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Susana Viegas, Lisbon School of Health Technology - IPL, Portugal

Teresa Patrone Cotrim, Ergonomics Dep., FMH, University of Lisbon, Portugal

Waldemar Karwowski, University of Central Florida, USA

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Companies' OHS Internal Structures: Types and theoretical foundations

Cristian dos Santos Castillo¹; Pedro Miguel Arezes¹; Mohammad Shahriari²

¹ University of Minho, Portugal

² University of Necmettin Erbakan, Turkey

ABSTRACT

An organization manages to regulate, standardize and optimize its operations in a way that places health and safety first by considering Health, Safety, Environment and Ergonomics (HSEE). In order to provide a theoretical foundation for Companies' Occupational Health and Safety Internal Structures (COHSIS) allowing the focus on safety, COHSIS and its fundamentals were reviewed and described based on a brief literature review, which have included both papers published in journals, as well as works made available by selected organizations with mature safety culture. Three COHSIS were defined for description of its fundamentals, enabling improve the usability of its terminologies and provide the mentioned theoretical foundation.

Keywords: Companies' Occupational Health and Safety Internal Structures (COHSIS), brief literature review, terminologies, fundamentals

1. INTRODUCTION

An organization manages to regulate, standardize and optimize its operations in a way that places health and safety first by considering HSEE. The integrated HSEE system introduces a systematic mechanism, integrating the structure of the human and organizational systems with a conventional Health, Safety and Environment (HSE) system and is used to enhance teamwork, reliability, availability, maintainability and safety (Asadzadeh *et al.*, 2013).

In order to provide a theoretical foundation for COHSIS allowing the focus on safety, COHSIS and its fundamentals were reviewed and described. This theoretical foundation was based on a brief literature review, including both papers published in journals, as well as works made available by selected organizations with mature safety culture (Bergh & Sundh, 2010).

The main objectives of this paper are presented in the following order: i). Identify the main type of COHSIS, ii). Define the most adequate terminologies for COHSIS, and iii). Describe the fundamentals/principles of COHSIS.

2. LITERATURE REVIEW: TERMINOLOGIES AND FUNDAMENTALS OF COHSIS

The description of the fundamentals of COHSIS is related to two criteria included in this section, in the following order: i). To identify terminologies of COHSIS, allowing the definition of the most adequate terminologies and ii). To find organizations with mature culture regarding their COHSIS or its individualized structures allowing to select some of these main organizations.

The COHSIS investigated on this work were described in relation to the two criteria above and for each of these structures as follows:

- Internal Structure 1 (IS1); Terminology: HFE - Human Factors / Ergonomics studied based on Dul *et al.* (2012).
Fundamentals: Ergonomics or human factors is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system (in this paper the system approach focuses on COHSIS mainly based on the work from Saksvik & Nytr (1996), Changchit & Holsapple (2001), Chen & Yang (2004), Levine & Toffel (2010) and Asadzadeh *et al.* (2013)), and the profession that applies theoretical principles, data and methods to design in order to optimize well-being and overall performance (IEA, 2000). Ergonomics is concerned with all those factors that can affect people and their behaviour, covering a broad range of programs from workplace design / equipment design to work regulation / communication / organization / system design (Asadzadeh *et al.*, 2013, Azadeh *et al.*, 2008a).
- Internal Structure 2 (IS2); Terminologies: HES - Health, Environment and Safety (Saksvik & Nytr, 1996) or SHE - Safety, Health and Ergonomics (Munck-Ulfsfält *et al.*, 2003); Safety, Health and Environment (Shahriari, 2013, Dodsworth *et al.*, 2007); Safety, Health and Environmental (Hassim & Hurme, 2010) or HSE - Health, Safety and Environment (Asadzadeh *et al.*, 2013, Shell Canada Limited, 2004).
Fundamentals: The company commitment and policy on Health, Security, Safety, the Environment (HSSE) and Social Performance (SP) (which are framed as 'Shell SHE model' based on Shahriari (2013)) applies / reflects the integrated way of the work across company and is designed to help protect people and the environment, it includes (Executive Committee of the Shell International Limited, 2009): (i) aims aligned with the company general business principles on how the employees operate and work to involve communities close to its operations, and (ii) all associated companies / contractors / joint ventures under its operational control must manage HSSE and SP in line with the commitment and policy. Occupational HSE management systems at the operational level will strive to eliminate injuries, adverse health effects and damages to the environment (Asadzadeh *et al.*, 2013). Company sustainable solutions' triple bottom line (human, environmental and financial performance) approach has produced results for clients worldwide, in industries from petroleum refining to mining, in which its customized solutions help maximize workplace safety, operational efficiencies, environmental management, and process technologies (DuPont, 2014).

- Internal Structure 3 (IS3); Terminology: HSEE - study on Health, Safety, Environment and Ergonomics done based on Azadeh *et al.* (2008a), Azadeh *et al.* (2008b), Azadeh *et al.* (2009), Azadeh *et al.* (2010) and Asadzadeh *et al.* (2013).
Fundamentals: The integrated HSEE system introduces a systematic mechanism, which integrates the structure of the human and organizational systems with a conventional HSE system and is utilized in the organizational management to enhance operational regulation / standardization / optimization, team-work, reliability, availability and maintainability; placing safety and health first (Asadzadeh *et al.*, 2013, Azadeh *et al.*, 2009, Azadeh *et al.*, 2008b, Azadeh *et al.*, 2010, Changchit & Holsapple, 2001, Chen & Yang, 2004, Levine & Toffel, 2010).

3. RESULTS AND DISCUSSION

The three terminologies of COHSIS defined in this paper were: HFE (Human Factors / Ergonomics), SHE (Safety, Health and Environment), and SHEE (Safety, Health, Environment and Ergonomics). The main selected organizations with mature culture in these structures or its individualized structures were: DuPont (based on Shahriari (2013) and DuPont (2014)), Shell International Limited (based on Shell Canada Limited (2004), Executive Committee of the Shell International Limited (2009) and Shahriari (2013)), and Volvo Car Corporation (based on Munck-Ulfsfält *et al.* (2003)). The fundamentals of the IS3 are coincident with the fundamentals' combination of IS1 and IS2, with the exception of the component (related to IS2) regarding the company commitment and policy include aims aligned on how the employees operate and work to involve communities close to its operations (Executive Committee of the Shell International Limited, 2009). These results, including the fundamentals of COHSIS, provide a proper context for identifying the need to review and describe the key-elements (e.g. justified intervention measures) of COHSIS to be included as its representative concepts (e.g. sub-dimensions of the key elements of COHSIS).

These key-elements are more suitable to investigate a way to implement the integrated HSEE (or 'SHEE', as proposed in this work) system which introduces a systematic mechanism; integrating the structure of the human and organizational systems with a conventional HSE (or 'SHE' based on Munck-Ulfsfält *et al.* (2003), Dodsworth *et al.* (2007) and Shahriari (2013)) system. In addition, the mentioned mechanism is utilized to enhance team-work, reliability, availability, maintainability and safety, in which an organization manages to regulate, standardize and optimize its operations in a manner that places safety and health first (Asadzadeh *et al.*, 2013, Azadeh *et al.*, 2009, Azadeh *et al.*, 2008b, Azadeh *et al.*, 2010, Changchit & Holsapple, 2001, Chen & Yang, 2004, Levine & Toffel, 2010).

4. CONCLUSIONS

A theoretical foundation was developed for the identification and definition of COHSIS, and to make a description of the fundamentals, or principles, of these structures through a brief literature review.

To improve the usability of the use of such concepts, the 3 terminologies of COHSIS defined were HFE, SHE and SHEE; and the main selected organizations with mature culture in COHSIS considered in this study were DuPont, Shell International Ltd. and Volvo Car Co. The company commitment and policy that include aims aligned on how the employees operate and work to involve communities close to its operations (Executive Committee of the Shell International Limited, 2009) is the only component related to IS2 that is not the combination of the fundamental from IS1 and IS2. A proper context for identifying the need to review and describe the key-elements of COHSIS to be included as its representative concepts is provided by the fundamentals of COHSIS and the results of this study.

With the intent of improving the operationalization of the theoretical foundation provided, a strategy to the characterization (based on the literature review) of the key-elements to be considered as concepts of COHSIS should be further investigated. After the definition of the most adequate methodology for identifying the mentioned concepts for comparison between the different COHSIS, further work will be developed and a guideline for evaluation of COHSIS will be proposed.

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