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COST/BENEFIT ANALYSIS IN OCCUPATIONAL HEALTH AND SAFETY

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ABSTRACT

The Occupational Health and Safety (OHS) management system can be regarded as the part of the management system of an organization used to develop and implement the OHS policy and manage the related risks (OHSAS 18001:2007; Santos et al. 2008).

Carrying out an occupational risk assessment is necessary to take into account the associated costs and benefits. However, only a cost-benefit analysis (CBA) can capture all impacts resulting from work accidents and/or from prevention measures regarding OHS. The CBA is used to determine whether a project is feasible from the standpoint of social welfare by the sum of the costs and benefits, discounted over time (EVALSED, 2009; Cullis and Jones, 2009).

In a CBA, the present value of all costs and benefits for all stakeholders can be combined to produce a net present value (NPV).

Furthermore, a CBA should take into account the costs throughout the life cycle of the subject under study, involving both economic costs and "accountable" benefits, but also the impacts that are not "accountable", known in the literature as externalities. According to Cullis and Jones (2009), externalities consist of social costs or benefits that manifest themselves beyond the realm of the project and influence the welfare of third parties without any monetary compensation.

Van Beukering et al. (1998) consider that an externality occurs when an economic decision has an impact on the welfare of another economic agent not directly involved in the process, resulting from the fact that the possibility of impact has not been properly addressed at the planning stage. In general, an externality is present when the welfare function of some economic agent (utility or profit) includes real variables whose values are chosen

directly by others, without special attention to the effect on the welfare of the agent that they affect. Where the project needs or deserves an evaluation by a public entity, the externalities generated are taken into consideration. However, the evaluation of projects of a private nature does not consider the effects on third parties arising from associated externalities. Indeed, the externalities generated by a project are in many cases difficult to quantify. This is the case, for example, of calculations related to the "value" of human life.

According to Cullis and Jones (2009), externalities may be positive (external benefits) or negative (external costs) and occur both at production or consumption.

The concept of externality can and should be applied to the area of OHS, namely through the implementation of a cost-benefit analysis. When an organization performs a risk analysis within its OHS management system, several steps are suggested to solve the identified risk situations. Usually the organization makes a detailed analysis of the monetary impact (positive or negative) for the organization of each considered measure. However, it is also important to perform an analysis of the impact of each measure for the society, i.e., to measure the involved externalities. The measures taken by an organization in terms of risk prevention may have an indirect positive effect (positive externality) for the society, while no action, due to the costs for the organization, may have significant negative effect for the society (negative externality). It follows that these effects should be duly considered in decision making.

Although there is some published work in this specific domain, the subject of CBA including externalities in OHS appears to have been insufficiently addressed in the literature (Ramos et al., 2011a). Thus, a proper model and a well-defined set of procedures are needed.

This project aims at discussing the use of the cost-benefit analysis within the OHS domain. With this purpose, a qualitative exploratory study is proposed, using the application of the Delphi methodology (Ramos et al., 2011b). In this study it is intended to get some



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input from an expert panel by conducting a series of questionnaires in order to determine the most important factors to consider in the cost-benefit analysis on OHS.

The main steps of the Delphi methodology are the following: 1) Experts selection, 2) Completion of the questionnaire, 3) Statistical analysis of results, 4) Preparation of the questionnaire for further rounds and 5) General conclusions and final report.

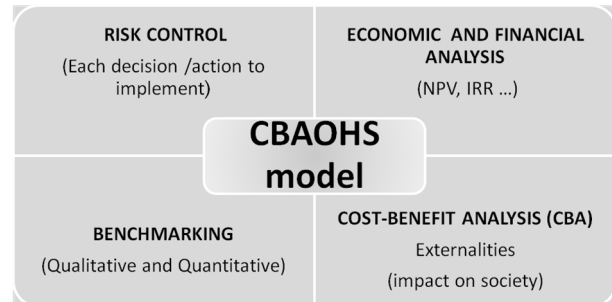
The questionnaire has been developed with the purpose of apply it to a panel of experts with different backgrounds. It is expected that with three rounds it may be possible to obtain important conclusions and to have a better understanding of the importance of the application of the cost-benefit analysis in the OHS domain.

The expert panel includes 10 Academics, 7 OHS Professionals/Technicians and 6 OHS Consultants/Auditors. All these experts have confirmed their participation. The first Delphi round will start in September.

The opinions of the expert panel will clarify what issues are important to consider in the development and application of the cost-benefit analysis in the OHS domain. In fact, the implementation of corrective and preventive actions under OHS requires a proper and systematic economic evaluation, in order to compare alternatives and understand the impact of each of them. For this, it is important to consider not only the costs and benefits for the organization but also the so-called externalities, which correspond to the impact of each measure in the whole society.

Following the results, a model (CBAOHS model) will be proposed for the application of CBA in OHS. This model will be permit to perform economic evaluations of risks and prevention initiatives from both the company and society perspectives. This model will be tested with data from two case studies (a hospital and a construction company).

The following scheme summarizes the CBAOHS model to be developed.



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