

## **Ecological behaviour of Moroccan industrial companies: An Analysis of Multiple Correspondences**

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**Résumé.** Depuis 2003, plusieurs industries marocaines en réaction essentiellement au développement de la législation environnementale ont procédé à des engagements environnementaux techniques et managériaux dont le but de préserver leur survie et pérennité. L'objectif de cette recherche est d'identifier les comportements écologiques des dirigeants des industries marocaines et d'explorer les instruments mis en place pour atténuer l'impact environnemental de ces derniers dans un contexte mondial de vulgarisation du développement durable. Sur un échantillon de 20 entreprises, les résultats montrent que ce sont essentiellement les dirigeants de grandes entreprises qui adoptent des comportements citoyens caractérisés par un engagement technique et managérial élevée. Cette recherche révèle aussi que la majorité des entreprises adoptent des technologies curatives et que les difficultés financières constituent la principale barrière pour l'adoption des technologies environnementales.

**Mots clés :** *Engagement environnemental, technologie environnementale, système de gestion environnementale, comportement écologique.*

### **Abstract**

Since 2003, several Moroccan industries, mainly in reaction to the development of environmental legislation, have made technical and managerial environmental commitments aimed at preserving their survival and sustainability. The objective of this research is to identify the ecological behaviours of the leaders of Moroccan industries and to explore the instruments put in place to mitigate their environmental impact in a global context of popularizing sustainable development. On a sample of 20 companies, the results show that it is mainly the managers of large companies that adopt citizen behaviours characterized by a high technical and managerial commitment. This research also reveals that the majority of companies adopt curative technologies and that financial difficulties are the main barrier to the adoption of environmental technologies.

**Keywords :** *Environmental commitment, environmental technology, environmental management system, ecological behavior*

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## **1. Introduction**

Reflections on the economic consequences of the environmental actions of companies are most of the time articulated around two attitudes that are difficult to reconcile. The first, the most traditional, considers that the advantages of environmental actions do not compensate for the often significant costs borne by the company. Ecological issues therefore appear as constraints likely to threaten the sustainability of organizations and to which companies must respond by investing. The second attitude is, on the contrary, based on the affirmation that actions to reduce the impact on the natural environment are profitable for the company, and constitute opportunities to improve competitive positioning and modernize processes.

The importance given to the environmental problems and their potential consequences for Humans has driven a change in the perception of our natural environment. To shift from a destructive attitude to a protective one, the safeguard of our environment has become a priority for the public authorities and ecological associations. Today, the protection of the environment is no more a developed countries' concern, many developing states have started to take more interest in their natural environment. This is the case of Morocco, which has joined this ecological wave since 2003 through setting up an environmental legislative and institutional framework.

Urged on by the public authorities, the Moroccan industries have started their commitments to protect the environment so as to sustain their legitimacy. This approach has compelled them to review their management systems and introduce the new ecological component. The level of their commitment to the protection of the environment depends mainly on the ecological behavior of the managers.

## **2. Environmental commitments**

The environmental commitments of the managers of the Moroccan industries reflect their will to reduce the pollution level of their companies. They significantly determine the ecological results. Florida (1996) found that the managers are through their environmental commitments the main actors that contribute to the improvement of the ecological results, more than engineers and operators. Norm ISO 14001 stresses the importance of the role of the managers, citing that they should commit to the improvement of the ecological results of their enterprises prior to any certification process (Gravronski *et al.*, 2008).

These environmental commitments rarely emanate from ethical motivation (Roy *et al.*, 2001). Generally, managers are motivated to save the environment only when they detect an opportunity or sense a threat. An opportunity because some environmental initiatives such as recycling operations are economically advantageous. A threat because the legitimacy of enterprises may be affected thus urging managers to take environmental measures.

The environmental commitments can take different forms: environmental strategy, environmental certification, etc. (Henriques and Sadorsky, 1999). This research proposes to classify them in two categories, technical environmental commitments and managerial environmental commitments. This classification emanates from the components of the environmental management which contains two constituents: technical and managerial (Robert and McLaughlin, 1996).

### **2.1. Technical commitment**

Technical commitments related to the environment manifest themselves through the implementation of environmental technologies defined as production equipments, methods, proceedings and perceptions aiming at preserving energy and natural resources, minimizing

the negative impact of human activities on nature and protecting the environment (Shrivastava, 1995).

Following this definition, the concept of environmental technologies is bidimensional. The first dimension is concerned with equipments such as wastewater treatment plants. The second relates to the techniques and procedures established so that the environmental equipments produce the effect desired, such as the procedures related to accidental pollution.

Environmental technologies are diverse. This is why several classifications are suggested (Klassen and Whybark, 1999b; Pogutz and Tyteca, 2002). Based on the principle of their functioning, the majority of works identify two major categories of environmental technologies: antipollution technologies and pollution prevention technologies (Christmann, 2000; Hart, 1995).

- **Control technologies** : This type of technologies aims at cleaning up and treating existing pollution. The contaminants generated by the enterprise's activities are treated along with the production process (Klassen and Whybark, 1996b ; Klassen and Whybark, 1999a). Despite the widespread use of these technologies in response to governmental incentives, which target a quick reduction of polluting emissions, these technologies are not free from certain shortages. They are short-term solutions that do not modify the behavior of the polluters. In fact, businesses keep polluting in hope that these technologies relieve the impact of their economic activities.
- **Prevention technologies** : In response to the control technologies deficiencies and the intensification of the ecological pressures, this type of technologies emerged to eliminate or minimize pollution before it occurs. These technologies interfere prior to the occurrence of the problem and thus induce modifications in the production process (Klassen, 2000). The development of the norm ISO 14001 makes it possible for this type of technologies to improve as it is based on the principle of prevention which implies an efficient use of resources. Pollution is regarded as an inefficiency in the use of resources (Porter and van der Lind, 1995).

While control technologies are placed downstream of production process, prevention technologies are an integral part of the process and thus force enterprises to modify their production process. Such a shift is generally refused by the managers, mainly if the processes are not technically and economically obsolete.

## ***2.2. Managerial commitment***

Environmental managerial commitments take form by setting up an environmental management system (EMS). This system is defined as an environmental policy and management procedures aiming at reducing pollution (Klassen and Whybark, 1999a). The EMS includes managerial activities which pave the way for enterprises to reduce and permanently control any negative effect on their natural environment. For this reason, the EMS is essentially based on environmental objectives, a clear environmental policy, an adequate organization that defines tasks along with identifying action plans and the necessary resources. According to Henriques and Sodorsky (1999), the environmental commitments of top managers are basically managerial. In this regard, Roy *et al.* (2001) state that the main environmental commitment of managers is the elaboration of an environmental policy.

These managerial environmental commitments are also more reinforced if enterprises subscribe into a certification process ISO 14001. A certified EMS adoption implies the implementation of important financial, human and technical resources. It also involves the use of new managements methods as well as a restriction of the whole organizational set. This may provoke employee resistance. This is why the managers are called upon to reinforce their environmental commitments so that the environmental certification fulfills its purposes, mainly the environmental ones (Berger-Douce, 2012).

Due to the barriers related to ISO 14001 certification, such as financial barriers, some managers opt for organizing their EMS. Within these non-certified EMS, managers commit to the safeguard of the environment. Their environment related activities can be organized in the framework of environmental plans within which their environmental objectives are fixed and procedures related to their evaluations are established (Mzoughi *et al.*, 2016)

The main objective of an EMS is generally to provide a framework of references for environmental activities so as to obtain more satisfying environmental results. It is about improving the organization of activities within a process so that each concerned collaborator is aware of his or her responsibilities and duties. Each enterprise that has adopted environmental management has an EMS. The difference between a certified EMS and a non-certified one lies in the level of organization, clarification and planning of environmental activities.

Despite the environmental technologies and the SGE being sources of environmental performance, several top managers opt for environmental technologies for the sole purpose of organizing their SGE. This is due, among other causes, to strategic choices. Some managers are quite satisfied implementing environmental technologies while totally or partially neglecting the role of the EMS in the improvement of the environmental results. Environmental technologies, more than EMS, provide more tangible results (Boiral, 1998). Others admit the utility of an SGE as a prerequisite for a successful environmental management and try to adopt them along with environmental technologies which are regarded not enough for environmental performance (Boiral, 2005).

The importance allotted to each of these two types of environmental commitments is subject to the perception managers have of the ecological dimensions which will be translated in their ecological behaviors (Sharma, 2000). The following section of this paper is an attempt to retrace the evolution of this perception and its impact on the environmental commitments.

### **3. Typology of behaviors**

The evolution of managers' ecological behaviors can be equated to a two- step process. The first emerged in the sixties with the escalation of ecological pressure caused mainly by the negative consequences of the Cow- boy approach to the economy adopted since the industrialization wave. The managers consequently started to modify their behavior towards the natural environment.

The Cow-boy approach to economy, resulting into an anti-ecological behavior, claims that all is permitted to maximize the profits of the enterprise (Boiral, 2003). Businesses massively exploit the natural resources without taking into account if the state of the environment permits such an exploitation or not. Therefore, enterprises consider solely the material value of nature and neglect its intangible value. Nature exists only for the purpose to satisfy human needs and humans have ample right to use nature the way it pleases them. Humans are considered more important than the natural environment whose resources are regarded as free and their exploitation is unlimited. For Hunt and Auster (1990) and Christopher and Ellen (1990), the managers that adopt this type of behavior claim that the protection of nature is irrelevant and thus try to minimize their commitments to the protection of the environment. Bellini (2003) describes such behavior as defensive.

Along with the appearance of the first ecological wave, a new approach starts to develop, bearing in mind that the old approach supposes that the ecological dimension is an economic and societal constraint Boiral (2003). An economic constraint because the profits issued by the ecological actions cannot compensate the costs engendered by these actions. A societal constraint because of the fact that the concern with the environment triggers societal pressures that are imperatively to be taken into account.

With such logic, the managers adopt in most of cases a defensive ecological behavior opening the door to corrective ecological actions rather than preventive ecological measures Berry and Rondinelli (1998). Bellini (2003) describes this behavior as an eco-conformist that tries to conform to environmental regulations without breaching them.

These reactive measures, mainly oriented towards technical rather than managerial aspects, try to reduce the amount of waste to be disposed of through adopting clean-up technologies so as to silence the protesters. Environmental actions are triggered only when problems arise. The environmental management is therefore not a priority for the managers.

The main objective is to conform to the environmental regulations. With this ecological behavior, the managerial environmental commitments are weak or even inexistent: no environmental objectives, no environmental strategies or environmental reports (Christopher & Ellen, 1990).

During this period, most managers think that environmental actions slow the economic growth of the enterprise (Burgenmeier, 2000). The environmental and economic dimensions are incompatible for most managers. As a consequence, few enterprises fulfill their responsibility to the environment; they refuse to modify their behavior towards nature.

This ecological behavior on the part of the managers can be explained by the adoption of the concept of negative externalities which supposes that any impact on the environment holds costs that society will bear and not the firms (Boutillier, 2003). They are as a consequence externalized. The ecological pressures contribute to making the firms bear the cost of their actions, which mean internalized. As a consequence, they are incorporated in the cost of production (Ambec and Barla, 2002).

Heavily criticized, the classical logic has gradually retreated in the eighties and a new logic emerged, qualified by winner-winner. It claims that the managers can at the same time improve the economic as well as the environmental performances of their enterprises. Lots of works try to confirm this logic Porter and van der Linde (1995). The appearance of sustainable development is a sign of the development of this logic. The protection of nature has thus become, for certain enterprises, one of the major concerns not only for the environmental administration, but for the other administrations as well. The ecological problems are managed on a daily basis. The actions of the enterprise take into consideration not only the economic aspect but the societal one as well. The managers' behaviour tend to be proactive and sensitive to ecology and attempts to go beyond environmental regulations Bellini (2003).

The environmental commitments of the managers have become much more important for this logic (Berry and Rondinelli, 1998). The managers try to fulfill their social responsibilities through incorporating ethical and environmental constituents. Such approach may lead to a change in the organizational culture and consequently introduce modifications in the staff behavior. Therefore, the managers tend to adopt prevention technologies even if they are more expensive than control technologies. The managers accept to modify their production process for a cleaner one. Moreover, the increasing importance allotted to the protection of the environment is along with a reinforcement of the management environmental commitments. The managers tend to establish an EMS even if it is certified (Ambec and Lanoie, 2009).

The environmental commitments of the managers become more significative according to this logic (Berry and Rondinelli, 1998). The managers try to assume their responsibilities towards society by including ethical and environmental components, which can provoke a change in the organizational culture and subsequently modify the staff behaviors. Therefore, managers accept to modify their production process for a cleaner one. Also, the increasing value given to the protection of the environment along with the empowering of environmental managerial commitments.

The managers tend to establish an SGE even if it is not certified. As Hunt and Auster (1990) affirm, the adoption of more convenient and supporting behaviors to the protection of the environment results into the strengthening of the environmental managerial commitments Christopber and Ellen (1990). These behaviors include: the setting of environmental objectives, formulation of an environmental strategy, environmental reports, etc....

#### **4. The characteristics of environmental management in the Moroccan context**

##### ***4.1. Presentation of the Moroccan context***

Morocco started to take into account the ecological dimension in 1990. Several plans and intervention programs aiming at saving and developing the natural resources and to a lesser degree ameliorate the quality of life have been introduced. However, many of these programs had little success. It was only in 2003 Morocco succeeded in establishing a legislative and regulatory framework aiming at preserving the environment, following the ratifications of major conventions and international protocols and the adoption of Rio declarations on environment and development (1992).

After the settlement of a legislative and institutional arsenal, which constitutes the basis of an environmental policy during the period (1995-2003), Morocco looked forward to giving shape to its environmental policies. The cost of environmental investments show such achievements as it has gone up from 820 MD in 2008 to 1278.96 MD in 2018. Several strategies and programs have been included to pave the way to the shift from a social and economic development approach to a sustainability logic associated with the protection of natural and cultural heritage<sup>1</sup>.

This environmental policy tended at first towards a concomitance between the curative and the preventive so as to face multi environmental problems, then it headed for an approach that favors sustainable development adopting the National Strategy of Sustainable Development and based on 7 issues and is concerned with 31 strategic axes. Several programs have been set up such as The Green Morocco Plan, wind and solar energy plan, the clean-up of industrial waste, the national program of household waste management and the corporate management of coastal zones<sup>2</sup>.

##### ***4.2. The characteristics of the sample***

So as to analyze the specifics of environmental management in the Moroccan context as well as the ecological behavior of Moroccan managers, questionnaire-based research was carried on in industrial Moroccan enterprises all over the country. The list provided by the Ministry of Industry, Trade, Green and Digital Economy allows for contact with the enterprise be it directly, by phone or electronic mail. Unfortunately, some enterprises are unwilling to be part of this survey. The sensitivity of the subject and external pressures constitutes an excuse for the managers to express their refusal. In total, 80 out of 220

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<sup>1</sup> Ministry of Economy and Finance. Special Treasury Accounts Report 2019.

<sup>2</sup> United Nations Economic Commission for Africa/Europe. Environmental Performance Review of

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enterprises have accepted to take part in this research, and most of them belong to the food and chemical sectors, thus a percentage of 37% in response rate. The respondents to the survey are top managers, technical managers or those in charge of environmental department. Descriptive statistics relating to the composition of the sample according to size and sector of activity are presented in Table 1.

**Table 1 : Distribution of enterprises according to activity sector and size**

	Number of enterprises	%
<b>Distribution of enterprises according to activity sector</b>		
<b>Chemical industries</b>	24	30
<b>Food enterprise</b>	28	35
<b>Metal and mechanical</b>	8	10
<b>Leather and textile industries</b>	20	25
<b>Distribution of enterprises according to size</b>		
<b>Small enterprise</b>	28	35
<b>Average enterprise</b>	20	25
<b>Big enterprise</b>	32	40

**Source: The authors**

These enterprises can be classified in terms of their size in three categories (table2). It seems in the framework hereby that the majority of the enterprises surveyed have small or medium size. This constitutes the reality of the Moroccan economic fabric of which small and medium enterprises (SMEs) represent 93%.

The enterprises surveyed are considered as pollutant enterprises. 45% of the enterprises discharge liquid waste, 35% are source of atmospheric pollutants, 65% discard solid waste and 20% generate pollution. The answers that have been collected reveal that some enterprises generate several environmental pollutants and form of releases at the same time.

## **5. Results**

### **5.1. Environmental technical commitments**

The survey reveals that the level of technical commitments for the preservation of the environment is relatively low, as is shown in Table 2 relating to the descriptive statistics of the technologies used and the level of investment committed by industries for the reduction of waste and the implementation of environmental management systems. The results (table 2) show that the managers opt mostly for control technologies rather than prevention technologies. This observation can be ascribed to several factors. Firstly, control technologies have lesser costs than prevention technologies, and the surveyed enterprises are mainly small or medium with limited financial capabilities. Secondly, the top managers are reluctant to accept the adoption of prevention technologies since this requires a change in the production process. Moreover, as Klassen and Whybark (1996) strongly declare, control technologies have a quick impact for the enterprises and their stakeholders, mainly governmental organizations, even if prevention technologies are more efficacious as far as the environment

is concerned than control technologies. Finally, control technologies are easier to set up than prevention technologies as they juxtapose the production process.

**Table 2 : Descriptive statistics**

	N	Minimum	Maximum	Average	Standard deviation
<b>Green Technology Investment</b>	80	1	5	2,80	1,480
<b>Reduction Of Waste</b>	80	1	5	3,75	1,209
<b>Investing in SME</b>	80	1	5	3,05	1,530
<b>Control technologies</b>	80	3	5	4,60	1,821
<b>Prevention technologies</b>	80	1	5	3,20	2,042

**Source: The authors**

This result summarizes the perception these leaders have of the environmental dimension. They admit that the environment initiatives hinder the economic performance. They opt consequently for a “win-lose” approach where the reconciling of the economic and the environmental components are difficult even impossible to attain.

The massive use of control technologies has had an impact on the level of pollution reduction. Most responders are dissatisfied with the environmental outcome of the ecological actions. The use of control technologies is supposed to be an obligation because prevention technologies are regarded costly.

In terms of environmental innovation, only ten enterprises introduce innovative ways to reduce their discharge. These innovations are only limited to the production process and are incremental. None of the enterprises introduce product innovations and are thus unable to offer an ecofriendly product. The respondents attribute this to the Moroccan consumers' behavior which assigns little importance to the ecological dimension in the product choice. The disinterest of surveyed enterprises in environmental innovation can be explained by the lack of means as they are small businesses. Moreover, and as some top managers say, the gains expected from certain innovations are largely low and do not cover the cost.

### ***5.2. The environmental managerial commitments***

The level of environmental management commitment of the companies is presented by the integration of sustainable development, the application of environmental policy, the establishment of an environmental department and by environmental performance (ecological balance sheet, carbon footprint, spending efficiency) as it shows at table 3.

The survey shows that the level of environmental managerial commitments (table 3) of the enterprises is relatively lower compared to environmental technical one (Table 2).

The respondents say that their environmental activities are not often a part of an environmental strategy. They claim that such strategy is irrelevant. The survey results also show that the 13 enterprises that formulate an environmental strategy are generally big enterprises (workforce exceed 200). For these enterprises, such strategy can be established after the meeting of organization department heads. In fact, some enterprises set up an



environment committee which defines the guidelines for the protection of the environment. This committee is mainly composed of department directors as well as the company' management. Similarly, the environmental strategy can also be established by the service in charge of environmental matters, whose final decision is up to the company management.

Among the 80 surveyed enterprises, only 10 have an environment service. For some managers, this service is irrelevant and environmental matters can be managed within the company management. Yet for others, the environmental issues are so complicated and should imperatively be organized within a department. Furthermore, eight enterprises have at the same time an environmental service and an environmental committee. The probability to have an environmental service increases along with contaminants range.

**Table 3: Descriptives statistics**

	N	Minimum	Maximum	Average	Standard deviation
<b>Integration of Sustainable Development</b>	80	1	5	3,30	1,418
<b>Application of Environmental Policy</b>	80	1	5	2,55	1,356
<b>Environmental Department</b>	80	2	5	3,50	1,192
<b>Environmental Performance</b>	80	1	5	2,60	1,635

**Source: The authors**

As for the last points, considering the preparation of environmental reporting and the documentation of environmental activities, there is insufficient commitment on the part of the managers. For most of the managers, documentation of environmental activities and environmental reporting are irrelevant as no concerned parties ask for them. Environmental legislation in Morocco does not oblige enterprise to circulate or document their environmental results. If the managers of some enterprises, mainly those that have more than 200 employees, affirm that documentation of environmental activities is necessary as it represents a reference framework to implement new environmental activities in view of a constant improvement. Environmental reporting is regarded as a rational management tool with the public authorities whose objective is reduce the regulations pressure.

### **5.3. Typology of behaviors**

To probe the managers 'ecological behavior, a correspondence analysis has been used. The Analyze of Multiple Correspondences as defined by Renisio and Sinthon (2014) is a factorial method for studying the correlations/ the similarities between individuals and variable modalities in a graph showing all variable modalities chosen in the analysis and whose principle go back to Gutman works (1941), Burt (1950) and Hayashi (1956) Desbois (2008).

5 variables are taken into account by the analysis: the enterprise size, the DD integration level, number of adopted technologies, establishment of a policy for promoting energy efficiency and creation of an environmental department.

Multi correspondent analysis used allowed for the extraction of two axes (dimensions) gathering 50% of collected data (inertia ratio or Variance of dimension) as shows in table 4 (Palm, 2007).

**Table 4: Represented variance**

Dimension	Cronbach's alpha	Total (proper value)	Inertia	Variance%
1	.890	6.280	.349	34,891
2	.668	2.712	.151	15,066
<b>Total</b>		9.992	.500	
<b>Average</b>	.823*	4.496	.250	24,979

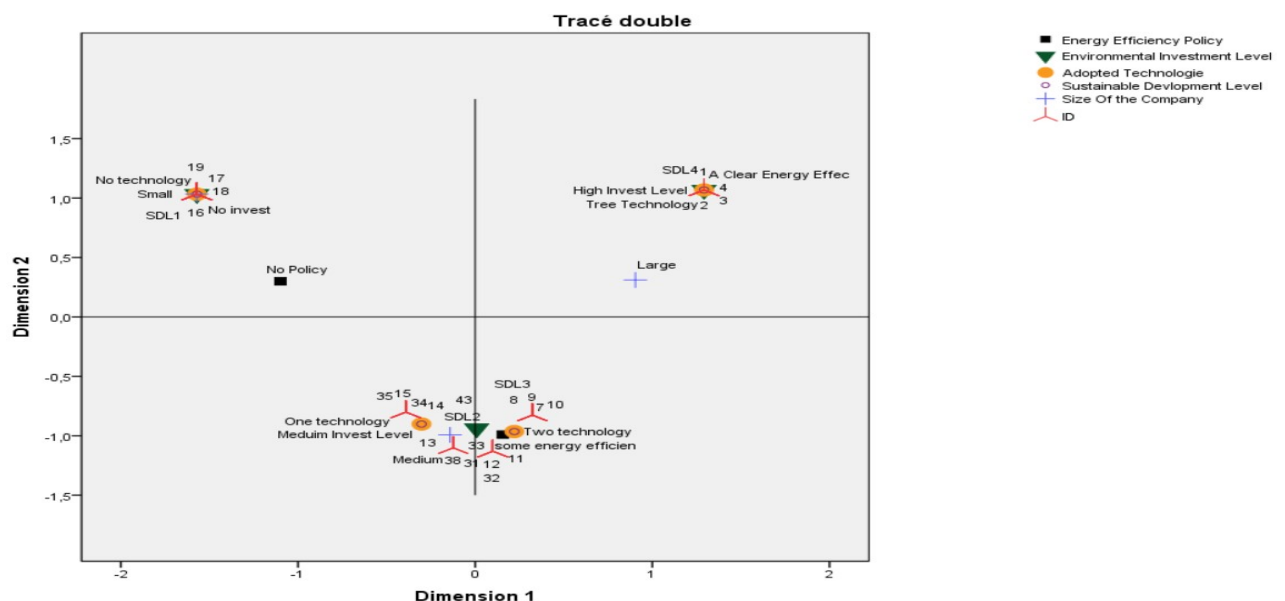
\*The average Cronbach's alpha is bases on the average proper value

**Source: The authors**

Figure 3 displays the simultaneous representation of the individuals and the modalities for a more concrete interpretation of the results, in general it is not carried out because the number of individuals is often numerous. Even if there are groups of individuals of identical profile leading to multiple points, the number of different profiles is likely to be significant when the modalities are numerous. This would result in unclear graphs and very voluminous results documents.

At first sight, the diagram of modalities shows the existence of 3 large groups of individuals.

**Figure 1: Modalities graphics representation**



**Source: The authors**

#### ***5.4. The citizen behavior***

The simultaneous individuals/modalities diagram analysis indicates enterprises situated on top right next to strong modalities of the variances and three technologies who's the environmental component is at the heart of all the strategies. The protection of the environment achieves its highest-level following a palliative approach mainly based on the daily basis treatment of the ecological problems and clean technologies use that target pollution reduction at the source. These enterprises are big-sized, certified and inform their customers of the accumulated efforts to preserve the environment. Such behavior is qualified corporate citizenship and is specific to big sized companies that are usually listed on the stock exchange Fatima and Alioua (2019).

#### ***5.5. The conformist behavior***

The lower part of the axis2 draws together modalities of two technologies, medium level invests, some energy efficiency policy and SD3 thus indicating a frequent behavior for the preservation of the environment that is characterized by integration of a sustainable development policy with a set up environmental component. These modalities are bounded by the medium and big size modality. Therefore, this so qualified behavior as conformist is generally present in the big and medium size surveyed enterprises Soumaya, Soualhia, and Habib (2014).

The entities situated on the right part (axis 1<0) where weak variable modalities are clustered indicate that the environmental component is neither a technical nor managerial priority for the surveyed enterprises. The aim of the implemented technologies is conformity to environmental regulations.

#### ***5.6. The defensive behavior***

Axis 1 clearly contrasts environment protection behavior modalities, weak modalities of analysis variables draw together on the top left part, sustainable development integration is low or nonexistent (no SD policy). Investments for the environment are low which explains the adoption of one curative environmental technology (situated downstream of production process). Such behavior described as defensive and which falls within a "win-lose" logic is frequent in medium and small enterprises.

Waste management issue seems to be prime concern of industries as most claimm apply series of measures to manage waste. In terms of renewable energy investments, only 30% declare using solar parks to ensure power supply despite the huge identified potential of this type of energy in Morocco.

The cost constraint seems to be the major hindrance to investments for small, medium and big enterprises, which explains the lack of environmental component inclusion in their management. Enterprises just use curative technologies to control pollution while unable to modify the polluters 'behavior.

### **6. Conclusion and policy implications**

The purpose of this research is to identify and explore the behavior of the Moroccan industries top managers in terms of the level of their commitments to the environment. A review of the literature shows two types of commitment, technical and managerial. The results of the survey reveal three ecological behaviors: defensive, conformist and citizen. The survey also shows that most Moroccan industries try to minimize their ecological commitments while respecting the Moroccan environmental regulations. Internal factors are at the cause of this finding. The managers' interpretation of the environmental dimension as well as the limited Moroccan enterprise capacities can explain this observation.

One of the reasons that can explain the massive defensive behavior adoption is linked to the public authorities' behavior towards enterprises. It is fundamental that the public authorities' role should be cooperative rather than coercive. Throughout the survey, we sensed mistrust in the authorities. A change in behavior will urge managers to modify their approach to the ecological dimension and achieve benefits. Mistrust is often regarded as an economic and societal obstacle.

On its part, the Department of Sustainable Development, in response to this situation, has put in place several programs and projects that will allow industries to be involved in this process, namely: the New Pollution Prevention and Control Programs 2021-2030, which aims at the environmental upgrading of industrial zones, SMEs and SMIs in the handicraft and olive sector, and other activities that have an impact on the environment; the National Strategic Adaptation Plan 2021-2030; and the Climate Plan 2020-2030, all of which will ensure that air quality is preserved and improved. Sectoral decarbonization plans are also envisaged as part of the National Low Carbon Development Strategy for 2050.

Meanwhile, this research has certain limitations, the selected investigation methodology, the questionnaire does not allow to deeply analyze the specificity of environmental management in the Moroccan context. In depth interviews and observation shed more light on the Moroccan managers' vision of the environmental dimension. Moreover, the choice of other regions allows to get a clearer insight of environmental management in Morocco due in particular to the geographical specificities and local issues of each region. Finally, identifying other factors allows a better understanding of environmental management mechanisms such as the leaders' vision of the environmental dimension and the societal pressures level.

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