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BEST PRACTICES OF TOP MANAGEMENT LEADERSHIP AND WORKERS' PARTICIPATION FOR ERGONOMICS MANAGEMENT IN SUPPLY CHAINS

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Resumen: La evaluación de la Gestión de Ergonomía (GE) en la Cadena de Suministro (CS) es un proceso en desarrollo, ya que existe la necesidad de evaluarla de forma integral y holísticamente. Es por ello, que las prácticas de liderazgo de la alta dirección y la participación de los trabajadores (PLYPT) es un constructo que juega un papel clave en este proceso. Tales prácticas han sido reconocidas en la literatura, ya que a través de la implementación de ellas se obtienen mejoras en la eficiencia y productividad, así como en la prevención y evaluación de riesgos ergonómicos. Esta investigación tiene como objetivo determinar las mejores PLYPT para la GE. Para ello, se desarrolló una revisión de literatura, posteriormente se diseñó un cuestionario digital con preguntas cerradas de escala Likert de 5 puntos (1-5), donde 1 = Totalmente en desacuerdo y 5 = Totalmente de acuerdo respecto al grado de acuerdo con las PLYPT en la CS para la GE. Se utilizó una muestra por conveniencia de expertos de Latinoamérica y se desarrolló un análisis descriptivo por medio de la obtención de las medianas y rangos intercuartílicos por ítem. Como resultados se diseñó y aplicó de manera electrónica un instrumento integrado por 17 ítems que miden cuatro dimensiones: 1) Liderazgo y compromiso, 2) Política de Ergonomía, 3) Roles, responsabilidades y autoridades en la organización, y 4) Consulta y participación de los trabajadores. El análisis descriptivo se realizó considerando la respuesta de 34 expertos. Las

medianas más altas con menores rangos intercuartílicos determinan un alto grado de acuerdo con la aplicación de ciertas prácticas para la gestión de ergonomía, encontrándose que la mayoría de éstas están centradas en el actuar de la alta dirección. Entre las mejores prácticas se encuentran: el liderazgo y compromiso de la alta dirección al asumir la total responsabilidad de la prevención de lesiones, el deterioro de la salud, la rendición de cuentas, así como la provisión de actividades y lugares de trabajo seguro y saludables. Además de establecer la política y objetivos de ergonomía, apoyar la conformación de la comisión de seguridad e higiene y garantizar la disponibilidad de los recursos necesarios. Otra de ellas está relacionada con implementar y mantener una política de ergonomía documentada, comunicada y pertinente que incluya el compromiso de cumplir los requerimientos legales, así como eliminar o reducir los riesgos ergonómicos. Sin olvidar la promoción de los medios e invitar a los trabajadores a informar sobre incidentes, peligros, riesgos y oportunidades con libertad y confianza. Así, estas prácticas deben promoverse, implementarse y evaluarse de una manera efectiva en la GE en la CS. El instrumento diseñado y las dimensiones propuestas pueden considerarse pertinentes para la evaluación de estas prácticas en la industria.

Palabras clave: Gestión de Ergonomía, Cadena de suministro, Liderazgo de la alta dirección y participación de los trabajadores.

Relevancia para la ergonomía: Esta investigación contribuye a la caracterización de las prácticas en liderazgo de la alta dirección y participación de los trabajadores en la cadena de suministro para la gestión de ergonomía.

Abstract: Evaluating of Ergonomics Management (EM) in the Supply Chain (SC) is a developing process that must be conducted comprehensively and holistically. That is why top management leadership practices and worker participation (TML&WPPs) is a construct that play a crucial role in this process. Such practices have been recognized in the literature since, through their implementation, significant improvements in efficiency and productivity are obtained, as well as in the prevention and evaluation of ergonomic risks. This research aims to determine the best TML&WPPs for EM. A literature review was created for this purpose. After that, a digital instrument was created with closed-ended, 5-point Likert scale questions (1–5) regarding the degree of agreement with the TML&WPPs in SC for EM. 1 represents strongly disagree, and 5 represents strongly agree. Finding each item's median and interquartile ranges was the first step in performing a descriptive analysis on a convenience sample of Latin American experts. As a result, an instrument composed of seventeen items measuring four dimensions was designed and applied electronically: 1) leadership and commitment; 2) ergonomics policy; 3) roles, responsibilities, and authorities in the organization; and 4) consultation and participation of workers. The descriptive analysis was performed considering the responses of thirty-four experts. The highest medians with lower interquartile ranges determine a high degree of agreement with the relevance of the practice, identifying that most of these are centered on the actions of top management. Among the best

practices are the leadership and commitment of top management to take full responsibility for injury prevention, health impairment, accountability, and the provision of safe and healthy workplaces and activities, in addition to establishing the ergonomics policy and objectives, supporting the formation of the health and safety committee, and ensuring the availability of the necessary resources. Another is related to implementing and maintaining a documented, communicated, and relevant ergonomics policy that includes the commitment to comply with legal requirements and eliminate or reduce ergonomic risks. It also promotes the means and invites workers to report incidents, hazards, risks, and opportunities freely and confidently. Thus, these practices should be promoted, implemented, and evaluated effectively in the SC. Therefore, the instrument designed, and the proposed dimensions can be considered pertinent for the evaluate these practices in the industry.

Keywords. Ergonomics Management, Supply Chain, Practices of top management leadership and worker participation

Relevance to Ergonomics: This research characterizes top management leadership and worker participation practices in the supply chain for ergonomics management.

1. INTRODUCTION

Organizations are adopting sustainable practices (Rocha et al., 2018) to contribute to the supply chain's (SC) profitability and eliminate or reduce negative impacts on environmental and social aspects. In this aspect, there is evidence suggesting that ergonomics management is a crucial aspect of achieving sustainability (Tortorella et al., 2017; Costa et al., 2018) since in these work systems, the leading actor is the human factor (Paillé y Boiral, 2013; Serdarasan, 2013). Thus, Ergonomics Management (EM) finds its most significant contribution to this purpose due to the need to perform comprehensive Ergonomics studies throughout the SC and propose a global assessment of all links through a holistic vision (Perttula, 2011). Therefore, it is essential to evaluate the ergonomic aspects inherent to the working conditions using an adequate ergonomics program and an ergonomics management system (EMS) that provides an assessment of good practices and requirements of EM in SC (Rodríguez-Gámez et al., 2023).

These considerations and the literature recognize top management leadership practices and worker participation as fundamental elements of EMS design (Rodríguez-Gámez et al., 2023); both elements contribute significantly to the success of ergonomic programs management and health and safety management (Rodríguez-Gámez et al., 2023; Hoque & Shahinuzzaman, 2021; Sadegh Amalnick & Zarrin, 2017; ISO, 2018; Shekari, 2020) and can have a positive impact on employee health, safety, and productivity. So, it is expected that TML&WPPs will be present on the SC links for ergonomics management. This research aims to identify

the most significant practices in top manager leadership and workers' participation in the SC for this purpose.

1.1 Conceptual Development

One of the critical concepts of this research is Ergonomics Management (EM), which needs a more widely accepted definition in the literature. However, antecedents of the vision of continuous improvement and quality management applied to EM were found to build this concept. For example, Rowan & Wright (1994) established that EM is a complex and continuous process that should be integral to corporate strategy and culture. These authors further suggest that companies adopting a total quality management philosophy are well-positioned to adopt effective ergonomic management. In addition, management commitment, in attitude and resource allocation, is critical to the ergonomic management process. Thus, the human factors professional must have the support of those with the power and influence to bring about the required change. However, a cost-benefit analysis is crucial to lend credibility to the arguments in favor of implementing the ergonomic process and EM (Khon & Friend, 1993). They also state that EM requires the involvement and participation of all departments and all levels of employees. Awareness of ergonomic principles must permeate the entire organization. Each employee should feel comfortable pointing out ergonomic problems or indicators of problems affecting his or her work area since the employees most directly involved in the work often have the best ideas. Thus, the importance of leadership and employee participation in EM is recognized. Currently, Rodríguez-Gámez et al., (2024) define EM as the set of procedures and actions aimed at identifying ergonomic risk factors, planning and executing an ergonomics program, establishing risk and hazard control through good practices, as well as setting objectives to reduce or eliminate them in man-machine systems and work environments.

In the background and the new trends of the EM concept, even management systems governed by international standards such as ISO recognize that the construct of top management leadership and worker participation is a critical element of the model since the success of the management system depends on this, as ISO 45001 confirms in the particular case of safety and occupational health (ISO 45001, 2018).

The concepts and some of the practices that make up this construct are addressed below under the view of Sorensen et al. (2018), which states that leadership makes worker safety, health, and well-being a clear organizational priority. It drives accountability and provides the resources and environment necessary to create favorable working conditions. These authors recognize that top management is responsible for setting the priorities that define worker and workplace safety and health as part of the organization's vision and mission. Worker participation at all levels of an organization, including unions or other workers' organizations if present, helps to plan and conduct efforts to protect and promote safety and health. Many organizations have mechanisms to involve employees and managers in decision-making and planning. These mechanisms can be used to plan

and implement policies and programs. Employee participation in decision-making facilitates a broader organizational health, safety, and well-being culture. Participation also includes encouraging employees to identify and report health and safety threats without fear of retaliation and expecting their concerns to be addressed.

Consequently, both, top management leadership and worker participation have historically been important to EM, so good practices must be defined, promoted, implemented, and evaluated to meet organizational and SC objectives regarding occupational health and safety.

2. OBJECTIVE

This research aims to determine the best practices of top management leadership and worker participation in the supply chain for ergonomics management.

3. DELIMITATIONS

As a delimitation, this research obtained a convenience sample of experts in the fields of ergonomics, occupational health and safety, management systems, and logistics will be studied.

4. METHODOLOGY

This research is a cross-sectional, non-experimental study with a convenience sample of experts. A four-phase methodology, shown in Figure 1, was considered:

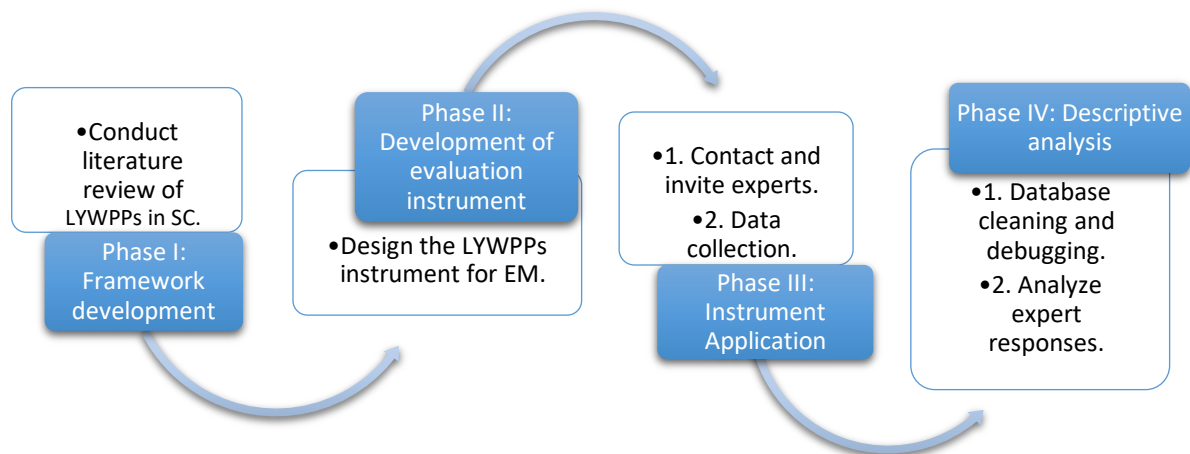


Figure 1. Phases of Methodology used in the research.

4.1 Phase I. Framework development

In this first phase, the theoretical framework was developed, obtained through a systematic literature review (SLR) to propose the dimensions and items that would evaluate leadership practices and worker participation in the supply chain. The PRISMA Statement (Liberati et al., 2009) can be consulted on their website: <http://www.prismastatement.org/>. Figure 2 shows the five stages that governed this process.

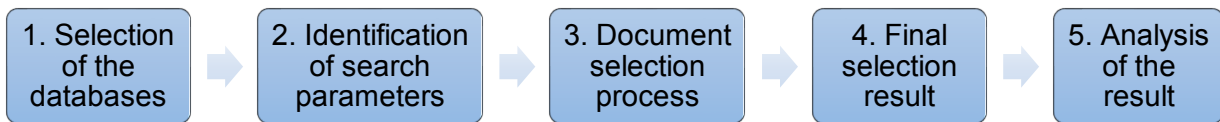


Figure 2. Overview of the approach used in the literature review.

4.2 Phase II. Development of evaluation instrument

For the design of the instrument, the aspects proposed by Hague (2006) and Arribas (2004) were considered, where first, the dimensions of the construct or aspects to be measured were determined, directly related to the research objectives and the information obtained from the literature review. Subsequently, the questionnaire's content, scope, and target population were established. A list of items to be evaluated for each dimension was drawn up, considering the type of question, either open or closed as appropriate, the measurement scale for each, and the coding of the responses (dichotomous, polychotomous, or analogical). The overall design of the instrument was finished once the questions had been defined or formulated and placed accordingly.

Finally, a content review of the instrument was conducted by six experts, as well as a pilot test, and the questions were redefined or eliminated based on the comments of these experts, resulting in a final version of the instrument. Once the design was completed, the form was developed in the online application Jotform®, for which all the sections included in the instrument were represented: 1) Cover page; 2) Introduction; 3) Informed consent; 4) Instructions; and 5) Content. This last section comprises two sections: the sociodemographic data of the expert, the top management leadership, and the workers' participation practices.

4.3 Phase III: Instrument application

This phase began with the invitation to experts to answer the digital instrument to establish the relevance of the leadership and participation practices of workers in SC for EM. Three invitation strategies were used: 1) sending emails to research network contacts, 2) promotion in international forums and congresses, and 3) through the LinkedIn platform. Those who chose to participate were given the evaluation instrument via a link provided by the Jotform® platform, distributed through email, WhatsApp, and social network chats.

4.4 Phase IV: Descriptive analysis

This phase used the SPSS 23® software. The data were explored as part of the cleaning process, which consists of identifying capture errors, extreme values, inadequate behavior, missing data, and unexpected variability. For the descriptive analysis, the median, quartiles, and interquartile range were used as description measures.

5. RESULTS

5.1 Phase 1. Framework development

The search was carried out in the ScienceDirect, ProQuest, and SpringerLink databases, which are the most widely used in the fields of engineering, supply chain, safety, and ergonomics (Rodríguez-Gómez et al., 2023). For this purpose, the search period was established from 2005 to 2022. In addition, the search focused on scientific articles that included keywords in their title and content, using logical operators to refine the search. These parameters are shown in Figure 3

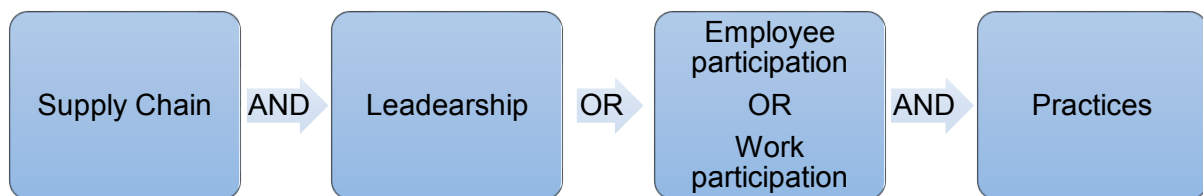


Figure 3. Relationship of keywords and logical operators used in the review.

After a thorough search, we identified 324 articles related to the specified keywords. Additionally, we found five documents from various other sources, including articles, theses, standards, and guides, bringing the total number of papers to 329. Subsequently, we applied inclusion and exclusion criteria to filter the papers.

Inclusion criteria:

1. The paper is published in a scientific journal.
2. The paper is available in English or Spanish.
3. The paper defines the concept of leadership or worker participation.
4. The paper addresses leadership or worker participation practices in the supply chain.

Exclusion criteria:

1. Duplicate papers.
2. Papers include conference posters, abstracts, short articles, and unpublished papers.

3. Articles that do not address SC or TML&WPPs.

Thirty-two documents were found to satisfy the inclusion criteria concerning worker participation and top management leadership. Table 1 shows the final selection of papers.

Table 1. The final selection of papers

| Year | Reference | Construct | |
|------|-------------------------------|------------|--------------------|
| | | Leadership | Work Participation |
| 2005 | (Polanyi et al., 2005) | X | |
| 2007 | (Sutarjo, 2007) | X | |
| 2009 | (Mehrjerdi, 2009) | X | |
| | (ILO, 2009) | | X |
| 2010 | (Closs et al., 2010) | | |
| 2012 | (Hasle & Jensen, 2012) | | X |
| 2013 | (Figueras, 2013) | | X |
| | (Grillo Canelo, 2013) | | X |
| 2014 | (Chiang-Vega et al., 2014) | X | |
| | (Bolis et al., 2014) | X | X |
| | (Mahmoudi et al., 2014) | X | |
| 2015 | (Yazdani et al., 2015) | X | |
| | (Hossain et al., 2015) | X | |
| | (Yorio et al., 2015) | X | |
| | (Samad, 2015) | X | |
| | (Fernandes et al., 2015) | | X |
| 2016 | (Pilbeam et al., 2016) | X | |
| | (Sienkiewicz-Malyjurek, 2016) | X | |
| | (Hedlund et al., 2016) | | X |
| 2017 | (Verma & Chaudhari, 2017) | X | |

| | | | |
|-------------|--|---|---|
| 2018 | (ISO 45001, 2018). | X | X |
| | (Sorensen et al., 2018) | X | |
| | (Prasad et al., 2018) | X | |
| | (Zeinalnezhad et al., 2018) | X | |
| 2019 | (Campailla et al., 2019) | X | X |
| | (Bayram & Üniversitesi İşletme Fakültesi Esentepe Kampüsü, 2019) | | X |
| 2020 | (Yanar et al., 2020) | X | |
| | (Rodríguez-Ruíz et al., 2020) | | X |
| 2021 | (Hoque & Shahinuzzaman, 2021) | | X |
| | (Khalid et al., 2021) | X | X |
| | (García-Aranda et al., 2021) | X | |
| | (Markowski et al., 2021) | X | |

These documents are evidence of the growing interest in the topic and the opportunity to address and study these aspects in greater detail in SC, ergonomics management, and even in the distinct types of management systems. On the other hand, the relevance of the topics of interest on the part of the authors is reflected in the thirty-two documents, since 68.75% addressed the topic of leadership, while 40.62% addressed the participation of workers. Thus, leadership is a practice of greater relevance for the authors.

5.2 Phase 2. Development of evaluation instrument

The dimensions were established based on the content of the literature, where four were determined: 1) Leadership and commitment, 2) Policy, 3) Organization roles, responsibilities, and authorities, and 4) Consultation and participation of workers, since these facilitated the grouping of the different TML&WPPs. It is important to note that considering these dimensions of the leadership and worker participation construct is based on adopting the ISO 45001 standard as a significant structural element, as proposed by Rodríguez-Gámez et al. (2023). This standard plays a crucial role in the development of the EMS, providing a comprehensive framework for environmental management. Furthermore, ergonomics is closely related to health and safety management systems, as both focus on risk analysis from their respective scopes of action. It is important to remember that, within its regulatory framework, the ISO standard establishes an opportunity for inclusion and improvement of working conditions and worker's health. Table 2 shows the relationship of the dimensions with the literature consulted for identifying the different TML&WPPs.

Table 2. Relationship of the dimensions with the literature.

| Construct | Dimensions | Reference |
|---|---|---|
| Top management leadership and worker participation | Leadership and commitment | (Chiang-Vega et al., 2014) (Hossain et al., 2015) (Yorio et al., 2015) (Samad, 2015) (Prasad et al., 2018) (Closs et al., 2010) (Mehrjerdi, 2009) (Zeinalnezhad et al., 2018) (Sienkiewicz-Malyjurek, 2016) (Pilbeam et al., 2016) (Khalid et al., 2021) (Markowski et al., 2021) (García-Aranda et al., 2021) (Yanar et al., 2020) (Verma & Chaudhari, 2017) (Mahmoudi et al., 2014) (Campailla et al., 2019) (Sorensen et al., 2018) (ISO 45001, 2018). |
| | Ergonomics Policy | (Yazdani et al., 2015) (Sutarjo, 2007) (Polanyi et al., 2005) (Yanar et al., 2020) (Campailla et al., 2019) (Bolis et al., 2014) (ISO 45001, 2018). |
| | Organization roles, responsibilities, and authorities | (Yazdani et al., 2015) (Pilbeam et al., 2016) (Campailla et al., 2019) (ISO 45001, 2018). |

| | | |
|--|---|---|
| | Consultation and participation of workers | (Rodríguez-Ruiz et al., 2020) (Fernandes et al., 2015) (Hasle & Jensen, 2012) (Figueras, 2013) (Grillo Canelo, 2013) (Hedlund et al., 2016) (ILO, 2009) (Khalid et al., 2021) (Campailla et al., 2019) (Bolis et al., 2014) (Bayram & Üniversitesi İşletme Fakültesi Esentepe Kampüsü, 2019) (Hoque & Shahinuzzaman, 2021) (ISO 45001, 2018). |
|--|---|---|

The practices identified (see Table 3) in the literature were used as inputs for the design of the evaluation instrument. In addition, the practices and requirements of ISO 45001 were used as the basis for the instrument's design. Also, it was defined that the questions would be closed Likert scale questions, where 1 = Strongly disagree and 5 = Strongly agree concerning the degree of agreement with the leadership practice of top management and employee participation in the SC for EM. Once the instrument was finalized, a content review was conducted by six experts, as well as a pilot test. The questions posed were redefined or eliminated based on the comments of these experts in an iterative process that ensured the instrument's reliability. The last version of the instrument, composed of seventeen items, is shown in Table 3.

Table 3. Items of the last version of the instrument

| Dimensions | Code | Practices / items |
|---------------------------|----------|--|
| | | In your organization, regarding TOP MANAGEMENT LEADERSHIP AND WORKER PARTICIPATION in ergonomics management (EM): |
| Leadership and commitment | TML&W P1 | Top management demonstrates leadership and commitment by assuming full responsibility for injury prevention, health impairment, accountability, and the provision of safe and healthy workplaces and activities. They also promote worker consultation and participation without retaliation by directing and supporting them to improve EM's effectiveness. |
| | TML&W P2 | Top management demonstrates leadership and commitment by establishing the ergonomics policy and objectives, supporting the formation of the health and safety committee, and ensuring the availability of the necessary resources. |
| | TML&W P3 | Top management's leadership and commitment are evident in their responsibility to ensure the achievement of planned results in the EM. They communicate the importance of effective management and promote continuous improvement. |

| | | |
|---|-----------|---|
| | TML&W P15 | Top management raises employee awareness and provides support and timely feedback. |
| Ergonomics Policy | TML&W P4 | Top management is unwavering in their commitment to implementing and maintaining a documented, communicated, and relevant ergonomics policy. This policy includes a commitment to comply with legal and other relevant requirements and to eliminate or reduce ergonomic hazards. |
| | TML&W P5 | The ergonomics policy is kept available (documented), communicated, and relevant. |
| Organization roles, responsibilities, and authorities | TML&W P6 | Top management ensures that responsibilities and authorities for roles are assigned, communicated, and documented. |
| | TML&W P7 | Workers at each level assume responsibility for those aspects of the business unit over which they have control. |
| Consultation and participation of workers | TML&W P8 | Process(es) are in place for employee consultation and participation in the development, planning, implementation, performance evaluations, and actions to improve management. |
| | TML&W P9 | Top management provides the mechanisms, time, training, and resources for consultation and participation. |
| | TML&W P10 | Top management emphasizes employee consultation on stakeholder needs and expectations, establishing ergonomics policy and objectives, and assigning organizational roles, responsibilities, and authorities. |
| | TML&W P11 | Top management emphasizes employee consultation on determining how to comply with legal requirements, applicable controls for outsourcing and purchasing, and what needs to be monitored, measured, and evaluated for performance. |
| | TML&W P12 | Top management encourages employee consultation on planning, implementing, and maintaining audit programs and ensuring continual improvement. |
| | TML&W P13 | Top management promotes workers' participation in determining mechanisms for their consultation, control measures, effective use, and training and evaluation needs. |
| | TML&W P14 | Top management promotes workers' participation in identifying and evaluating ergonomic risks, investigating incidents, and determining corrective actions. |
| | TML&W P16 | Top management promotes the means and invites workers to report incidents, hazards, risks, and opportunities freely and confidently. |
| | TML&W P17 | Workers report risks and hazards freely and confidently. |

These items were used to develop a digital form in the Jotform® platform (<https://www.jotform.com/>) to facilitate its application and data processing.

5.3 Phase III: Instrument Application

A total of 286 invitations were sent electronically, but only 34 experts responded to the evaluation instrument. The experts have at least five years of experience in one of the areas of knowledge (Ergonomics, Occupational Health and Safety, Management Systems, and Logistics). 76.4% are men, and 23.6% are women. They are from Mexico (64.71%), South America (32.31%), and Cuba (2.94%). Of these, 64.70% belong to the private sector and the rest to the academic area.

5.4 Phase IV: Descriptive analysis

The values of the descriptive measures obtained from the experts' responses are shown in Table 4.

Table 4. Medians, Quartiles, and Interquartile Ranges of the dimensions of top management leadership and employee participation

| Dimensions | Code / Item | Median ^a | Quartiles ^b | | | IQR |
|---|-------------|---------------------|------------------------|------|------|------|
| | | | 25 | 50 | 75 | |
| Leadership and commitment | TML&WP1** | 4.50 | 3.6 | 4.50 | 5.00 | 1.40 |
| | TML&WP2** | 4.48 | 3.6 | 4.48 | 5.00 | 1.40 |
| | TML&WP 3 | 4.27 | 3.29 | 4.27 | 4.92 | 1.63 |
| | TML&WP15* | 4.04 | 3.20 | 4.04 | 4.72 | 1.52 |
| Ergonomics Policy | TML&WP4** | 4.37 | 3.42 | 4.37 | 5.00 | 1.58 |
| | TML&WP5** | 4.41 | 3.45 | 4.41 | 5.00 | 1.55 |
| Organization roles, responsibilities, and authorities | TML&WP6* | 4.04 | 3.24 | 4.04 | 4.75 | 1.51 |
| | TML&WP7 | 4.22 | 3.35 | 4.22 | 4.85 | 1.50 |
| Consultation and participation of workers | TML&WP8 | 4.15 | 3.28 | 4.15 | 4.78 | 1.50 |
| | TML&WP9 | 4.31 | 3.5 | 4.31 | 4.90 | 1.40 |
| | TML&WP10* | 4.08 | 3.06 | 4.08 | 4.79 | 1.73 |
| | TML&WP11* | 4.00 | 2.89 | 4.00 | 4.74 | 1.85 |
| | TML&WP12 | 4.16 | 3.24 | 4.16 | 4.84 | 1.60 |
| | TML&WP13* | 4.08 | 3.25 | 4.08 | 4.73 | 1.48 |
| | TML&WP14 | 4.28 | 3.17 | 4.28 | 4.96 | 1.79 |
| | TML&WP16** | 4.41 | 3.64 | 4.41 | 5.00 | 1.36 |
| TML&WP17 | 4.32 | 3.50 | 4.32 | 4.93 | 1.43 | |

Note:

* Top management leadership practices and worker participation of lesser consensus.

** Top management leadership practices and worker participation of highest consensus.

^a Median for pooled data,

^b Quartiles with pooled data.

IQR: Interquartile range.

From the highest medians and smallest interquartile ranges for each practice, it is determined that the experts have high agreement that the best practices of top management leadership and employee participation in SC for EM are:

1. Top management should take full responsibility for injury prevention, health impairment, accountability, and the provision of safe and healthy activities and workplaces.
2. Top management should establish the ergonomics policy and objectives, support the formation of the health and safety committee, and ensure the availability of the necessary resources.
3. Top management should implement and maintain a documented, communicated, and relevant ergonomics policy committed to complying with legal and other relevant requirements and eliminating or reducing ergonomic hazards.
4. The ergonomics policy is kept available (documented), communicated, and relevant.
5. Top management should promote the means and invite workers to report incidents, hazards, risks, and opportunities freely and confidently.

For all TML&WPPs, the ratings of more than half of the experts agree that organizations should implement and evaluate the level of EM considering these practices. These practices evaluate the level of EM and play a crucial role in assessing the level of leadership and worker participation within the SC, enabling each member to contribute to the balance and performance of the SC and its partners.

Defining the best TML&WPPs in the SC related to EM is essential since their compliance can prevent illnesses due to dysergonomic factors and improve the SC's overall efficiency and productivity by implementing ergonomics projects or programs in conjunction with benefits for SC members. In addition, it is feasible to evaluate the SC's EM level through compliance with the TML&WPPs.

6. CONCLUSIONS

In conclusion, it is essential to evaluate the ergonomic aspects inherent to the working conditions using an adequate ergonomics program in the absence of an EMS that offers an evaluation of good practices and EM requirements in the SC (Rodríguez-Gómez et al., 2023). Considering these considerations and the literature, top management leadership and worker participation practices (TML&WPPs) are recognized as fundamental elements for the design of the EMS (Rodríguez-Gómez et al., 2023). They are also considered critical factors that significantly influence EM, as both elements contribute significantly to the success of ergonomic programs and can positively impact employee health, safety, and

productivity. So, it is expected that TML&WPPs will also be present in the SC links for ergonomics management. The overall efficiency of the SC can be improved by complying with them and implementing ergonomics projects or programs that benefit the members of the SC. In addition, it is feasible to evaluate the SC's level of EM through compliance with them. The objective was met since the main TML&WPPs recommended by the experts were determined, in which the leadership and commitment of top management in establishing the ergonomics policy and objectives aimed at compliance with legal requirements, injury prevention, health care, as well as the provision of safe and healthy activities and workplaces, stand out. In addition, top management leadership must support the formation of the health and safety committee and ensure the availability of the necessary resources for implementing ergonomics programs and promote consultation and participation of workers to contribute to the effectiveness of the EM.

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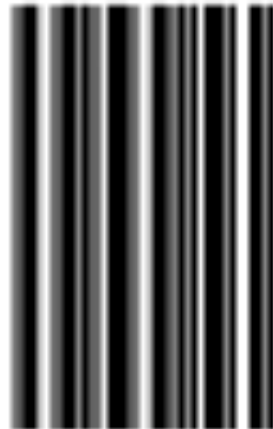
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