Model of OHS Management Systems in an Excellent Company

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Abstract. In the paper the model of the Occupational Health and Safety management system (OHS management system model.) implementable in organizations striving for continuous improvement and excellence is presented. The concepts of excellent organizations and organizational maturity are explained. The model presented by the author is the result of the case study based research conducted in five manufacturing companies in the Wielkopolska region. All the analyzed companies in a very clear way focus their attention on the issue of improving OHS management system and are interested in are assessment of organizational maturity in this area and meet the requirements of any health and safety excellence model. The basic assumption of the model is application of the continuous improvement principle at three management levels: strategic, tactical and operational. As an extension of the model presented, the option of the implementation of Deming's fourteen principles to the area of health and safety management is introduced. Approach to the management of health and safety presented points to the ever increasing interest of enterprises in these issues, in addition it proves the fact that achieving and improving organizational maturity is only possible with regard to issues of health and safety.

Keywords: OHS management model · Excellence model · Organizational maturity

1 Introduction

The contemporary market and its tendency to continuous change and growing demands of the relevant stakeholders of organizations, force the search for solutions that ensure achievement of success in the long-term. Short-term thinking about the results of the organization does not guarantee success, and moreover is not sufficient to provide competitive advantage over the world-class companies. The desire to increase the value of companies and their ability to compete not only in domestic market but also in foreign one forces organizations to perform in a way, which in addition to making profit will enable development of a number of additional benefits for both the company and its stakeholders. This is directly linked with the idea of excellence and continuous improvement. The benefit is undoubtedly improvement of safety in organizations, as well as care for the health and safety of internal stakeholders. Safety should be considered here both in broad terms, understood as the absence of risk or protection against general risk, as well as in

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narrower terms related strictly to production systems, implemented processes, people functioning in these systems and processes, as well as broad technical safety. Safety correlates with multiple dimensions of an organization, including reliability, but also other aspects of safety, such as financial or social, should be taken into account [1].

In the area of health and safety management in Poland the most popular models of management include Polish standard PN-N 18001:2004 and international standard OHSAS 18001:2007. The first of these standards defines the occupational safety and health as a state of conditions and the organization of work and behavior of employees to ensure the required level of protection of health and life against hazards in the work environment [20]. This definition clearly indicates that the object of interest in the management of occupational health and safety is a worker, that is the most important internal stakeholder, who is exposed to a nuisance, and harmful and dangerous factors. Thus, the objective of management of health and safety should be to reduce this exposure, inter alia by ensuring safe working environment. Requirements for safety and health at work may also include protection of persons exposed to work-related activities outside the immediate workplace, which is indicated in the OHSAS 18001: 2007 [18].

The objective of this article is to present a model of OHS management systems in an excellent company, which is the one for which the achievement of results at the highest level is the basic premise. The presented model takes into account the results of a case study conducted in five large companies in the Wielkopolska region. During the development of health and safety management model numerous aspects determining the level of organizational maturity in the area of health and safety management were taken into account, among which are:

- understanding the needs of employees,
- involvement of people,
- the level of motivation,
- safety culture awareness,
- improvement of the hygiene factors,
- ergonomic quality,
- quality of working conditions,
- industrial fatigue,
- ergonomic design criteria,
- occupational health and safety,
- optimization of the functions of equipment,
- safety of technical equipment,
- understanding the risks,
- benchmarking.

2 Improvement and Organizational Maturity in the Area of OHS Management

Improvement is a term often used in practical operation of enterprises. This is certainly related to the growing importance of management concepts such as TQM or Kaizen. Focusing on the implementation of tasks aimed towards continuous improvement is a

natural action of companies managers of which understand the relationship between the economic results achieved and the continuous improvement of the functioning of the internal processes. The term improvement refers to projects undertaken to obtain additional benefits for the organization and its customers [10]. Analysis of the operation of enterprises in the management of occupational safety and health leads to the conclusion that improvement role is extremely important. System approach in this area, and operating in the traditional terms of the well-known Deming cycle: Plan-Do-Check-Act [3] is necessary to achieve long-term effects in striving for improvement of the area of health and safety in organizations. Undertaking one-time corrective actions aimed at the minimization of the negative influence of environment at human labor will not lead to the desired effects.

Focus on the issues of improvement in the area of health and safety has led to definition of the term of quality of working life, understood as the degree of satisfaction of employees with work, working conditions and, in particular, with such features as the quality of working conditions [4]:

- fair salary,
- occupational satisfaction (I like what I do),
- supervisors' respect,
- good organization of work and workstations,
- safety, hygiene, ergonomics,
- opportunity to prove one's independence (strict definition of responsibilities and rights).

Achieving this level of quality of working conditions that would guarantee benefits to the organization and its stakeholders requires the use of appropriate measures not only at the strategic level, but especially at tactic and operational levels (Fig. 1), with special emphasis on the human factor. The human factor can be considered as a determinant of obtaining the desired results [8].

Fig. 1. Strategic, tactic and operational level in health and safety management

The implementation of the activities presented at all levels of health and safety management has an impact on the level of organizational maturity in this field. The idea is that the more "mature" organization, the greater is its ability to carry out processes in a way to achieve better product quality, vast improvements in the safety and thus better business results [2, 14].

Unfortunately, health and safety are rarely viewed as a main area of interest in business. However workers' health in a great manner influences the financial state of a company and next the company's development. While the managerial staff is interested mainly in the influence of workers' state of being on the company's business efficiency the workers are interested in the managerial and working processes that influence their health. Both aspects must be considered paralelly [21].

3 Excellent Organizations and Excellence Models in Health and Safety Management

The term excellent organization is an agreed idea referring to organizations heavily focused on continuous improvement, which enabled them to achieve the best possible position in their class. Improvement understood as a project undertaken to obtain additional benefits for the organization and its clients should focus on incremental improvements in every aspect of business, so that organizations could become the best in their class. Mature organization is the striving for achieving sustained success which is the result of the ability to achieve and maintain objectives in the long term [9]. Analyzing opportunities for improvement it is necessary to use the standards and guidelines to guide the organization's processes for continuous improvement, but also look for opportunities to recognize the effects of actions taken. This is why the models of excellence (e.g. MNBQA, EFQM) were developed, and meeting the criteria presented in them enables companies obtaining formal confirmation of improvement of their performance. Models of excellence, however, are still strongly associated with the area of quality management well developed in organizations. This is wrong thinking, because the success of an organization depends on the consideration of, and the strategy of sustainable development, which has become not only an idea, a political program, and the concept of loss prevention, but the paradigm of efficient management [23], taking into account the issues of health and safety management. Accordingly, excellence models were developed targeting the organization in such a way that they are aimed at improving the working conditions. A selection of these is presented in Table 1.

The evidence of interest in improving corporate issues is also developing by the most recognized manufacturers their own models of excellence defining world-class production standards (World Class Manufacturing - WCM). Among Polish organizations the excellent example is SABMiller's WCM model called "Manufacturing Way" [10] as well as the WCM model by Fiat Auto Poland [15]. Analyzing these models of excellence leads to the conclusion that in each of them one of the pillars is safety, which essence in the simplest terms, is the continuous minimization of accidents and incidents potentially dangerous, as well as improving the working environment and conditions.

Table 1. Selected health and safety excellence models

Models	Basic assumptions of the model
OHSAS 18001	Model primarily promotes safe and healthy working environment, offering a structure in which an organization can consistently set and control risks to health and safety, and reduce the likelihood of accidents, which favors the adjustment of applicable regulations and improves overall performance. The model can be used in any organization that wants to implement a formal procedure to reduce the risk to the safety and hygiene of work for employees, customers and members of the public [22]
PN-N 18001	It is the Polish standard that allows to carry out safety and occupational health management system certification. The standard indicates what should be done to effectively predict occurrence of circumstances which expose workers to injury or loss of life and prevent them. In addition, the PN-N standard requires the commitment, expressed in the safety policy, that the organization will act in accordance with applicable law and is committed to continuous improvement of safety management system [19]
International Safety Rating System (ISRS)	Model developed basing on the ISO 9000 series of standards and adapted to the needs of safety and risk management. Focuses on issues that relate to the management system and a loss as a result of accidents, incidents, industrial accidents, fires, explosions, occupational diseases and absenteeism of employees. ISRS takes into account requirements that are included in other international and national norms and standards, such as BS 8800, OHSAS 18001 and BS 18001 [19]
BS 8800	British and the first global standard that specifies guidelines for safety management systems and occupational health. It is worth noting that the standard BS 8800 became the basis for the development of the OHSAS 18001 [19]
Guide of International Labor Organization ILO-OSH 2001	Creates a guide on safety and health management systems. Includes guidelines (mainly organizational and institutional) that are not obligatory because they do not have the force of law, are not a substitute for national law regulations, or any standards. They are designed for the people responsible for the management of occupational health and safety in organizations and are used as practical advice in this area [19]

(*Continued*)

Table 1. (*Continued*)

Models	Basic assumptions of the model
SHE Model	Integrated management model of safety, health and the environment. It should be noted that this is one of the fundamental pillars of TPM. In this area focus is on to create a safe workplace and a surrounding area that is not damaged by their process or procedures. The general aim is to achieve zero accidents. Two factors help people acquire a zero accident – daily practice as part of workplace and strong, visible companywide support [10]

The issue of safety included in the models of excellence in world-class enterprises requires the adoption of a suitable methodology for the management of this area.

4 Health and Safety Management Model

The presented excellence model of OHS Management was developed basing on the results of a case study conducted in five large manufacturing companies in the Wielkopolska region. All of the analyzed companies in a very clear way focus their attention on the issue of improving health and safety management system, are interested in the evaluation of organizational maturity in this area and meet the requirements of any health and safety excellence model applicable.

As a result of the observation, it can be stated unequivocally that quality of work environment as a category itself has gained special importance. Ensuring adequate working environment is one of the primary responsibilities of company's management. Maintaining a working environment able to comply with legal requirements and expectations of stakeholders determines the possibility of obtaining the desired effects, while non-compliance should be treated as an important factor of disturbances [6]. Moreover modern enterprises are forced to constantly improve ways of management and to introduce changes. One of the changes is an alteration of organizational culture and acceptance of participation of employees in designing and implementing new solutions. Striving for general improvement of system efficiency involves joint design of technical and social systems to achieve the best fitness to goals and requirements of system and its parts possible. Not only technical objects, but also workers and workplaces (work environment) require keeping in good condition [11]. The human in technical system can exist in four roles: controller, operator, service technician, and performer. Different configurations of the human-technical object system are closely linked to the issue of the level and type of training of employees, the nature of their tasks and the type of workload [16]. Industrial production is an integrated process where a human plays the most crucial and vital role. The employees' ability to perform tasks at shift contributes to a significant loading of health. Thus, providing them good working conditions is necessary. In order to achieve it, safe and environmental friendly

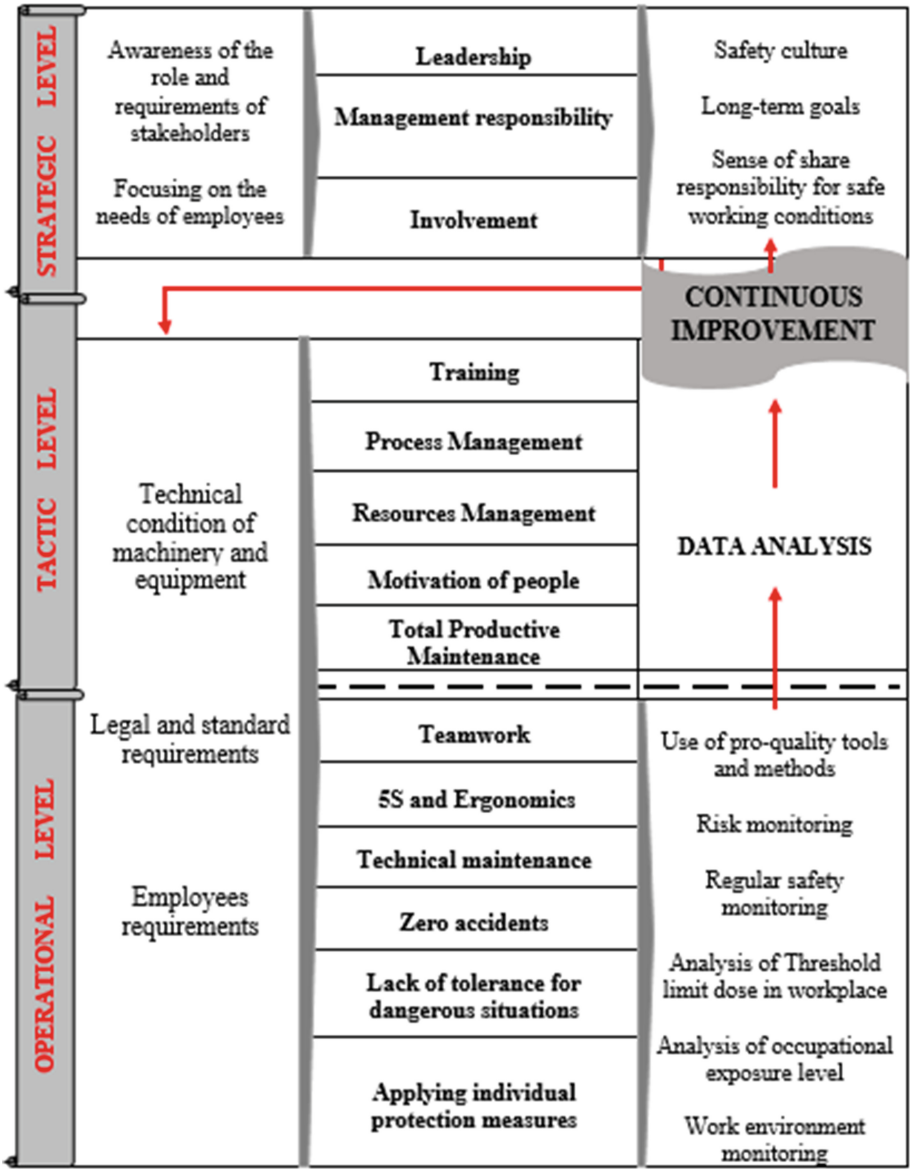

Fig. 2. Framework of the excellent model of OHS Management

systems of work should be assured. It should also be noticed, that in most cases poor working conditions are due to the lack of safety supervision and control [12]. An approach to the problem of analysis of the causes of accidents at work is also an important issue is also. Organizations that devote special attention to this issue gain better experience in eliminating the real causes of dangerous situations. It was noted that in the case of the use of appropriate methods to analyze the causes of accidents,

Table 2. Application of the 14 Deming's principles to health and safety

Deming's principle	Application to health and safety management
1. Responsibility of managers	Define a vision in terms of health and safety consistent with the general policy of the company. Make the leaders aware of the role of the occupational health and safety. Teach them the responsibility for the occupational health and safety, select the rules for implementing the vision and policies adopted with regard to the principle of continuous improvement.
2. New way of thinking	Accept new safety and hygiene of work management philosophies. Determine direction of efforts to realize adopted vision of security. Specify the basic rules applicable in practice in efforts to improve safety and improve the quality of working conditions
3. Lack of belief in efficiency of mass final control	Introduce the issues of quality of working conditions for all the areas of functioning of companies. Evaluation of the quality of working conditions is not only reflected in accidents at work and occupational diseases. Define the factors affecting the quality of working conditions during the performance of manufacturing processes
4. Change in decision making on purchasing concerning the price criteria	Implement method of assessing the cost of safe operation, analyze them, and use the results in deciding whether to allocate resources to different areas of health and safety management. Consider the costs of decentralization. Middle managers should be involved in decision on the necessary purchases (e.g. Personal protection means, training) that contribute to the improvement of the security situation
5. Continuous improvement of processes	Audit, assess, and improve all of the actions taken and affecting the quality of working conditions in order to achieve the highest effectiveness. Focus attention on improving the safety of your process
6. Courses and training	Ensure that all employees are educated, trained and made aware of health and safety. Use modern methods in this area. Improve their competences because once conquered and not embedded they do not

(*Continued*)

Table 2. (*Continued*)

Deming's principle	Application to health and safety management
	guarantee sufficient level of awareness of employees on safe working conditions
7. Leadership	Become a "superleader". Learn to listen to people and their opinions. Teach them to identify problems and solve them. Inform them on the actions taken to improve the level of quality of working conditions. Encourage such actions, constantly help. Encourage your middle managers to inform their superiors on the matters requiring adjustments in terms of quality of working conditions
8. Elimination of fear from management area	Try to make your employees not afraid to talk together about the risks and problems within the quality of working conditions. Teach employees that they should inform about the poor state of the safety, threats, loads not only physical and mechanical but also mental. Ask questions and listen
9. Break barriers in communication	Remove obstacles to cooperation between different levels of health and safety management in the company. Build teams to solve specific problems related to the safety of involving employees at all levels. Top management should play their roles according to the structure of the team and not the company
10. Eliminate slogans and inciting workers to overcome shortages and to a higher level of performance	Eliminate slogans on the safety of work for a real appreciation for the people working to improve safety. Instead of empty words create opportunities for the creation of programs and measures to warn about the dangers in the workplace
11. Limit standards on quantity	Do not impose quantitative targets to improve safety, such as the maximum number of accidents at work. Analysis of statistical data on accidents and occupational diseases is not sufficient for the development of safe behavior in the workplace
12. Remove barriers that rob workers of pride from their job	Ensure appreciation to employees and managers who obtain positive results in terms of safety, both in their workplaces and jobs of their colleagues. Build loyalty systems for those who follow the rules of

(*Continued*)

Table 2. (*Continued*)

Deming's principle	Application to health and safety management
	safety, give a good example and motivate others to follow them
13. Introduce training and self-learning schemes	Introduce the specific forms of professional skills improvement and learning on work safety. Provide a full understanding of employees on roles they play their actions in ensuring an adequate level of quality of working conditions as their decisions and actions affect the overall security posture
14. Commitment of all the employees	Apply the cycle of continuous improvement of all processes to improve the management of quality of working conditions. For this purpose, teach employees and executives using the appropriate methods and tools to identify and analyze problems concerning the quality of working conditions. Develop shared sense of responsibility for the safety and health status of the company

such as 5 Why analysis, FMEA (Failure mode and effects analysis), Pareto-Lorenzo analysis [5] or, for example, Ishikawa Diagram, the results are analyzed in greater depth and the actual causes are traced. The latter tool mentioned, in particular, allows to define the causes of accidents, which in many cases depend on the human factor [7]. Projects undertaken to ensure safety through strict control of the processes in which the main subject is a human and his/her appropriate response to alarms of the system also deserve special attention [17].

All observations made, analyzes conducted in the surveyed enterprises, as well as the conceptual framework resulting from the application of the principles of continuous improvement led to development of the excellent model of OHS management system (Fig. 2) (Table 2).

5 Conclusion

Excellent company is not just the one that effectively eliminates waste, depletes cost-absorption of resources, has a passion for standards, boasts the best leaders and dedicated employees. Excellent company is also the one for which primary value is the sensitivity to the safety of the workers. The managers of excellent companies have the expertise and are fully aware of the risks which are inherent to the implementation of processes, manufacturing of products or providing services. Striving to achieve the safety at the highest level brings many financial and social benefits, and above all helps to reduce the number of accidents, to develop a broad culture of prevention, improve

the ergonomic quality of work environment and develop human sensibility and lack of tolerance to safety and hygiene deficiencies.

The model of health and safety management developed indicates what actions should be taken at different levels of organization management to achieve the benefits listed above. In addition, implementation of an attitude focused on continuous improvement of the organization, and of the fourteen Deming's principles as natural determinants of decision-making can bring nothing but benefits to organizations.

The issue of safety and health management is very important for enterprises striving for improving their maturity. Organizations focused on continuous improvement of their performance are not just interested in fulfilling the legal requirements relating to safety. Protecting the health of workers in the workplace and beyond, continuous improvement of competence in the area of safety excellence and taking actions to improve the design of technological processes and work space with respect to safety principles become unconditional requirements. Polish companies seeking to improve standards in the area of occupational health and safety, reaching to the PN-N 18001: 2004 are provided solely with the set of hints on the general direction of actions taken to plan and formulate a declaration aimed towards continuous improvement of safety. The presented model is currently being verified in the industrial environment, and the development of its components with specific guidance on implementation can bring tangible benefits to businesses. The further research of the author seeks to validate the model presented in the realities of the functioning of Polish manufacturing enterprises.

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