

Workers' Involvement—A Missing Component in the Implementation of Occupational Safety and Health Management Systems in Enterprises

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Effective implementation of occupational safety and health (OSH) legislation based on European Union directives requires promotion of OSH management systems (OSH MS). To this end, voluntary Polish standards (PN-N-18000) have been adopted, setting forth OSH MS specifications and guidelines. However, the number of enterprises implementing OSH MS has increased slowly, falling short of expectations, which call for a new national policy on OSH MS promotion. To develop a national policy in this area, a survey was conducted in 40 enterprises with OSH MS in place. The survey was aimed at identifying motivational factors underlying OSH MS implementation decisions. Specifically, workers' and their representatives' involvement in OSH MS implementation was investigated. The results showed that the level of workers' involvement was relatively low, which may result in a low effectiveness of those systems. The same result also applies to the involvement of workers' representatives and that of trade unions.

occupational safety and health management management system workers' involvement
participative approach safety culture continuous improvement

1. INTRODUCTION

1.1. Legal Context and Voluntary Standards

The provisions of the Polish Labour Code place full responsibility for the protection of workers' safety and health in the enterprise on the employer. They require a range of actions of an organizational nature to be taken, aimed at the prevention of occupational hazards and risks. Detailed requirements, contained in executive instruments, concern various aspects of occupational safety and health (OSH) management, and hence determine the basic structure of the required OSH management system (OSH MS). The concept of such a system is consistent with the requirements of the main European Directive

89/391/EEC on OSH (the Framework Directive) [1], which Poland started to transpose into her law in the latter half of the 1990s as part of the process of her integration with the European Union (EU).

To support employers in introducing system-based OSH management methods aimed at achieving at least the level required by the Framework Directive and to proceed with further improvements, a series of three voluntary standards were developed and adopted in Poland: PN-N-18001:1999 [2], PN-N-18002:2000 [3] and PN-N-18004:2001 [4]. The first standard contains OSH MS specifications and provides a basis for certifying systems, while the other two are practical guidelines for occupational risk assessment and OSH MS implementation. The OSH MS model adopted in the standards of the

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PN-N-18000 series is based on the PDCA (Plan-Do-Check-Act) cycle and is compatible with the Environmental Management System (EMS) and Quality Management System (QMS) models described in the ISO 14001:1996 [5] and ISO 9001:2000 [6] standards respectively.

In view of the increasing interest in developing and establishing OSH MS international standards in various countries worldwide, in 1996 the International Organization for Standardization (ISO) analysed the need to initiate an OSH MS standardization process at the international level [7]. Nevertheless, on the basis of the discussions held during an international ISO workshop and an analysis of the results of the voting held among national standardization bodies, in 1997 ISO decided not to continue further work on standardizing OSH MS. The main reason for this decision consisted in considerable differences in methods and culture of OSH between highly developed and developing countries, primarily expressed in different OSH solutions in their respective legal systems. Another attempt by ISO to undertake work related to OSH MS international standards was made in 1999. However, in 2000 ISO members rejected that proposal. This situation was caused, among others, by the view that ISO was not an appropriate organization to lay down requirements for the relations between employers and employees, which are the basis of efficient OSH management.

ISO's decision not to undertake activities aimed at developing standards for OSH MS generated other international initiatives. One of them resulted in OHSAS 18001 [8] being developed and adopted in 1999. However, as this document was not generated within a formal standardization process, it is not recognized as an international standard. Although the Polish PN-N-18001:1999 standard [2] and the OHSAS 18001 specifications [8] were published in the same year and have the same number, they were developed independently of each other. As both of them were based on the same model, i.e., the ISO 14001:1996 standard [5], the structure of those documents is similar, and—if some minor differences are disregarded—they can be treated as compatible with each other.

Being aware of the need to establish international rules for OSH MS, in 2001 the International Labour Organization (ILO) adopted and published ILO-OSH 2001 guidelines [9]. They are not mandatory, but in many countries OSH MS have been promoted by transposing the ILO guidelines into national legal systems and normative documents, or at least by publishing them in national languages. In Poland, it was assumed that the ILO guidelines would be transposed on the national level by way of amending the PN-N-18000 standards. As a result, a new version of the PN-N-18001 [10] standard was adopted in 2004, in line with the ILO guidelines.

1.2. Promotion of OSH MS

The standard-setting measures mentioned in section 1.1 have triggered an increase in the number of enterprises implementing OSH MS in Poland. At the same time, the systems were found to have contributed to the improvement of working conditions. This was reflected, among others, in significantly lower incidence rates of accidents at work in enterprises that implemented elements of OSH MS [11]. However, the increase in the number of such enterprises did not meet the original expectations. According to the figures available from the Polish National Labour Inspectorate, this number is currently estimated at about 300. The enterprises implementing OSH MS are mostly large organizations employing over 250 workers. Given the large number of enterprises in Poland, the adoption of a system approach to OSH management does not seem to be sufficiently common. This situation is more pronounced in small and medium-sized enterprises, a negligible percentage of which implements OSH MS.

In order to promote OSH MS among as large a number of enterprises as possible, in 2002 the Central Institute for Labour Protection – National Research Institute (CIOP-PIB) launched a project aimed at supporting the development of a comprehensive national policy for OSH MS promotion. The results of the project were expected to contribute to an increase in the number of enterprises with OSH MS, and hence to an improvement in working conditions

nationwide. The adopted approach was also consistent with the ILO-OSH 2001 guidelines [9], which recommend that a coherent national policy on OSH MS should be formulated and implemented. According to those guidelines the following important aspects should be taken into account in a national policy:

- promoting implementation of OSH MS as part of the overall management of an organization;
- promoting workers and their representatives at organization level;
- implementing continual improvement while avoiding unnecessary bureaucracy, administration and costs;
- promoting collaborative and support arrangements for OSH MS at the organization level by labour inspectors, OSH services and other services, and channelling their activities into a consistent framework for OSH management.

In view of those aspects, it was proposed to base the definition of a national policy on OSH MS on the identification of factors motivating enterprises to implement OSH MS. Other factors of key importance included the identification of the roles of different organizational subunits in decision processes concerning OSH MS implementation and improvement.

1.3. Workers' and Their Representatives' Involvement and the Effectiveness of OSH MS

In general, the involvement of workers and their representatives is a fundamental component of OSH management since it makes it possible to achieve the main goal of OSH MS implementation, namely, improvement in working conditions for the benefit of both employees and employers. In particular workers' involvement plays a crucial role in risk assessment and prevention, and also facilitates workers' rights to defend their health and safety [12]. The involvement of workers and their representatives, or an even broader commitment of trade unions, may also have a significant influence on the performance of the so-called "integrated management systems", which in addition to OSH

cover other management areas such as quality or environmental management [13]. From this perspective, workers' involvement constitutes part of a participative approach to sustainable business development, where workplace democracy plays a central role in the reorganization of work towards sustainable production forms.

Despite the provisions of the ILO guidelines [9] providing a firm international framework for widespread consideration of worker's involvement as an essential element of OSH MS, there is still a need for research evidence on how to deal with this aspect in shaping an enterprise's safety culture. According to Hale [14] one of the important issues for further debates on safety management is to find if workers are perceived as important partners in defining how to achieve safety in the enterprise, or not.

The involvement of workers in OSH-related activities helps to promote effectively prevention principles within the enterprise and supports the understanding of safe practices amongst the workforce [12], whereas in enterprises where employers conduct OSH management activities without consulting workers, performance indices (such as injury rates) are worse than in enterprises where such consultations take place [15]. Taking that into account, the positive impact of worker involvement and consultation on OSH is, e.g., emphasized in a declaration of the Health and Safety Commission [16], which has been adopted in the UK together with a summary of strongly supportive research evidence [17].

In most cases workers' involvement in OSH-related activities does not occur spontaneously; it should be stimulated and supported by managers convinced of potential benefits, both in the economic aspects and in an improvement in the management of the enterprise. The Finnish Tuttava programme [18] has been an example of efficient organizational arrangements encouraging workers' involvement. The programme is based on teams composed of workers, supervisors and managers, appointed to implement safety- and production-related improvements. Applications of Tuttava in various enterprises have proved its high efficiency in reducing accidents at work. The programme also results in a reduction in

the rate of absenteeism and other production losses. The efficiency of such arrangements was also reported in the Polish-Swedish OSHMAN project on implementing OSH MS in selected Polish enterprises with the use of Scandinavian techniques stimulating workers' participation [19]. Therefore recognition in ILO guidelines [9] of workers' and their representatives' involvement as the essential element of OSH MS has gained its strong empirical proof.

2. METHODOLOGY

2.1. The Survey

In this study, a survey of enterprises operating in Poland was conducted. The companies were randomly selected from among those with OSH management systems (which meet the PN-N-18001 standard [2] requirements) already in place or those currently implementing such a system. Invitations to participate in the survey were accepted by 45 of the 60 invited enterprises. In 2 out of the 45 enterprises the survey was not completed due to organizational constraints. Another 3 were surveyed, but the results were not accepted for analysis due to some deficiencies in the collected data. Finally, data from 40 enterprises were statistically analysed. Of the 40 enterprises, 2 were small (fewer than 50 workers) and 6 were medium-sized (between 50 and 250 workers). The others were large: 17 had 250–1000 workers, and 15 had more than 1000 workers.

The survey involved interviewing four groups of people who had participated, to various extent, in the OSH MS implementation decision process. Thus the following respondents were interviewed:

1. the most senior managers of the enterprise (MSM),
2. representatives of the top management for OSH MS implementation and maintenance (RTM),
3. safety and health managers employed by the enterprise (SHM),
4. workers' safety representatives (WSR) appointed by trade unions or elected by the staff.

The interviews were carried out by two researchers from CIOP-PIB and four graduate students of economics. All those people received necessary instructions and were provided with sets of five structured interview questionnaires containing open- and closed-ended questions (162 questions in total). The first questionnaire was designed to gather general information about the enterprise, while the other four were addressed to specific groups of respondents. The interviews in one enterprise, held on its premises and conducted by one person, lasted 4–6 hrs.

2.2. Data Analysis

The data collected from 40 enterprises were statistically analysed with Statistica v. 6. All the results were assembled and described in detail in the final project report [20], which constitutes a large pool of information for further consideration in activities aimed at promoting OSH MS. The present article focuses on a small part of the survey results on the involvement of workers and their representatives. Other factors underlying decisions on OSH MS implementation will be analysed and discussed in other publications.

3. RESULTS

3.1. Comparison of Factors Affecting Decisions on Implementation of OSH MS

The data produced by the survey made it possible to evaluate the influence of various factors on decisions concerning implementation of OSH MS in enterprises. That influence was examined on the basis of subjective ratings given by the four groups mentioned in section 2.1. The influence was rated on a 5-point Likert scale. Table 1 presents mean rating values (M) with respective standard deviation (SD) and confidence intervals ($M_{\text{li}} < M < M_{\text{ui}}$) for the .95 level of certainty calculated for various factors and groups of respondents.

Factors 1–5 listed in Table 1 are classified as “external” since they are related to causes outside the enterprise. Therefore using the same criterion, No. 6–10 are classified as “internal”.

TABLE 1. Ratings of the Influence of Various Factors on OSH MS Implementation Decisions

| No. | Factors | Ratings by MSM | | | Ratings by RTM | | | Ratings by SHM | | | Ratings by WSR | | |
|-----|--|----------------|----------------------|------|----------------|----------------------|------|----------------|----------------------|------|----------------|----------------------|------|
| | | M | M_{ul} M_{ll} | SD | M | M_{ul} M_{ll} | SD | M | M_{ul} M_{ll} | SD | M | M_{ul} M_{ll} | SD |
| 1 | Aiming at compliance with legal regulations on OSH | 4.38 | 4.76 3.99 | 1.19 | 4.13 | 4.54 3.71 | 1.28 | 4.42 | 4.71 4.14 | 0.90 | 4.50 | 4.80 4.20 | 0.93 |
| 2 | Labour inspectors persuading to implement OSH MS | 2.18 | 3.72 2.28 | 1.28 | 2.25 | 2.91 1.59 | 2.06 | 2.43 | 3.10 1.75 | 2.11 | 2.33 | 2.99 1.66 | 2.07 |
| 3 | Customers' expectations to implement OSH MS | 2.35 | 2.95 1.75 | 1.87 | 1.90 | 2.52 1.28 | 1.93 | 2.25 | 2.88 1.62 | 1.97 | 2.93 | 3.52 2.33 | 1.85 |
| 4 | The need to improve the enterprise's public image | 4.10 | 4.46 3.74 | 1.13 | 4.50 | 4.78 4.22 | 0.88 | 4.47 | 4.73 4.22 | 0.78 | 4.12 | 4.55 3.70 | 1.32 |
| 5 | Expected implementation of the differentiated insurance premium rate from accidents* | 2.47 | 3.08 1.87 | 1.88 | 3.30 | 3.91 2.69 | 1.91 | 3.15 | 3.77 2.53 | 1.93 | 3.02 | 3.59 2.46 | 1.76 |
| 6 | Top managers' aim to improve managing the enterprise | 4.47 | 4.81 4.14 | 1.06 | 4.50 | 4.85 4.15 | 1.09 | 4.65 | 4.85 4.45 | 0.62 | 4.52 | 4.88 4.17 | 1.11 |
| 7 | Workers' expectations of an improvement in their working conditions | 1.45 | 1.93 0.97 | 1.50 | 1.48 | 1.93 1.02 | 1.43 | 1.83 | 2.36 1.29 | 1.66 | 2.60 | 3.21 1.99 | 1.89 |
| 8 | Top managers' expectations of a reduction in occupational accidents and diseases | 3.40 | 3.91 2.89 | 1.60 | 3.25 | 3.70 2.80 | 1.41 | 3.45 | 3.99 2.91 | 1.69 | 3.87 | 4.36 3.39 | 1.51 |
| 9 | Top managers' expectations of economic benefits from a reduction in other losses | 3.32 | 3.85 2.80 | 1.64 | 3.30 | 3.76 2.84 | 1.44 | 3.68 | 4.09 3.26 | 1.31 | 3.95 | 4.36 3.54 | 1.28 |
| 10 | Top managers' expecting economic benefits from an increase in productivity | 3.45 | 3.94 2.96 | 1.54 | 3.15 | 3.62 2.68 | 1.48 | 3.68 | 4.08 3.27 | 1.29 | 4.07 | 4.51 3.64 | 1.37 |

Notes. *—factor No. 5 is related to the already announced enforcement in Poland of a law on a differentiated insurance premium rate related to occupational accidents and diseases. It is expected that the new insurance system, which will operate from 2006, will motivate employers to introduce measures aimed at an improvement in working conditions. OSH MS—occupational safety and health management system, MSM—the most senior managers, RTM—representatives of the top management for OSH MS implementation and maintenance, SHM—safety and health managers employed in the enterprise, WSR—workers' safety representatives; M_{ll} , M_{ul} —lower and upper limits of confidence intervals for the .95 level of certainty ($M_{ll} < M < M_{ul}$).

The results presented in Table 1 show that the three factors most significant in decisions concerning OSH MS implementation were “aiming at compliance with legal regulations” (No. 1), “the need to improve the enterprise’s public image” (No. 4) and “top managers’ aim to improve managing the enterprise” (No. 6). Factors No. 8, 9 and 10 concerning respectively “expectations of economic benefits related to a reduction in occupational accidents and diseases”, “reduction in other losses” and “an increase in productivity”,

were rated as having medium significance. Small significance was attributed to “labour inspectors persuading to implement OSH MS” (No. 2), “customers’ expectations” (No. 3) and “expected implementation in Poland of the differentiated premium rate for insurance against occupational accidents and diseases” (No. 5). However the smallest rating of influence on decisions concerning OSH MS implementation was reported for factor No. 7: “workers’ expectations of an improvement in working conditions”.

TABLE 2. Statistical Differences of Ratings for Factor No. 7 Indicated by Wilcoxon Matched Pairs Test

| Compared Groups of Respondents (Mean Rating Value) | | Significance Level α | Z | Z_{α} |
|---|------------|-----------------------------|------|--------------|
| WSR (2.60) | MSM (1.45) | .01 | 2.63 | 2.58 |
| | RTM (1.48) | .02 | 2.55 | 2.33 |
| | SHM (1.83) | .05 | 2.02 | 1.96 |

Notes. Z—value of the Z-statistic for Wilcoxon Matched Pairs Test, Z_{α} —critical level of the Z-statistic at α level; WSR—workers' safety representatives, MSM—the most senior managers, RTM—representatives of the top management for implementation and maintenance of an occupational safety and health management system, SHM—safety and health managers employed in the enterprise.

In order to identify differences of ratings attributed by various groups of respondents for various factors the data were subjected to nonparametric Friedman ANOVA as well as Wilcoxon Matched Pairs tests. The tests were used on the assumption that compared variables were dependant because the answers were given by four respondents from one enterprise, thereby reflecting different perceptions of the same specific situation in the enterprise. In the case of factor No. 7 the Friedman ANOVA test revealed a statistical difference in mean ratings expressed by all groups of respondents with $\alpha = .04$ ($N = 40$, $df = 3$, $\chi^2 = 8.438$, $\chi^2_{\alpha} = 8.312$). Furthermore the Wilcoxon Matched Pairs test indicated significant statistical differences of ratings between specific groups of respondents (Table 2).

The results presented in Table 2 indicate that workers' expectations with regard to an improvement in their working conditions had a greater influence on the decision to implement OSH MS in an enterprise than MSM's, RTM's or SHM's opinions. Such a result reflects a lower

level of workers' involvement perceived by those respondents compared with the level perceived by WSR. This might be caused by WSR overestimating their role in OSH MS implementation, and by underestimating the workers' role by the other respondents who represented the employers' interests.

3.2. Evaluation of Roles and Opinions on Decisions on Implementation of OSH MS

The questionnaires used in the survey contained questions focused on the influence of various people's roles and opinions on OSH MS-related decisions. The estimation of this influence was based on subjective ratings given by three groups of respondents: RTM, SHM and WSR. The fourth group—the most senior managers (MSM)—was not covered by this part of the survey since it was assumed that their answers would be biased taking into account their key role in managing the enterprise. The influence was rated on a 5-point Likert scale. Table 3 presents mean values

TABLE 3. Ratings of the Influence of Roles and Opinions of Various People on OSH MS Implementation Decisions

| People | Ratings by RTM | | | Ratings by SHM | | | Ratings by WSR | | |
|--------------------------------|----------------|----------------------|------|----------------|----------------------|------|----------------|----------------------|------|
| | M | M_{ul} M_{ll} | SD | M | M_{ul} M_{ll} | SD | M | M_{ul} M_{ll} | SD |
| Mid-level management | 2.92 | 3.43 2.42 | 1.59 | 3.48 | 3.96 2.99 | 1.50 | 3.68 | 4.10 3.25 | 1.33 |
| SHM | 3.92 | 4.44 3.41 | 1.62 | 4.20 | 4.65 3.75 | 1.40 | 4.55 | 4.84 4.26 | 0.90 |
| RTM | 4.33 | 4.76 3.89 | 1.35 | 4.43 | 4.81 4.04 | 1.22 | 4.45 | 4.88 4.02 | 1.36 |
| WSR | 1.78 | 2.37 1.18 | 1.86 | 2.10 | 2.75 1.45 | 2.01 | 2.85 | 3.50 2.20 | 2.05 |
| Trade unions in an enterprise* | 1.06 | 1.56 0.57 | 1.37 | 1.78 | 2.37 1.20 | 1.62 | 2.47 | 3.18 1.75 | 1.98 |

Notes. *—parameters of ratings for the influence of trade unions were calculated based on answers collected from 32 enterprises where such organizations have been established and which have been active. OSH MS—occupational safety and health management system, M_{ll} , M_{ul} —lower and upper limits of confidence intervals for the .95 level of certainty ($M_{ll} < M < M_{ul}$).

of those ratings (M) with respective standard deviation (SD) and confidence intervals ($M_{ll} < M < M_{ul}$) for the .95 level of certainty calculated for various groups of respondents.

The findings presented in Table 3 confirm the aforementioned observations that the role of WSR and trade unions (usually responsible for appointing WSR) in decisions concerning OSH MS (No. 4 and 5) was clearly smaller than the role of other people or groups. In order to identify differences in ratings obtained from the various groups of respondents, statistical tests were used. In the case of No. 4 (WSR) and No. 5 (trade unions) the Friedman ANOVA test showed that the ratings were significantly different with $\alpha = .02$ ($N = 39, df = 2, \chi^2 = 8.510, \chi^2_{\alpha} = 7.824$) and $\alpha = .01$ ($N = 32, df = 2, \chi^2 = 18.023, \chi^2_{\alpha} = 9.210$) respectively. The Wilcoxon Matched Pairs test indicated statistically significant differences in ratings between specific groups of respondents (Table 4).

The results of the applied tests show that WSR considered their influence on OSH MS implementation decisions as stronger than did RTM and SHM. Similarly, the influence of trade unions was perceived as stronger by WSR, who were usually appointed by those trade unions, than by RTM. That result confirms the thesis that WSR

overestimate their role in decisions concerning OSH MS implementation, and that the other groups of respondents tend to underestimate the role of workers and their representatives.

Trade unions operated in 32 out of the 40 surveyed enterprises. According to information received from SHM and WSR, implementation of OSH MS was consulted with trade unions in 19 enterprises (group A). In the other 13 (group B), such consultations were not carried out even though trade unions were in place. To verify the relation between carrying out consultations and assessing WSR's and trade unions' influence on OSH MS implementation decisions, mean values of influence ratings were calculated separately for groups A and B (Table 5).

The results presented in Table 5 were subject to Mann-Whitney U test. In the case of SHM's ratings, the test revealed a significant difference between groups A and B for both WSR's and trade unions' influence ($\alpha \leq .05$); whereas in the case of WSR's ratings, the test indicated a significant difference for the influence of trade unions only ($\alpha = .04$). The results show explicitly that consultations with trade unions had positive impact on increasing their influence, as well as that of WSR, on OSH MS implementation decisions.

TABLE 4. Statistical Differences of Ratings of the Influence of WSR and Trade Unions on Decisions Concerning OSH MS Implementation Indicated by Wilcoxon Matched Pairs Test

| People | Compared Groups of Respondents (Mean Rating Value) | | Significance Level α | Z | Z_{α} |
|--------------|---|------------|-----------------------------|------|--------------|
| | | | | | |
| WSR | RTM (1.78) | WSR (2.85) | .01 | 2.76 | 2.58 |
| | SHM (2.10) | WSR (2.85) | .04 | 2.07 | 2.05 |
| | RTM (1.06) | SHM (1.78) | .01 | 3.18 | 2.58 |
| Trade unions | RTM (1.06) | WSR (2.47) | .01 | 3.18 | 2.58 |

Notes. Z—value of the Z-statistic for the Wilcoxon Matched Pairs Test, Z_{α} —critical level of the Z-statistic at α level; OSH MS—occupational safety and health management system, RTM—representatives of the top management for OSH MS implementation and maintenance, SHM—safety and health managers employed in the enterprise, WSR—workers' safety representatives.

TABLE 5. Mean Values of Ratings of WSR and Trade Unions' Influence on OSH MS Implementation Decisions in Enterprises Where Consultations with Trade Unions Have Been (Group A) and Have Not Been (Group B) Conducted

| People | Ratings by SHM | | Ratings by WSR | |
|--------------|----------------|---------|----------------|---------|
| | Group A | Group B | Group A | Group B |
| WSR | 3.2 | 1.7 | 3.6 | 2.9 |
| Trade unions | 2.5 | 0.8 | 3.2 | 1.6 |

Notes. OSH MS—occupational safety and health management system, SHM—safety and health managers employed in the enterprise, WSR—workers' safety representatives.

TABLE 6. Evaluation of the Frequency of OSH MS-Related Proposal Submissions for Various People and Groups

| People | Ratings by RTM | | | Ratings by SHM | | | Ratings by WSR | | |
|--|----------------|-------------------------|-----------|----------------|-------------------------|-----------|----------------|-------------------------|-----------|
| | <i>M</i> | $\frac{M_{ul}}{M_{ll}}$ | <i>SD</i> | <i>M</i> | $\frac{M_{ul}}{M_{ll}}$ | <i>SD</i> | <i>M</i> | $\frac{M_{ul}}{M_{ll}}$ | <i>SD</i> |
| MSM | 2.98 | $\frac{3.57}{2.38}$ | 1.87 | 2.45 | $\frac{3.04}{1.86}$ | 1.84 | 2.47 | $\frac{3.15}{1.80}$ | 2.11 |
| Mid-level management | 2.90 | $\frac{3.40}{2.40}$ | 1.57 | 2.77 | $\frac{3.24}{2.31}$ | 1.46 | 2.82 | $\frac{3.37}{2.28}$ | 1.71 |
| SHM | 3.67 | $\frac{4.28}{3.07}$ | 1.90 | 3.58 | $\frac{4.12}{3.03}$ | 1.71 | 3.53 | $\frac{4.14}{2.91}$ | 1.91 |
| RTM | 3.45 | $\frac{4.07}{2.83}$ | 1.93 | 3.55 | $\frac{4.15}{2.95}$ | 1.88 | 3.47 | $\frac{4.08}{2.87}$ | 1.89 |
| Internal auditors of OSH MS | 2.37 | $\frac{3.00}{1.75}$ | 1.96 | 2.50 | $\frac{3.08}{1.92}$ | 1.83 | 2.03 | $\frac{2.72}{1.33}$ | 2.17 |
| WSR | 1.93 | $\frac{2.55}{1.30}$ | 2.55 | 1.83 | $\frac{2.42}{1.23}$ | 1.85 | 2.45 | $\frac{3.12}{1.78}$ | 2.09 |
| Workers (direct submission to supervisors) | 1.97 | $\frac{2.53}{1.42}$ | 1.73 | 1.93 | $\frac{2.48}{1.37}$ | 1.73 | 1.78 | $\frac{2.31}{1.24}$ | 1.69 |
| Representatives of trade unions | 1.22 | $\frac{1.79}{0.65}$ | 1.58 | 1.69 | $\frac{2.25}{1.13}$ | 1.55 | 2.19 | $\frac{2.80}{1.58}$ | 1.69 |

Notes. OSH MS—occupational safety and health management system, RTM—representatives of the top management for OSH MS implementation and maintenance, SHM—safety and health managers employed in the enterprise, WSR—workers' safety representatives, MSM—the most senior managers; M_{ll} , M_{ul} —lower and upper limits of confidence intervals for the .95 level of certainty ($M_{ll} < M < M_{ul}$).

3.3. Frequency of Proposals for OSH MS-Related Improvement

The next aspect of the involvement of various people and groups in OSH MS activities, which this study analysed, was the frequency of submissions of proposals for OSH MS-related improvement. The analysis was based on answers from three groups of respondents: RTM, SHM and WSR, who were asked to rate the frequency on a 5-point Likert scale. Table 6 presents mean values of those ratings (*M*) with respective standard deviation (*SD*) and confidence intervals ($M_{ll} < M < M_{ul}$) for the .95 level of certainty.

The comparison of ratings for various people and groups presented in Table 6 indicates that the level of involvement of workers, their representatives and trade unions (No. 6, 7 and 8) is distinctly lower than the involvement of other people or groups. The Friedman ANOVA test used for comparative analysis of the ratings in those items indicated a significant difference only for No. 8 (representatives of trade unions) with $\alpha = .052$. The additionally applied Wilcoxon Matched Pairs test revealed that RTM and WSR's ratings were significantly different with $\alpha = .02$.

4. DISCUSSION AND RECOMMENDATIONS

4.1. Interpretation of the Results

As a result of the survey carried out in 40 enterprises a substantial amount of information was obtained, indicative of the factors underlying OSH MS implementation decisions in enterprises operating in Poland. An analysis of the collected data revealed that a low level of involvement of workers, their representatives and trade unions is a common problem in enterprises implementing OSH MS. On the other hand, the top management of enterprises often fail to notice the fundamental role of workers, their representatives and trade unions in activities aimed at improving OSH in general and OSH MS in particular. Such conclusions can be drawn from the following findings discussed in section 3:

1. The "workers' expectations of an improvement in their working conditions" factor (Table 1, No. 7) has been identified as least important for decisions on OSH MS implementation;
2. WSR tend to overestimate the importance of workers' expectations in the decisions on the implementation of OSH MS in comparison

- with ratings by the most senior managers, representatives of the top management for OSH MS and SHM (Table 2);
3. The level of the influence of WSR and trade unions on decisions on the implementation of OSH MS is low comparing to other people's and groups' level of influence (Table 3, No. 4 and 5);
 4. WSR overestimate their influence on decisions on the implementation of OSH MS comparing to ratings by representatives of the top management for OSH MS and SHM, and overestimate the influence of trade unions comparing to ratings by representatives of the top management for OSH MS (Table 4);
 5. The frequency of submission of OSH MS-related proposals by workers, WSR and trade unions is lower comparing to the frequency of such submissions reported for the most senior managers, representatives of the top management for OSH MS and SHM as well as for mid-level management and internal auditors of OSH MS (Table 6, No. 6, 7 and 8).

The low level of workers' and their representatives' involvement in OSH MS-related activities, which the results of the survey demonstrated, is surprising, especially given that such involvement has a positive impact on the effectiveness of OSH MS (see section 1.3). However, analysis of the legal environment and the situation in standardization and certification of OSH MS in Poland as well as the relatively low level of trade unions' activities in the field of OSH suggest a three-fold explanation of these results: (a) deficiencies in the PN-N-18001:1999 standard, (b) the influence of certification bodies and (c) trade unions' low interest in improving OSH.

4.1.1. Deficiencies in the PN-N-18001:1999 standard [2]

The significance of the involvement of workers and their representatives in implementation and improvement of OSH MS was insufficiently addressed in the first version of the PN-N-18001:1999 standard (in particular it was not specified as a basic pre-requisite for efficient

prevention of occupational accidents and diseases).

The insufficient addressing of the involvement of workers and their representatives in the OSH MS specifications of the PN-N-18001:1999 standard stemmed from the assumption made by the Standardization Technical Committee, which developed the standard, that the model of OSH MS should be to the highest degree compatible with QMS and EMS models described in the ISO 9001 and ISO 14001 standards respectively. Additionally it was assumed that a voluntary standard on OSH MS should be supplementary to the legal regulations already considering general forms of workers' and their representatives' involvement in OSH-related activities. It should be noted that the ISO 9001 and ISO 14001 standards require managers to specify in detail the operating procedures and scopes of responsibility for all the tasks carried out by workers within the system. This is a basic principle of ISO 9000-based management systems and a pre-requisite for achieving compliance with the standard in the certification process. That approach results in drawing attention to top-down communication and, consequently, in limiting bottom-up workers' initiatives aimed at improvements. Therefore application of these rules to the PN-N-18001:1999 standard with the intention to follow accurately the ISO 9001 model failed to emphasize the importance of workers' involvement in OSH MS implementation.

The causes of this undesired effect were already removed by developing and adopting a new version of PN-N-18001:2004, which is now fully harmonized with the ILO-OSH 2001 guidelines [9]. The new version is firmly based on a thesis that workers' and their representatives' involvement is a basic pre-requisite for implementing a management system assuring efficient prevention of all occupational accidents and diseases. In particular the standard contains the following requirement (item 4.2.3): "The top management should make arrangements for employees and their representatives to have time and resources to participate actively in the processes of planning, implementation, maintaining, checking, preventive and corrective actions and other actions

for continual improvement of occupational safety and health management system” (p. 11) [10].

4.1.2. The influence of certification bodies

The need to involve workers and their representatives in implementation and improvement activities within OSH MS was not perceived by auditors of third-party certification bodies as an important criterion in conformity assessment of the system.

The next aspect—low significance attributed by auditors of certification bodies to workers’ and their representatives’ involvement as an important element of an efficient OSH MS—is, to a large extent, connected with the problem discussed in section 4.1.1. In most cases the OSH MS auditors’ earlier approach was based on their experience gained in auditing QMS and EMS conformity with ISO 9001 and ISO 14001 standards respectively. Because of the novelty of systematic management of OSH those auditors were not sufficiently aware of the potential benefits of workers’ and their representatives’ involvement as this component was less important in QMS and EMS. Therefore conformity certificates issued by certification bodies maintained this negative state and convinced managers that the OSH MS was operating properly. Furthermore, because the new version of the PN-N-18001 standard [10] has only been in use since 2004, it is probable that some certification bodies still do not appreciate the involvement of workers and their representatives as a main criterion for the assessment of the system. This may be especially so in bodies that mostly employ auditors experienced in and focused on conformity certification of QMS and EMS.

4.1.3. Trade unions’ low interest in improving OSH

In most enterprises in Poland workers, their representatives and trade unions demonstrate a low level of motivation and interest in improving working conditions. This negative phenomenon is related closely to a relatively low level of working conditions in Polish enterprises and to their prevailing formal approach limited to achieving a minimum level of compliance with legal regulations on OSH.

The low level of involvement of trade unions and workers’ representatives in OSH-related activities in Polish enterprises has also been caused by a relatively short history of the new formula of trade unions functioning as free, independent and self-governing workers’ organizations. This new legal status of trade unions has practically only existed since 1989, which saw the beginning of the political and economic transformation in Poland. In the first phase of this transformation unions mainly focused on improving workers’ economic situation and on assuring continuity of employment for large populations of workers. Therefore the issues of OSH and of improvement in working conditions were often of secondary importance.

The current situation has also been influenced by a relatively low level of working conditions compared to some other EU countries. This is primarily demonstrated by higher rates of occupational accidents and diseases reported in Poland. The need for substantial improvements in this area is confirmed by the results of a survey on working conditions that was carried out in 2001–2002 by the European Foundation for the Improvement of Working and Living Conditions in the acceding and candidate countries [21].

4.2. New Legal Solutions

Since the beginning of 2004, the involvement of workers and their representatives in OSH-related activities has improved due to the new provisions of the Labour Code concerning consultations on OSH [22]. In particular the new provisions place legal obligations on employers to conduct the following activities in consultation with workers and their representatives:

- introducing changes in work organization and work equipment as well as introducing new technological processes and chemical substances;
- conducting risk assessment and informing workers about occupational risk;
- creating OSH services in the enterprise;
- providing workers with personal protective equipment, work clothes and shoes;
- providing workers with OSH training.

Additionally employers are required to make sure that conditions are appropriate for consultations with workers, that the consultations are carried out within regular working hours and that both workers and their representatives receive payment for the time spent in those consultations. Those provisions are formulated in a general way; they do not directly address the need to conduct such consultations when implementing OSH MS in an enterprise; and they do not specify the form of such consultations. Therefore the national policy on promoting OSH MS addresses the need to raise awareness among workers, their representatives and trade unions of their key roles in improving working conditions. The workers' representatives and trade unions should make greater use of their legal powers by expressing their expectations and by persuading employers to continue improving working conditions far beyond the minimum legal requirements, particularly to implement efficient OSH MS.

4.3. Good Practice in Workers' Involvement in OSH MS

The results of the survey prove that workers and their representatives should be involved much more actively in the process of designing, implementing, maintaining and improving OSH MS in close co-operation with top and mid-level management. Numerous forms of such involvement are possible, a fact confirmed by examples of good practice on workers' involvement in OSH improvements collected and published by the Health and Safety Laboratory, UK, in 2001 [23]. Some of the possible solutions in this area are the following:

- participation of workers' representatives in developing a declaration of the OSH policy of an enterprise followed by a survey of workers' opinions on that policy carried out before its adoption by top management;
- providing specialized training on OSH for workers with outstanding safety behaviour in order to involve them in more advanced OSH-related activities, such as initial training for other workers, assessment of occupational

risks, implementation and auditing of OSH procedures, etc.;

- participation of workers and their representatives in establishing OSH goals and objectives, developing short- and long-term plans of OSH improvements, and in periodical reviews of those plans;
- appointing risk assessment teams of workers' representatives, supervisors and mid-level managers as well as workers working at workstations subject to the assessment;
- appointing safety task teams with workers' and their representatives' participation to solve specific technical problems concerning OSH, e.g., a reduction in manual handling, preventing accidents caused by in-house transport;
- engagement of workers and their representatives in active OSH monitoring by their participation in safety inspections of workshops, installations or machinery;
- participation of workers and their representatives in accident or near-miss investigations;
- consulting programmes of OSH MS internal audits with workers and their representatives and involving them directly in audits.

In order to disseminate and promote widely various forms of workers' involvement in OSH MS a guidebook or a series of leaflets on good practice in this area should be developed in the near future. The forms of involvement proposed in the guidebook or leaflets should be adjusted to serve specific elements of OSH MS as required by the PN-N-18001:2004 standard [2], harmonized with the ILO guidelines on OSH MS [9]. It is expected that such informative materials will be distributed in Poland mainly by trade unions, the National Labour Inspectorate and through a website and training courses on OSH provided by CIOP-PIB.

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