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STRATEGIC INFORMATION FOR EXCELLENCE IN SECURITY, HEALTH AND ENVIRONMENT (SHE) MANAGEMENT IN THE PETROLEUM INDUSTRY

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Resumo

Neste estudo, um programa estratégico de informações em SMS é apresentado e discutido quanto a sua utilidade para levar a empresa à excelência em segurança, meio ambiente e saúde. Cada vez mais, as editoras de periódicos científicos e tecnológicos têm disponibilizado seus documentos em páginas na Internet, de onde atualmente é possível baixar milhões de trabalhos. Além disto, empresas privadas e públicas têm disponibilizado documentos relatando suas experiências em seus sites na Internet, disponibilizando-os a qualquer um. Embora a informação esteja cada vez mais franqueada na internet, o simples ato de baixar a informação não implica em adquirir conhecimento e uma exaustiva seleção de material é necessária, de modo a separar o que é confiável do que não é. Esta seleção deve dirigida para os interesses da companhia e deve focar as prioridades em cada área. A quantidade de publicações eleitas, deve ser restrita, caso contrário o corpo de executivos da companhia ficaria submerso em informação da qual nada poderia aproveitar. Finalmente, de modo que sejam legíveis, os artigos e trabalhos devem ser apresentados ao corpo de executivos em formato reduzido, onde constem apenas as informações mais importantes como o resumo do autor, uma breve descrição do assunto tratado, o enquadramento teórico, a metodologia e uma avaliação crítica, onde as aplicações mais interessantes são ressaltadas O documento inteiro não deve exceder 3 páginas. Após a discussão, um exemplo deste tipo de resenha é apresentado e discutido

Abstract

In the present work, a strategic information program on SHE is described, and it is discussed how this program can be helpful to reach excellence in security, health and environment. Editors of scientific and technological journals have their own home pages, from where it is possible to download a great number of articles. Besides, it is becoming usual that private and public organizations publish experiences in their internet sites, making it available for everyone. Although, within the internet, the information is easily available, the possibility of downloading documents does not imply acquiring knowledge, and a thorough selection has to be carried out. This selection has to meet the directives established by the company and should focus on the priorities for each area. The amount of publications being selected has to be restricted; otherwise, the company staff would be submerged in information. Finally, in order to be read, a digest of the article should include the author's abstract, a brief theoretical framework where the subject is included; a description of the methods and a critical evaluation, where the most interesting applications are highlighted. The whole document should not exceed three pages. One example of this digest is presented and discussed.

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1. Introduction

The legal milestones concerning security, health and environment have been imposing very strong restrictions to the industrial activities, pushing industries to find intelligent solutions that make their business still profitable. For instance, the Brazilian law for dredging operations (Conama, 2004) recently established a classification that forbiddens ocean disposal of heavily contaminated sediments in the open ocean. In this case the solutions should range from disposal in controlled industrial land fillings, or simple abandon of the project.

Companies are obliged to pursue the highest rates of production in a secure and healthy environment and for that, managers have to be up-to-dated with a myriad of technologies that evolve with astonishing velocity. The achievement of elevated standards of SHE management depends on a series of factors including access to technological and scientific knowledge. A considerable amount of work on knowledge management of the firm has been carried out, aiming to improve knowledge application in industry and business (Alavi e Leidner, 2001), and thereby increase the profitable use of knowledge. Furthermore, considerable efforts have been spent to create knowledge, that has taken some organization to cooperate sharing a highly strategic knowledge (Forrest e Martin, 1990). As established in Kalseth (1990) the strategic information generated is beyond competition, mainly when dealing with SHE management, contributing to the sustainability of the business. If an activity, like petroleum production is too risky then better, safer and sustainable procedures, rather than an asset of the company, is a value for the whole humanity.

In the petroleum industries, the amount of knowledge as represented by the number of publications dealing with SHE largely overcome 100 published works every month that have to be managed. It is clear that a company should not have contracted experts in every specific subject concerning SHE, nor should the company employ professionals that have no knowledge on the matter. It is evident that a certain amount of knowledge of technologies should be acquired by the company staff, who can interact with external experts (otherwise there is no interactions). Among other important functions, knowledge management aims to define the level of knowledge that should be acquired by the staff of a company.

Applying the latest developments in SHE knowledge may result in significant reduction of accidents, environmental impacts and health problems with workers and neighboring communities. In the maze of the knowledge in SHE area, some companies have already figured out that specialized services in information for excellence achievement can be handy.

In the present work, a strategic information management program on SHE is described, and it is discussed how this program can be helpful to reach excellence in security, health and environment. The aim of the program is to furnish a reasonable (readable) amount of information, directed to the staff that actually needs it. Although the selected informations (publications) are not supposed to comprise the world's knowledge, it will help to improve the processes for a profitable management of SHE.

2. Methods

Most of the information on improvements of health, security and environment in the industry is now available in the internet. Even publishers of scientific and technological journals have their own home pages, from where it is possible to download a great number of articles. Besides, it is becoming usual that private and public organizations publish experiences in their own internet sites, making it available for everyone. For instance, OGP (Oil and Gas Producers, see www.ogp.org.uk) an organization that gathers the biggest petroleum companies operating worldwide has an excellent site with white papers on specific technology reviews and discussions. In the program we describe in this work, the main source of information is the internet, although tradition information mining procedures like visits to library and request of works to authors is not abandoned.

Although, within the internet, the information is easily available, the possibility of downloading documents does not imply acquiring knowledge. Actually our information management program starts with a thorough outline of the characteristics of the company, identifying the main flaws in knowledge. Also, the efforts already carried out by the company for the construction of SHE management should not be neglected nor questioned, but improved.

Our first approach is based on listening to the staff, and better understanding where they think the knowledge gaps are. Even if sometimes our experts do not agree with the opinions of the staff, it is clear that an attitude of conflict should take the program to failure. First of all, it is necessary to motivate the staff to read our material. Furthermore, the already established directives in SHE of the company should also be considered. Gathering this set of information should permit the construction of a list of subjects (keywords) that should orient the bibliographic survey. This strategy aims to focus on SHE problems that are being dealt with, providing a flow of information in that matter.

From the bibliographic survey, a selection of 20 to 30 articles a month in different sub-themes of SHE should be enough. It is evident that more than 30 articles, a too big effort of reading is demanded from the staff,

however, less than 20 articles, should not cover the entire area. In our program, which was applied to a petroleum company, 10 different sub-themes were chosen, but depending on the type and size of the industry, there will be a varying number of selections per month. The periodicity depends also on the dynamics of the area of business. It is probable that a biotechnology company would require more frequent selections.

Finally, most of the works are published in a format that normally is too long to be read by the staff (10 – 20 pages), therefore, an abbreviation of the text should be provided. Our program provides a digest that includes the author's abstract, a brief theoretical framework, where the subject is included; a description of the methods and a critical evaluation, where the most interesting applications are highlighted. The whole document should not exceed three pages. These digests should be made available for the whole company (for instance, on a private home page), permitting maximum feedback concerning the quality of the digest and the coherence of the subjects.

The active participation of the company's staff is required during the whole procedure and the selection of the article that should be digested has to be validated. In the case of the petroleum company we are working with, five articles are submitted to the company's staff in each theme and only three are picked for digest..

3. Results and Discussion

From the first approach of the program, *i.e*. establishment of sub-themes of interest for the company, a list of subjects was constructed as exemplified on Table 1. For the research in the literature sources, a set of keywords for each sub-theme was established, but it became immediately clear that the understanding of each keyword was not explicit enough and inconsistent articles were selected. Therefore, a short explanation of each sub-theme as exemplified on table 2 was prepared and an example of article is also presented. This short explanation allows the responsible for the survey in the database to choose more adequate keywords.

Table 1: Example of the organization of themes. These sub-themes are the result of a thorough survey in the company directives for SMS and are also based on the perception of the company staff.

Area	Theme	Sub-theme
Environment	Residues	Technologies for the treatment of wastes from petroleum Exploration and Production
		Reduction, recycling and reuse
		Technologies for the treatment of organic wastes
		Wastes contaminated with metals
	Impacted areas	Remediation of contaminated soils
		Diagnostics, monitoring and risk assessment
		Remediation of areas with oil spilled

A copy of the final selected article should be made available for the company staff, and a digest for each article is prepared. The following items are presented in each digest:

1. Abstract: The author's abstract is reproduced here. Here we try to preserve (whenever possible) the contents of the author's abstract. If the abstract is written in a foreign language, it has to be translated. The digest should be available for all the employees and not only for those who know foreign languages.
2. Key-words: If there are key-words available in the article, they are placed here. Further key-words that are considered necessary can be added. The inclusion of keywords may help to organize and locate digests in the base. Presently, we have already included some 260 digests in our database and search tools are already required.
3. Description of the subject: The subject of the article is briefly described. Sometimes the title is not clear enough to outline the subject of the article and the author's abstract is too long. In this part we provide our reader with a more comprehensive description of the subject, where the "what is done" of the article is presented in a three lines text.
4. Theoretical framework of the author's ideas: The theoretical basis of the concepts discussed in the text is to be presented here. In an article, the theoretical basis is frequently dispersed in the introduction where the reader has to focus a great deal of attention in order to withdraw the necessary information. Our aim here is to gather and summarize this information. Further, a brief discussion of the theoretical settings that are not presented in the introduction of the article may also appear in this item.
5. Description of the method: This part is focused on a discussion of the methodological approach of the work. No description of the method itself is presented in order not to repeat what is already written in the article.
6. Critical appreciation: Besides a brief description of the more relevant results, the digester is sensed to present and discuss on the possible applications in the company processes. Criticism is also presented here, showing flaws of the work and possible future research that are interesting for the company. Although some of the data and

discussion has to be reproduced in this item, we try to focus the whole discussion on the interests of the company, i.e. "what is it good for".

Table 2: Explanation and example of a sub-theme. This explanation was shown to be more explicit than the choice of keywords, when driving selection of articles in the literature sources

Sub-theme	Explanation	Example
Technologies for the treatment of organic wastes	The treatment of oily wastes is complex and although recycling and reuse should constitute adequate solutions (for instance conversion of petroleum sludge by LTC), costs involved justify the choice of destruction/degradation. The final destination for this kind of residues is frequently landfarming or destruction by various methods, including plasma. In this sub-theme works concerning new and more adequate technologies for the final destination of oily residues will be selected. Studies that evaluate the efficiency of procedures for the treatment of oily wastes should also be chosen.	Ming-Shean Chou and Hsiao-Yu Chang, Bio-Oxidation of Airborne Volatile Organic Compounds in an Activated Sludge Aeration Tank Journal of Air & Waste Management Association - v.55,n.5, May 2005

Table 3: Example of a digest

Bibliographic reference: Hunt, A., Mason, P., Dale, N., Markandya, A. (2003). Greensense: an applied integrated environmental impact assessment framework for the european union. www.bath.ac.uk/~hssam/greensense/gsensefinalexecsumm.pdf.
Author's abstract: This project aims to address two major problems. The first is a shortage of data on the major impacts to human health, wellbeing and the economy of the environmental damage caused by economic activity. This data shortage limits the ability of policymakers to identify the most appropriate environmental policies. The second major problem to be addresses is related to the framework of economic and environmental reporting that indicates to policymakers and the general public the success of the economy. The existing environmental accounting frameworks have been criticized for a number of reasons, and in particular because they do not place sufficient weight on sustainability concerns. This project will develop and apply an environmental accounting framework that addresses these concerns.
Key-words: environment; countries accounting; economic issues; sustainability; greenstamp
Description of the subject: Considering environmental parameters in a country accounting system (Gross Domestic Production) can be useful to the improve evaluation of the sustainability of the country's economy on a long term basis. Although a few years ago, environmental data from large regions were imprecise, improving survey techniques like satellite sensors, chemical and ecological measurements has increased quality and precision of the information, allowing its inclusion with an adequate margin of error in the accounting systems. This work proposes a system that measures the costs of well-being and sustainability admissible. Data were analyzed for three countries from the European Union: United Kingdom, Germany and Spain.
Theoretical Framework of the author's ideas: When considering environmental impact assessment, two main problems arise: First, there is a lack of baseline data on the main impacts of economic activities on human health, life quality and on economy itself. Second, the structure of the reports is frequently inadequate for application by decision makers, therefore they are not able to give support to sustainability. An alternative, based on the concepts of Roefie Hueting* and on the project "Greenstamp" identifies and calculates sustainable development standards by means of a simulation model. Nevertheless this model does not include the costs of actual environmental damages and of the environmental efficiency of the economic processes. **Roefie Hueting: Dutch Economist and statistician that identified the importance of the availability of environmental data.*

Table 3: continued

Description of the method: The economic/monetary system for the evaluation of a country sustainability was constructed in four steps. First, a system to evaluate economic efficiency and level of sustainability was designed. A review of the green accountability system is carried out in this phase. The second step consisted of the measurement of environmental damages in order to improve availability of the set of data. Most of the data on this phase were obtained from the EUROSTAT program of environmental pressure indicators. Third, a prospective analysis of the expected development of each country was carried out in order to check for the possibilities of sustainability The authors designed a scheme that described some of the most relevant factors for sustainability and proposed a system for its classification. In this classification, the environmental sustainability is a premise for economic sustainability. Three types of sustainability are established, weak, intermediate and strong. In the fourth step environmental issues were internalized to economic costs, based on a thorough review of national green accountability. As a result, the authors proposed the structure of an integrated report of economics and environment.
Critical appreciation: The authors stated that this was the first time economic and environmental approaches were treated together for the national accountability of the environment. Presently, although the issues of sustainability and well-being are considered important in the worldwide political agenda, the lack of environmental data restraint the establishment of an effective environmental policy. However, with the data of three countries (United Kingdom, Germany and Spain) it was clear that an accountability system that treats informations on environment, life quality and sustainability is necessary. The environmental impact assessment is a tool of the environmental policy and environmental management, which is able to identify and preview the positive and negative aspects of a development plan. Although a number of companies have integrated systems of accountability, the report structure developed in the article should be a useful tool for the decision makers and also, it improves transparency for shareholders and general public, yielding improved credibility of the enterprise image.

The contents of Table 3 varies for different publications. For instance, when an article concerning a specific technology is digested, then the description of methodology can be longer, for it can be of interest for the client. Obviously, it cannot be as long as the article itself because it is supposed that if further details are necessary, they should be looked for in the article itself

4. Conclusions

Nowadays, knowledge is a key asset for the firm. If in the second half of the XXth century the success of a company was based on availability of raw material, low salaries and transportation facilities, today these values are no further important. Highly technological facilities, with a high rate of creative solutions are the key for success in business. Among the values that a company should invest to attain this technological development, qualification of the staff and knowledge management are probably the most important.

The program described in this article is a tool that contributes significantly to the knowledge management, allowing the company to overcome the technological gaps, without applying a huge effort of survey for the good and interesting information.

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