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Performance Monitoring of the Environmental Management Approach in the Case of the Production Units of the Industrial Park Bir Rami Kenitra City - Morocco: Achievements and Challenges

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Abstract

Our scientific research summarizes the results of the study we realized in the units of production of the industrial park Bir Rami in Kenitra city benefiting from the implementation of the environmental management approach; our scientific article to describe the situation current, illuminating both objectives achieved that deficits and constraints. The study confirms a user satisfaction environmental management about the new organizational tool, which exceeded expectations. The principal's raisons for the implementation of environmental management are essentially; the improving the company's brand image and the obtaining the ISO 14001 certificate. However, the proven benefits after the implementation of an environmental management system (EMS) are primarily; the systematization of the existing environmental measures, the guarantee of legal compliance and the improvement in risk prevention. The units of the productions of our study field implement the EMS to ensure an ecology improvement of the company and an ecological improvement level of products. Important constraints remain in assessing the benefits and costs of environmental measures, as our survey reflect a qualitative assessment rather than analysis and accurate measurements.

Keywords: Performance monitoring; Environmental management system; Achievements; Challenges; ISO 14001:2015

Introduction

Moroccan environmental policy changed course in recent years. Global climate changes (the various types of pollution, drought, floods) require Moroccan governments to adopt organizational and structural strategies to cope with environmental challenges. In this context the various private sector organizations are coming to join the public authorities of the state; which ensures collaboration between different partners.

The protection of the environment represents today a priority in both research and action to avoid the disruption of the ecosystems forming the biosphere, which may lead to an unlivable planet [1], in Morocco the protection of the environment as a major, this concern is reflected in different works and other planned by the "Social Economic and Environmental Council of Morocco" and the Ministry of Environment and Water (the example of zero plastic bag action). Its work focuses instead on the fight against pollution and protection of the environment, the information, advice and cooperation, also on research and evaluation.

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Thus, the COP 22 to be held in Marrakech city - Morocco, it will considerate as an event for the environment, that the COP is the supreme decision-making body of the United Nations Framework Convention on Climate Change. It "provides regular updates of the application of the Convention and any related legal instruments that it may adopt, and shall, within the limits of its mandate, the decisions necessary to promote the effective implementation of the Convention". This year, the COP will be the COP22 in Marrakech city from November 7-18, 2016.

Our scientific research is the result of a study focused on ISO 14001 certified companies Bir Rami of the industrial park of Kenitra city, which reflect valuable experiences regarding the implementation of the environmental management system (EMS). Analysis of the results reveals existing problems and outline solutions emerges. The study sheds light on the strengths of the system, useful for the positive development of environmental management in the Morocco. Although that there are many companies have adopted EMS not certified to ISO 14001 and do not therefore included in the statistics that we were able to have the senior management of the National Council of the Environment is one of the most important environmental management tools, it is premature to speak of a strong presence of the SME in the economy and administration.

While various Moroccan companies have their own EMS for several years, did not exist until now little data on the effectiveness, benefits and costs of these systems Morocco. The survey we conducted on the performance management of EMS in the industrial park of Bir Rami in Kenitra city we provided data on the impacts of EMS, in order to answer the question of constraints and the objectives of the implementation of an EMS. The investigation was conducted; it provides us with empirical results on the effects of SME-related control of the environmental performance of companies. The results of the study are the basis for decision-making and strategy development.

Environmental Management System: Theoretical Approaches

The EMS is a business management tool ensures a structural and organizational organization to reduce and control its environmental impacts. The commitment to environmental improvement of the company or the community over time by allowing them to continually improve. The main objectives of the EMS are:

- Comply with the regulations exceeded initial targets.
- Managing environmental risks for the site.
- Control and managing the costs waste by saving energy and raw materials.
- Develop the improvement continuous of the performance management system with the introduction of a new critical angle.
- Differentiate from the competition.
- Enhancing the company's image.
- Communicate seamlessly with staff, customers, insurers, etc.

Thus, the EMS is a management system that continuously improves the environmental performance of production units.

It results in a work on the management of the environment, the production process, internal and external communication. It includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources to develop and sustain an environmental policy. The implementation of an EMS helps control costs, integrate regulatory constraints, to meet customer demand, improve the image of the company and mobilize people and different parties. Studies show that companies with an EMS more control over their environmental impact while saving money. They are often healthier and sustainable than others.

ISO 14001 is based on the objective of driving environmental performance by controlling the impacts related to the activity of the company, in the same approach it should be noted that respect for regulatory devices is always present in environmental policy that can adopt. Thus, every business needs to know the requirements of the regulations, industry codes, standards and permits that must be respected. Organizational systems are needed to ensure compliance and appropriate monitoring and possibly prepare reports [2]. In the same context, it is imperative that each company's compliance with legal requirements and other requirements to establish its environmental objectives and targets to develop its programs [3].

Briefly the implementation of the 14001 environmental standards is based on the following steps:

- Environmental analysis, preliminary to the establishment of the EMS: This analysis is not required by the standard but made implicitly required by the standard; it requires the enterprise that lists exhaustively all environmental aspects.
- The scope of the environmental analysis: The company must define and identify the scope and the context of which will certification and therefore the environmental analysis. This area can be limited to a production line, platform office or a subsidiary. After setting the field, all the energy, raw materials and pollution generated by the activities, services and products of the area will be identified in the EMS.
- Environmental policy: it describes the objectives and principles of environmental performance, that environmental politics was once considered "low politics" in international relations [4]. The ISO 14001 standard requires the company management to draft an environmental policy; the content held in one page very synthetic, environmental policy outlines the objectives for environmental is the same principle as the poetic quality.
- The action plan: It takes into account the objectives of environmental policy but also the technical and financial constraints of the company. Compliance with environmental regulations and the highest risk activities for the environment will be priority actions. In the same context, the action plan base on a planning, who is, in effect, deciding in advance "what to do", "how to do it», "when to do it" and "who is to do it". Planning assumes that rational processes can be used to nominate resources and define appropriate future action, which will produce the desired outcomes [5].
- The PDCA approach (Plan Do Check Act): the basis for the approach underlying an EMS is founded on the concept of PDCA. The PDCA model provides an iterative process used by organization to achieve continual improvement [6]. The steps correspond to the quality process known under the abbreviation PDCA. The standard requires that the EMS works in the mode of continuous improvement; controls, the progress of the action plan, innovation, different watches lead the management to correct and update its action plan and its EMS.

Application Scope

Kenitra city is considered one of the largest cities in Morocco and one of the most important northwest of the Kingdom. Indeed, the city lies on the south bank of the Sebou river 12 km from the mouth of the Atlantic Ocean at Mehdya beach. Also, it is in a crossroads of trade routes linking the cities of northern and eastern Morocco. This is a recent city, unlike the imperial cities of the Kingdom, since it was established only 120 years. However, many historians closely link the Kasbah Mehdya, built in the sixth century BC by Hanoun and restore first time in 1185 by Yacoub Elman Sour.

Kenitra city is located in the center of a rich agricultural region of Gharb. It is near the biological reserve of the Lake Sidi Boughaba and many species of migratory birds and the forest of Mamora. The seaside town of Mehdia beach is only 12 km from the city. It's retains many houses and buildings from the beginning of its creation years we thus find beautiful villas of 20 and 30 with their flower gardens. Mehdia has a small fishing port, and Mehdia-beach resort with its long beaches of golden sand, offers renowned spots for surfing. Thus, Kenitra city is a town of nature and the environment (FIG. 1).

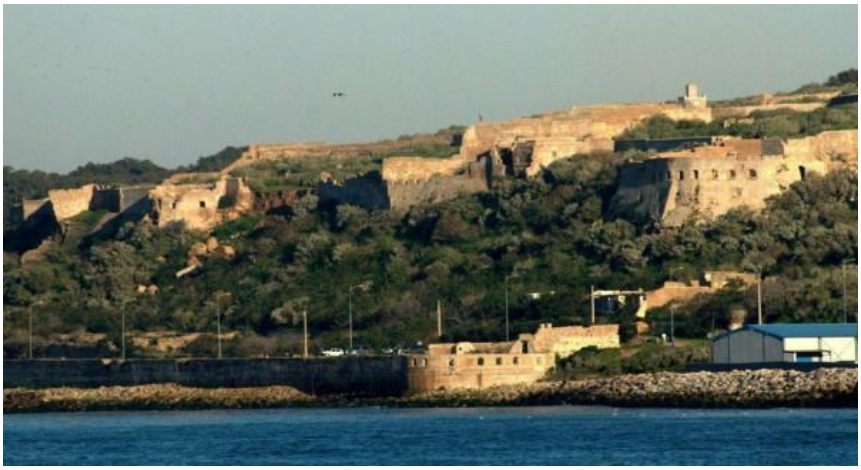

FIG. 1. **A nature overview of Kenitra city.**

For the dams and appurtenant hydraulic structures, the water is sutured with the respect to calcite and the clay mineral kaolinite. Is under saturated with respect to dolomite. Heavy and trace elements have a low concentration in the aquifer with the exception of contamination in the industrial zone of Kenitra city [7].

The industrial area of Bir Rami Kenitra is one of the first platforms created in a short interval of time, developed as part of the National Pact for Industrial Emergence (FIG. 2), covering an area of 345 ha, including 198 ha benefit from Free Zone status, the industrial area of Bir Rami is dedicated mainly to the automotive industry and electronics.

FIG. 2. **The industrial area of Bir rami in Kenitra city.**

Enjoying a strategic location and offering excellent connectivity to major transport routes, the industrial area of Bir Rami primarily target automotive equipment, without being exclusive, but also:

- The related activities and for export.
- Industrial logistics.
- The support services industry (maintenance, offices, business centers, etc.).

Its diversified offer and its benefits make it an attractive platform, with many advantages, only 3 hours of European capitals. The first tranche, which is spread over 192 ha, is on the market, and has already won several renowned OEMs therein are located, including St. Gobain, Delphi, Hirschmann, Coficab, Sews, Fujikura, Pec MFZ, Lear, And Auto CMGP Hall. Sectoral industrial parks of the area Bir rami are not exclusive and can accommodate other sectors.

The Impacts of Environmental Management System

The advantages and interest of SME

The essential advantages and interest of EMS focuses on the organization and setup of existing environmental measures on ensuring compliance with regulatory provisions as setting of preventive actions against risks (TABLE 1). However, SME play little on innovation capacity, on improving the competitiveness of enterprises and improving the brand image, and obtaining certification.

Overall, EMS far exceeds the expectations of its users. The results of the survey we conducted show that users are extremely pleased with the implementation of the environmental management approach and instruments. If the EMS thus proves effective especially regarding the systematization and control of processes related to the environment within the company, they do not meet the high expectations placed on them in the innovation sector and the opening of markets. Indeed, the profits differ widely recognized profits. In summary, one can say this is achieved recognition at the company's external environment and we finally found the systematic and safety within the enterprise level.

TABLE 1. **The interests provided after the implementation of an EMS.**

Advantages and interest	**Obtained (per %)**	**Expected (per %)**	**Gap (per %)**
Internal			
Systematization measures existing environmental	39	76	+37
Guarantee regulatory compliance	35	67	+32
Risk preventive actions	41	59	+18
External			
Improving the brand image of the company	44	63	+19
Obtaining the certificate	46	35	-11
Improved market position	33	25	-8

Environmental performance management

Environmental performance measurements (EPM) can be defined as the measurement of the interaction between business and the environment [8]. In this context, the first advantage of the EMS is to significantly strengthen the position of environmental protection within the production unit. EMS call attention to the environmental roles and reinforce the actions of environmental responsibility within the company, when it comes, for example, to decide on investments, ensure compliance with standard guidelines and ISO 14001. In addition, environmental officials agree judging very positive environmental influences EMS (TABLE 2). Of these, only (5%) see no significant effect on the environmental performance of the company. The vast majority (60%), however, recognizes the EMS rather positive effect, while (33%) of respondents felt these effects as very positive.

TABLE 2. **Impacts on environmental performance management (per %).**

View	Very positive	Rather positive	Rather negative	No influence	Don't know
Per %	33	60	0	5	2

Integration of the environment in sustainable development approach

Sustainable development is based on three pillars: a strong economy, social cohesion and effective nature conservation and environmental management, and that the greatest challenge is finding a balance between these economic, social environment goals [9].

Compared with the very positive overall assessment more specific answers on improving the integration of the environment into sustainable development approach give more mixed results. More than half of the units of production surveyed find at least a small reduction in flow of substances and energy (materials, energy, waste and hazardous substances) to the production volume, 30% perceive no change, or perceive even a relative deterioration.

In terms of absolute value, the results are even more modest: half of companies report at least slight reductions, while 40% do not receive any modification or even see increased flows of materials and energy. These results show that gains partially offset by the increase in volume of production.

After the first results of our investigation we realized that the vast majority of companies give to EMS a complementary role; these companies do not consider them vital management systems to 100%, by which develop specific environmental management and proactively.

Environmental impacts product

Environmental impact is defined as "any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services" [10]. After our frequent visits of at achieving our scientific research in the industrial park of Bir Rami Kenitra the city, the majority of responsible EMS and quality system respondents do not perceive a radical organizational change but just a slight change or no reduction in the environmental impact of products.

The EMS has only a supporting effect without exerting a decisive influence. Given the much greater importance that companies attach to these impacts, there is a clear gap between the perception of the problem and its resolution.

Future of the Environmental Management System

Implementation of an integrated management system (environment, quality and safety)

An integrated management system is defined as the combination of processes, procedures, and practices used by an organization to implement its policies. Integrated systems may be more effective in achieving policy goals than an approach base on separate systems [11], so the integration of EMS in the management system mainly quality management system (QMS) and safety management system is practically universal. A large majority of companies benefiting from QMS (more than 90%), and 83% have linked it to an EMS. In contrast, less than half of the companies surveyed have integrated the EMS to the health management system and safety at work or at other global management systems.

The goals of the integration of EMS in the different management systems are:

- Avoid a lot of paperwork
- The operation functioning
- The certification

But environmental management systems, management of quality or management of safety at work are actually integrated if they are connected into one comprehensive management system. For the SME, this means integrating environmental responsibility into the general responsibilities, associate environmental objectives and programs planning systems, budgeting and existing controlling, and finally integrates environmental activities to the company's core processes. This is the only way to ensure that environmental concerns are taken into account from the outset as part of regular decision-making processes, not treated retrospectively by the environmental officials through special procedures and systems.

The first solutions are integrative solutions, that is to say, those that adapt to a basic standard structure, so the structure of ISO 9001 or 14001 standards Integrate means, in this case, adapt new bases of the system in the existing management structure. But the 20 chapters of the old ISO 9001 (1994) lend themselves badly. However, ISO 9001 (2000), adapted and directed process offers much more favorable conditions. Thus, global systems integration should be based on full management concepts that integrate smoothly different specific management concepts. The integration-oriented process relies on structural bases specific to the company and not on a predefined or generic external structure. Count the rapid development of different forms of organization-oriented process, this variant seems more interesting now.

A development process and continuous improvement system

Continuous improvement is defined 'as an organization-wide process of focused and sustained incremental innovation' [12]. Reviews of the effects of the EMS are much divided. If for half of the companies, the benefits induced by the system are insignificant, the other half believes that the EMS has significant potential for improvement and control of environmental performance in the future. The essential conditions of a continuous improvement system are internal order. Among these, the active support of senior management and employee involvement, stimulated motivation, qualification and training, topped.

In general, certification is a sufficient incentive to implement EMS and management infrastructure required. This step is necessary, but not sufficient to produce some improvements and assured. Other incentives are essential if the system must comply with the requirement of a dynamic process of continuous improvement of EMS and environmental performance, as required by ISO 14001. This new impetus can come from customers, financial markets or the authorities. If these pulses are missing, or if they remain as low as shown by empirical results of the investigation, it is feared that interest in the SME falls. But beyond improving framework conditions and external incentives, we must also make changes within the unit of production, to improve the effectiveness of EMS.

Three factors are considered essential for the future development of the EMS:

- Ensure the implementation of an integrated management system
- The strategic application of the EMS
- The use of EMS as a basis for a new relationship between business and the authorities.

Lack of a clear strategic plan

A plan is defined as "anything that involves selecting a course of action for the future". Within the field of management, you can find a considerable body of knowledge pertaining to planning [13]. ISO 14001 reflects a strategic plan choice for the company, but it does not describe a managerial strategy adopted, most elements of the standard remain focused in terms of operational management.

It is true that the requirement a corporate environmental policy primarily addresses the normative level, leaving aside the strategic plan. There is nothing special in the standard that allows helping the company management to build potentials ecological success and to use changes in the context of the company as starting point for the targeted reduction of ecological risks. For cons, the standard full details on how to proceed operationally.

This is reflected in practice, where the strategic objectives of the EMS are so developed. The results of the survey show that companies are satisfied with the standard requirements on the operational level, but strategically it is not satisfied. Thus we see that the definition of an environmental strategy helps identify strengths and weaknesses and identify opportunities and threats.

The Key Elements Recommended to Improve the Environmental Management System

Leadership

Many writers on leadership have pointed out a connection between art and leadership. According to Max De Pree, Herman Miller CEO emeritus, "leadership is an art", leadership is more tribal than scientific, more a weaving of relationship than an amassing of information [14]. Thus, the role of the leadership in the EMS is an essential condition for the success of the approach. Management defines the financial and human resources it will make available to implement the EMS. Moreover, it is a key element in terms of staff motivation.

Training

The training is a planned and systemic effort to modify or develop knowledge/skill/attitude through learning experience, to achieve effective performance in an activity or range of activities. Its purpose, in the work situation, is to enable an individual to acquire abilities in order that he or she can perform adequately a give task or job [15]. The improvement and development EMS requires awareness, qualification and training of staff at all levels. The system will only work if everyone is involved.

It is appropriate that everyone knows:

- The environmental policy of the company
- Company motivations
- Project planning
- The project coordinators (who can answer questions the workers?)
- The practical implications for the workers at the daily work (who is responsible for what, how to sort waste?)

Awareness campaigns must be arranged for all staff. This is a new concept that was not addressed in the ISO 9000 family training is limited to personnel whose activities may generate a significant impact on the environment (the treatment plant manager operator "waste sorting", etc.) and those involved in the operation and monitoring of the EMS (auditors, etc.), awareness can lead to simplified instruction.

Training can be done internally or externally. It will therefore be necessary, firstly, to analyze the needs in environmental training within the company and identify the skills needed for various functions. A training program will then be developed. When trainings have been organized, the effectiveness of these will be assessed. It will also train new employees and temporary system set up (special instructions for sorting waste material, instructions in case of emergency, etc.).

Standards and technicals

Standards and technical's it defined as "the description of a unique, definite solution of a recurring task adapted to the given scientific, technical and economic situation" (after German Industrial Norms Institute, DIN) [16].

Operational procedures

The operational procedures in the EMS will control the environmental impacts generated by all the company's activities. Initially, it will identify activities generating environmental impacts. For example:

- Design and engineering research and development
- Purchases, subcontracting
- Storage of raw materials and transport
- The methods of production and maintenance
- The storage and handling of products
- Waste management
- The water treatment before discharge and operation of the treatment system
- Replenishment (loading/unloading activities, unpacking, etc.)

Once identified, activities need to be developed procedures and guidelines for the various workplaces involved. It is recommended to involve a maximum of persons affected by the proceedings in their writing: it is a guarantee of higher system efficiency. Here are some examples of procedures or instructions that may be drawn up:

- A purchase process product will provide environmental criteria (Ex. prohibition of use of CFC type of polluting compounds).
- A selection procedure for subcontractors
- A waste management procedure
- A procedure for managing safety data sheets for hazardous

These procedures and work instructions must be communicated to staff but also to subcontractors and suppliers.

Environmental Audit

The definition of an audit is a systematic, multidisciplinary assessment of a process, system, or facility. An industrial hygiene and safety audit is the unbiased collection, evaluation, and report of workplace and management information [17].

There are actually two types of audits:

- Internal audits: This is a self-assessment system decided by the company itself, and applying to its own system (developed by the company's staff). To comply with the ISO 14001 standard, there needs to be an audit procedure describing the method, the qualification of auditors and implement audit programs (specifying the scope of the audit, the auditors

involved, the dates, etc.). Still insist on the fact that the audit is a good staff membership means to approach since workers will be audited and should be involved in corrective actions. The audit should also be considered as a tool of progress: this is not a constructive and repressive approach.

- External audits: Audits by an outside person who can be a customer or an independent external auditor in particular, for a certification in this case, we speak "audit by a third party."

Conclusion

Our scientific paper shows that certified companies in the industrial park of Bir Rami do not fully 100% to the requirements contained in ISO 14001. A number of non-conformities are mainly noticed at the management and the method of the organization of leadership and the level of training of the management process. The ISO 14001 standard prescribes how a company can develop an environmental policy, identify environmental aspects and impacts of their activities, products and services, define the significance of these impacts; rank them, identify legal and other requirements governing the organization's operation, establish objectives and targets, implement programs to meet those standards, establish an auditing system and procedures for management review, and implement corrective action, if needed, based on audit findings [18].

Finally, we can confirm that the integration of the development and the continuous improvement approach in EMS project can ensure the improvement of environmental performance, defined as measurable outcomes EMS in relation to the control by the organization's environmental aspects on the basis of its environmental policy, objectives and environmental targets [19]. In fact, the environmental impact is, remember, the effect and its cause is the environmental aspects of the business activity [20].

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