidance of W.E. Deming more than forty years ago and is included within what is known as continuous improvement (aliaga 2013) is a tool that gives step by step techniques to improve taking into account that the smallest details make a bigdifference in the processes in which it is directly linked to the works.

The insertion of the 5s in companies and organizations around the world has demonstrated benefits in which we can highlight: increased productivity, reduced delivery times, increased quality, greater safety, a better working environment, encourages employee creativity and facilitates communication (Pons 2017). It is of vital importance to recognize that workers obtain better results when working in a healthy and orderly environment.

The stages of the five s help to ensure that the planning process runs smoothly, giving way to the changes that are generated internally in the company and its workers, as the 5 s is a way of giving a sense of belonging to the work, as it contributes to saving resources, directly increasing safety in the workplace.

The following comparative table analyses the 5S methodology

methodology of the 5s	classification or organization	In this first stage common sense is required, the main idea is to separate the tools, equipment, elements and documents that are really used in the work I am doing and what I will not need for the development and implementation of my project I must isolate it, give it some benefit either in another field where they can be useful.
	order	The order is the second step in the chain of this methodology, it consists of adapting a specific place for each tool, equipment and information or any element that you should use in your work, besides locating it you should know the type of frequency with which you work with some help to facilitate your work.
	cleaning	The third step is cleaning, in which all the information, tools, equipment, etc. are handled in a way that makes the work environment pleasant and increases the productivity of a company. It improves the image and integrates the cleaning in the gear of the organization.
	standardization	It is the fourth step of this methodology, it consists of channeling the first three steps (classification, order and cleanliness) to tune them and to take them by themselves, it is recommended to use different types of aids, it depends on the creativity of the person in charge, and everything is valid as long as the planned results are obtained.
	discipline	Fifth and last step, already achieved the four previous steps only remains to maintain the continuous habit, this is achieved through perseverance, continuous monitoring and creating awareness in each of the people involved in the process, that the results are thanks to the collaboration of all, teamwork. the most important thing is that every day things can be done better. Fifth and last step, already achieved the four previous steps only remains to maintain the continuous habit, this is achieved through perseverance, continuous monitoring and creating awareness in each of the people involved in the process, that the results are thanks to the collaboration of all, teamwork. The most important thing is that every day things can be done better.

5s Methodology
Source: the researchers

Conclusions and Recommendations

As a result of the documentary collection presented, it is possible to conclude that there are many shortcomings in the construction sector, such as the environmental impact generated by its waste during and after development and the fluctuation in the market that varies considerably resulting in a sector directly proportional to changes in the economy. Likewise, after having read and understood process management, it is concluded that it is a fundamental tool for any type of company, taking it through an interdisciplinary group of professions capable of facing challenges and willing to make continuous improvements. By ignorance or disregard of these management processes many companies or industries fail, because they do not have clear a hierarchy, an organization chart, they are only based on producing without any accompaniment or monitoring. Finally, when knowing the 5S methodology, one can

positively infer that its argumentation and content is very complete to put into practice, because it is presented in a simple and easy way to execute in a company, its good results depend on the degree of commitment and follow up of the people in charge.

Taking into account the above, it is recommended that all productive activities in the construction sector be carried out under the guidelines of an organized structure, taking as a guide one of the simplest and easiest to apply, such as the 5S methodology, which allows the discovery of flaws in the development of any activity and thus prevents possible cost overruns in poor execution of work, as well as contributing to a better quality of the final product of each project.

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