

Notification systems and risk management

Maria M. Antunes, Miguel T. Diogo*, Joaquim Góis

CERENA-Centre for Natural Resources and the Environment, Faculty of Engineering of the University of Porto, Rua Dr. Roberto Frias, s/n, 4200-465 Porto, Portugal

ABSTRACT

In an occupational context, “Notification” understood as “the act of telling someone officially about something, or a document that does this”, (in Cambridge Advanced Learner’s Dictionary & Thesaurus), may reveal a management approach. The ILO Code of Practice on Recording and Notification of Occupational Accidents and Diseases provides practical guidelines for establishing and use a national system for recording and notification of occupational diseases.

In the European Union, there is a legal obligation to report occupational accidents and diseases. Such is the case, e.g. with RIDDOR making reporting certain incidents a legal requirement. The report informs the enforcing authorities about deaths, injuries, occupational diseases, and dangerous occurrences. Mandatory notification procedures may also arise from certain types of specific hazards, such as exposure to biological agents.

Also relevant are reporting procedures in non-compulsory management systems, namely the ILO Guidelines on OH&S management systems, when considering performance monitoring and measurement, clearly states that “Reactive monitoring should include the identification, reporting and investigation of: (a) work-related injuries, ill health (including monitoring of aggregate sickness absence records), diseases and incidents (...)”.

Findings from a case study over a 5-year period, based upon a notification system from one organization alone with 736 records and 915 workers directly involved, supports a main conclusion. A notification system is not by itself enough in prevention terms. The validity of the required information and the way it is demanded is also fundamental to obtain the best adequate records. The statistical data treatment is a critical stage, for changes regarding preventive actions and measures are based upon such findings and conclusions.

Statistical treatment of data is fundamental to achieve adequate use of the data collected. Multiple correspondences analysis privileges tables of relevant size simultaneously comprising variables of distinct nature: quantifiable and qualitative. It helps in describing the complex relationships that may exist among variables, both independent and dependent (Dohoo, 1996).

The mentioned study comprises a total of 47 management variables and a set of multiple sub-variables, resulting from the notification system analysed. The results obtained identify management variables that may be considered transversal to other economical sectors, from the workers’ point of view (gender, professional classification and others) and specific to the sector if the employers’ point of view is considered (day of the week, type of accident, communication procedures, contributing factors, etc.).

The present study aims to design, implement and validate a notification system as both a transversal and sectorial information system in OH&S risk management. A notification system should provide effective and adequate flow of information within a proactive prevention context.

KEYWORDS: notification systems; risk management

1. INTRODUCTION

In an occupational context, “Notification” understood as “the act of telling someone officially about something, or a document that does this”, (in Cambridge Advanced Learner’s Dictionary & Thesaurus), may reveal a management approach.

The International Labour Organization (ILO) Code of Practice on Recording and Notification of Occupational Accidents and Diseases provides practical guidelines for establishing and use a national system for recording and notification of

occupational diseases. Not only at national level, but also at the level of the enterprise, it establishes that “6.2.1. The employer, (...), should set up arrangements within the enterprise, in accordance with national laws or regulations, to notify occupational accidents, occupational diseases, dangerous occurrences and commuting accidents, as appropriate.”

In the European Union, there is a legal obligation to report occupational accidents and diseases. Such is the case with Reporting of Injuries, Diseases and

*Corresponding author – email: tatodiogo@fe.up.pt

Dangerous Occurrences Regulations (RIDDOR) making reporting certain incidents a legal requirement. The report informs the enforcing authorities about deaths, injuries, occupational diseases and dangerous occurrences. Mandatory notification procedures may also arise from certain types of specific hazards, such as exposure to biological agents. The Directive 2000/54/EC of the European Parliament on the protection of workers from risks related to exposure to biological agents at work establishes that “Art. 13 - Notification to the competent authority, Art. 14 - 4. The notification referred shall include (...) the name and capabilities of the person responsible for safety and health at work and (...) the protection and preventive measures that are envisaged”.

Also relevant are reporting procedures in non-compulsory management systems, namely the ILO Guidelines on OH&S management systems, when considering performance monitoring and measurement, clearly states that “Reactive monitoring should include the identification, reporting and investigation of: (a) work-related injuries, ill health (including monitoring of aggregate sickness absence records), diseases and incidents (...)”.

2. ORGANIZATION PRESENTATION

The organizational set for the present assessment of an institutional Notification System, in the Health Care sector, and for a five years period of the analysis, has a human resources framework as shown in Table 1.

Table 1: Workers.

Year	Number of workers
N	411
N+1	415
N+2	433
N+3	400
N+4	391
Mean (5 years)	410

Over the five-year period, there is no significant variation concerning the job categories amid the workers. The most relevant job categories are Operational assistants, representing in average 39% of the total number of workers; nurses are the second job category, with 32%; the third professional group are the Doctors (aprox. 18%) and the technical assistants are the smallest group with 11%.

The workers' age profile, as viewed in Figure 1, identifies the higher percentage (19.22%) in the “50-54 year” age group, followed by the “45-49 years” age group, for the first three years, and a slight reduction for the last two years.

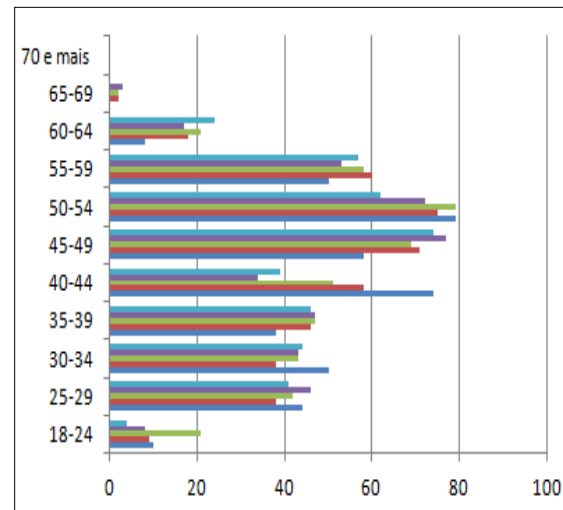


Figure 1: Age groups.

Education is diverse and the largest percentage of workers holds a university diploma within the first five years: (year N (41.12%); year N+1 (41.2%); year N+2 (48.96%); year N+3 (51.25%) and year N+4 (52.17%). The educational qualification has been increasing in a general manner over the years.

Another variable, in a management point of view is the working schedule.

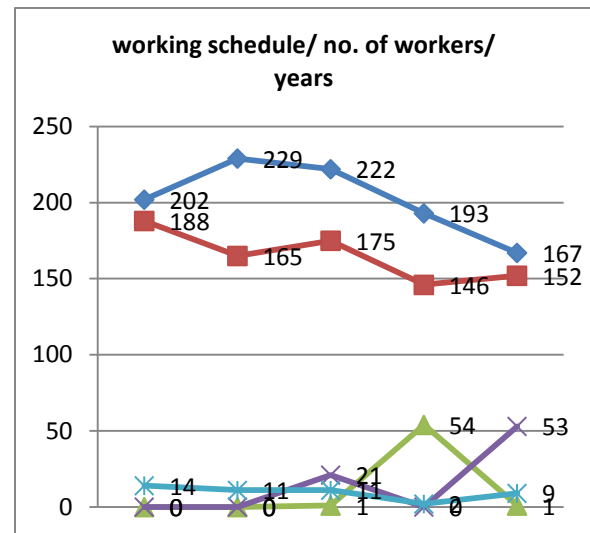


Figure 1: Working schedule.

(Note: blue (non-flexible); red (shifts); green (flexible); purple (lapse timetable) and blue (open schedule))

The non-flexible working schedule was undertaken for the five years from year N to year N+4, 49.15%, 55.18%, 51.27%, 48.25% and 42.71% respectively. Working in shifts (three shifts)

represented in the same five years 45.74%, 39.76%, 40.41%, 36.50% and 38.87%.

3. CASE STUDY

A preliminary analysis was undertaken to assess the potential of information flow and variables correlation. A sample register procedure was designed, including only ten (10) fields (variables) considered crucial for a first rough analysis.

Table 2: Sample register procedure.

Field	Content	Remarks	Management
0	Notification	Counter	S
1	Register	Monthly counter for the event & counter of number of persons involved in the event (Year)	S
2	Date	Day of the week	M
3	Time	In a 24 hour	M
4	Shift	Morning	M
		Afternoon	
		Night	
5	Location	Drop down menu of a inside map of the establishing	M
6	Gender	Female	W
		Male	
7	Professional Category	Drop down menu of the legal professional category	W/M
8	Type of Accident	Drop down menu of different accident's description	R
9	Accident classification	Accident	M
		Incident	

	ation	Near-miss	
		Incident event	
		Unknown/Not assess	

Note: S – system; M – management; W – worker and R – Risk

The sample register procedure comprehends ten (10) fields (a subset from the total of forty-one (41) fields of the main notification system. These ten fields are grouped into four (4) management criteria: S – system; M – management; W – worker and R – Risk. For the five (5) years period of the study, Table 3 shows the figures related to total number of records (events); number of workers involved in those events.

Table 3: Case Study characterization.

Year	Number of Records (Workers)	Number of Workers Involved	Total Workers
N	93	101	411
N+1	126	166	415
N+2	165	199	433
N+3	183	235	400
N+4	169	214	391
Total	736	915	

Out the 915 workers exposed to events subjected to register, over the five years period: 208 are nurses (22.73%); 17 operational assistants (1.86%); 18 doctors (1.97%) and 19 nursing students (2.085). The remaining registers comprise different job categories accounting for 15.74% of the total workers.

For analysis purposes, out of the five (5) years period, one particular year was selected (year n+3).

Table 4: Year N+3.

Year	Number of Records (Workers)	Number of Workers Involved	Total Workers
N+3	183	235	400

Findings from a case study over a 5 year period, based upon a notification system from one organization alone comprehending 736 records and 915 workers directly involved, supports a main conclusion. A notification system is not by itself enough in prevention terms. The validity of the required information and the way it is demanded is also fundamental to obtain adequate records.

The statistical data treatment is a critical stage, for changes regarding preventive actions and measures are based upon such findings and conclusions

4. RESULTS

Statistical treatment of data is fundamental to achieve adequate use of the data collected:

- Combinatory analysis,
- Multiple correspondences analysis (MCA), privileges tables of relevant size comprising simultaneously variables of distinct nature: quantifiable and qualitative. MCA helps in describing the complex relationships that may exist among variables, both independent and dependent (Dohoo, 1996).

For the five years, Table 5 presents the number of possible combinations ($n C p$) according to ten (10) variables of the sample register procedure.

Table 5: Case Study characterization.

n = 10			No. of combinations	Total of combinations
p =	2	$n C p$ =	45	45
p =	3	$n C p$ =	120	165
p =	4	$n C p$ =	210	375
p =	5	$n C p$ =	252	627
p =	6	$n C p$ =	210	837
p =	7	$n C p$ =	120	957
p =	8	$n C p$ =	45	1002
p =	9	$n C p$ =	10	1012
p =	10	$n C p$ =	1	1013

However the present study only analyses combinations resulting from 2, 3 and 4 variables.

Table 6: Year “N+3” combinations.

n = 10			No. of combinations	Total of combinations
p	2	$n C p$	45	45

=		=		
p =	3	$n C p$ =	120	165
p =	4	$n C p$ =	210	375

In this set of a total of 375 combinations (45 (2 vars) + 120(3 vars) + 210(4 vars)), there is an essential aspect of always including field 00 (variable “Notification”) and field 01 (variable “Register”). Thus the total number of 224 combinations (17(2 vars) + 67(3 vars) + 140(4 vars)) as presented in Table 7.

Table 7: Year “N+3” combinations (Field 0 & 1).

n = 10			No. of combinations	Total of combinations
p =	2	$n C p$ =	17	17
p =	3	$n C p$ =	67	84
p =	4	$n C p$ =	140	224

The register system under study, supporting the notification system can be viewed has a global set in the management cycle. It comprises a total of 47 management variables and a set of multiple sub-variables, resulting from the notification system analysed. The results obtained identify a set management variables such as: working schedules; job categories and the accident’s description as management variables essential in a risk assessment procedure. Also crucial, is the legal framework of accident work-related classification of all the records.

The codification system adopted, pretends to highlight the importance of a set of management variables which may be considered transversal to other economical sectors, from the workers’ point of view (gender, professional classification and others) and another set which is specific to the sector if the employers’ point of view is considered (day of the week, type of accident, communication procedures, contributing factors, (...)).

This study aims to design, implement and validate a notification system as both a transversal and sectorial information system in OH&S risk management.

A notification system should provide effective and adequate flow of information within a proactive prevention context.

Thus, the present study analyzed 736 records, involving 915 workers. This set of records is however part of a global notification system, not only work-related accidents, but also comprising all type of adverse events occurring, (total of 3763 records for the 5 year period, involving 4636 persons for the studied establishing)

5. FINAL REMARKS

Risk management has been described as “the adoption of financial, technological and organizational measures designed to modify the relationship between the turbulence of an environment and the variability of the results obtained therein”. Risk management is based essentially on analysis and evaluation of all of the relevant information available (Badi, 2015).

The mining sector, despite considerable efforts in many countries, remains the most hazardous occupation when the number of people exposed to risk is taken into account. Decision makers need a sustainable and consolidated reporting and notification system in order to implement effective improvements in the occupational and health safety (OH&S) management systems.

Table 8: Notification System: variables.

Health Care Variables	Notification variables	Mining variables
Legal framework	Notification	Mandatory
Date/time	Date/time	Date/time
Shifts (...)	Working schedule	24 hours production
Psychological risks	Type of accident (risk exposure)	Work-related diseases

In order for an action to be truly preventive or corrective, hazards must be identified first on the basis of rigorous analysis of information or data. Such an approach and further procedure can create conflict areas with a certain organizational operational day-to-day basis. Several management issues, such as financial, economic, social and operational, may be constrained concerning data sources (Badri, 2015).

Besides the mandatory legal framework procedure 1 “If workplace injuries or illnesses occur, the employer constructor, or mine or mining plant owner, have the following duties to notify certain people (...)”, notification systems, regarded as a full component of an OH&S management system, provide employers as decision-makers with a prevention design management tool, in all economic sectors in general, and in major risk sectors in particular.

6. REFERENCES

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