

# Macroergonomic Assessment of a Colombian Floriculture Company



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## Abstract

It is unusual to find ergonomic evaluations or interventions approached from a macroergonomic perspective in the Latin American context. **The purpose of this study was to evaluate the ergonomic maturity level of a Colombian company in the floriculture sector using the Ergonomic Maturity Model (EMM), a macroergonomic tool.**

The evaluation was conducted in three stages. An ergonomist conducted this process with the participation of five managers and 61 operational workers of the company. As a result, the company was classified at the lowest maturity level (Level 1: Ignorance). We hope that the organization's discussions generated during the evaluation process will allow ergonomics to be gradually integrated into its processes.

**Keywords:** Ergonomic Assessment, Ergonomic Maturity Model, Organizational Ergonomics, Systems Ergonomics.

## Introduction

For several decades, it has been proposed that to increase the impact of ergonomics in organizations, actions should be taken from a systemic perspective [1, 2]. The integration of macroergonomic principles in the design and redesign of work systems has been gradually proliferating [3].

In our opinion, one factor that has driven this proliferation is the need for organizations to add value to their processes through ergonomics, which has been limited when only the traditional ergonomic approach, focused on the physical factors of the workplace, is used.

The company under study, which belongs to Colombia's floriculture sector, health, safety, and productivity problems have arisen. However, these problems have not been addressed from a macroergonomics perspective. Therefore, a macroergonomic study would allow the company to identify some improvement actions that could be taken to solve its organizational problems.

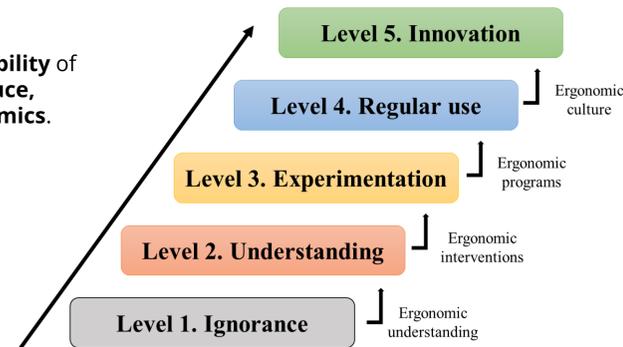
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## Methodology

### Ergonomic Maturity Model (EMM)

**Objective:** to assess the capability of an organization to introduce, develop and apply ergonomics.

Maturity of the organization  
Gradual classification



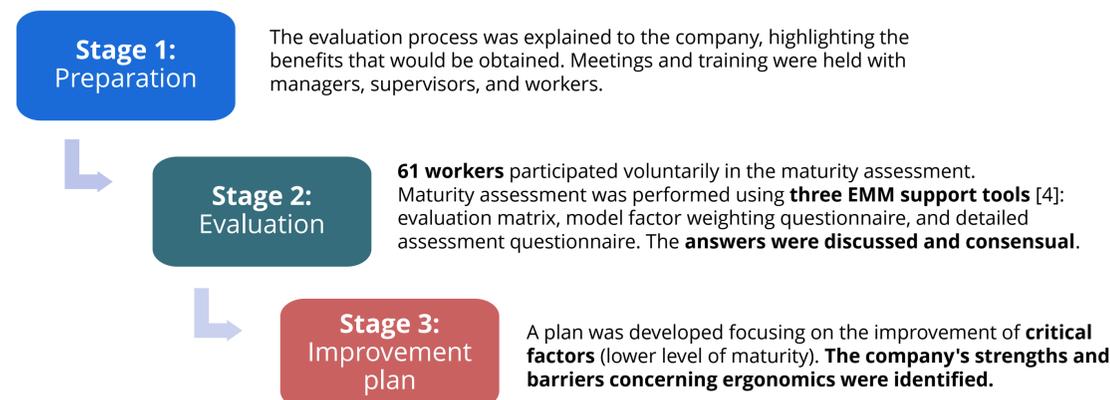
### Macro factors and factors of the EMM

MACRO FACTORS	MEANING	FACTORS
CULTURE	Disposition and way of working of the organization for the use of ergonomics.	<ul style="list-style-type: none"> <li>Acceptance</li> <li>Teamwork</li> </ul>
INTEGRATION	The degree that management structures and policies prevailing in the organization condition the integration of ergonomics with the organization's processes.	<ul style="list-style-type: none"> <li>Strategic alignment</li> <li>Management</li> <li>Commitment</li> <li>Resources</li> </ul>
PERFORMERS	Individuals (internal and external) who perform ergonomics in the organization.	<ul style="list-style-type: none"> <li>Knowledge and skills</li> <li>Person in charge</li> <li>Compensation</li> </ul>
SURVEILLANCE	How ergonomic information is collected, analyzed, interpreted and used in the organization.	<ul style="list-style-type: none"> <li>Indicators</li> <li>Information systems</li> <li>Risk assessment</li> </ul>

### EMM support tools [4]:

- Evaluation matrix
- Weighting questionnaire
- Detailed assessment questionnaire

### Assessment process with EMM



## Results

The company was classified in **maturity level 1 (Ignorance)**. This maturity level is due to the general lack of knowledge in the company about ergonomics and its application.

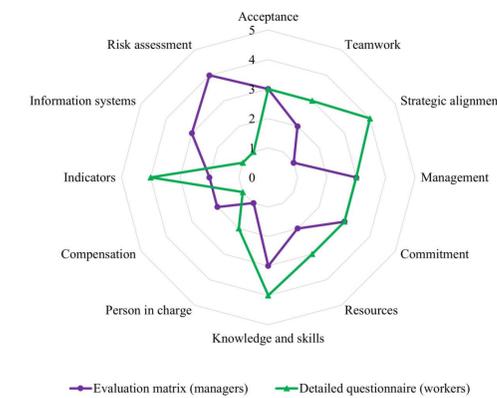


Fig shows the maturity assessment results obtained with the EMM assessment matrix and the detailed questionnaire designed.

### Five company's top management:

- According to the **evaluation matrix**, the managers considered company **level 1 of maturity (Ignorance)**.
- According to the **weighting questionnaire**, the **most important factors were risk assessment and acceptance**, while the **strategic alignment and person in charge factors were the least important**.

A 52-question **questionnaire was developed** and applied to **61 workers**:

- According to these workers' opinion, the level of maturity in ergonomics for the company was also **1 (Ignorance)**.
- According to the workers, the **most critical factors were compensation, information systems, and risk assessment**.

## Conclusions

In the company studied, the managers are not clear about the role of the ergonomist, they dedicate few resources to ergonomics projects, and they do not know how ergonomics can help fulfill the organization's strategic objectives. For this reason, the improvement plan was oriented towards the creation of an ergonomic culture. Workshops and training were proposed, focused on showing how ergonomics can generate value in organizational terms. The introduction of participatory techniques where workers are involved will be another crucial success factor in developing practical solutions.

In this case study, differences in opinions on ergonomics maturity between managers and workers were visible. The factors risk assessment, information systems, indicators, and strategic alignment, caused most opinion differences. Conducting pre-assessment training and including workers from all organizational levels in the assessment team and among the respondents can help in the consensus of the maturity assessment results.

The ergonomic maturity assessment provided a global vision of the company's current situation in terms of ergonomics. During the assessment process, the discussions generated new ideas to improve working conditions, initiating a transformation process within the organization. This research's systemic approach to address ergonomics can serve as a reference to extend the ergonomics profession's current scope in the Colombian context.