Environmental Performance Management Systems (EPMS) versus Sustainable Development/Competitive Advantage in the Case of the Tunisian Companies

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Abstract

This paper explores how companies are focusing to evaluate the performance management system that attempts to promote sustainable development and its competitive position, or even have a sustainable competitive advantage. Under the influence of control variables such as the environment, the social responsibility, the strategy and the stakeholders, we conceptualize a performance management system (PMS) able to reach these goals.

We take a case study approach using questionnaire survey sent to 306 Tunisian industrial companies, supported by exploratory and confirmatory analysis. The results of the principal component factor analysis evidenced by Cronbach's alpha and KMO and the structural equations with indices of structural have devoted a good quality of adjustment. These results show the existence of a significant and positive relationship between the variables. This confirms that performance management system (PMS) influenced by the dimensions of social responsibility, environment, strategy and stakeholder interests had a positive impact on the integrated ecological business models (IEBM) and the environmental Management Control Systems (EMCS)

Keywords: Environmental performance management, Sustainable development, Competitive advantage, Social responsibility, Organization

1. Introduction

Social responsibility is a management issue that has been widely asked in different contexts. The whole idea of this concept covers all interested parts that have relations with companies, which take into account the different expectations of its stakeholders, the financial, social, ecological and environmental.

Kaplan and Norton (1992, 1996, 1998, 2001, and 2010) frames highlight the implications of the strategic management control system on the financial and strategic value.

Financial performance is no longer enough to appreciate the performance of a company. It was during the 20th century that performance was broadened to take into account the "social responsibility" or social responsibility of the company towards its stakeholders. The concept of performance is dematerialized with the concept of sustainable development.

In this context, the concept of social responsibility is well understood as an essential component of sustainable development. This has a great importance in the different evolutions of the overall performance to reveal its different approaches.

Thus, the Johannesburg Summit (2002) marked a great event for the promotion of sustainable development. In fact, sustainable development is based on three general principles: The principle of equity, the precautionary principle and the principle of participation.

Similarly, sustainable development is reflected in three main lines that make it possible to evaluate performance under three axes, namely the environmental axis, the social axis and the economic axis.

The use of non-financial indicators to evaluate or steer performance in organizations finds its explanation in various theoretical reflections. Hayes (1977) was one of the first to study management control systems using a contingent approach. His efforts concerned the level of performance achieved by the divisions according to three contingency factors.

For the proponents of the neo-institutional school, the management control is not a simple technique but it participates "in the construction of the social and organizational reality". Several recent researches in management control have been based on this neo-institutional approach. Most explain that the company seeks to put in place control systems based on its strategic choices and demands of the external institutional environment.

Indeed, the neo-institutional approach appeared around the 1980s, have explained and understudied the conventional mechanisms. This approach is based on the study of the behaviour of individuals in the organization.

In this context, different theories have invested in this observation. They demonstrate the importance of the integration of CSR indicators into management control tools. In order to pilot a societal performance, this has proven interesting in turbulent environments and mutants, which make essential the integration of CSR indicators in a voluntary approach.

Finally, management control is a societal performance measurement function capable of fostering sustainable development and stimulating competitiveness.

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2. Performance Measurement Systems (PMS)/ Sustainable Development (SD)/ Competitive advantage (SDA): Literature Review

2.1 Performance Measurement Systems Evolution

Performance measurement systems have continued to evolve. This is reflected by many contributions that have not stopped to adjust strategies of the organization with the development of the overall business environment. Firstly, Chiapello and Delmond (1994) proposed adding a qualitative representation that incorporates non-financial information into performance management systems. These authors include the same assumptions as those mentioned by Bowen (1953) and Kaplan and Norton (1992), which involves the integration of non-financial indicators in systems for measuring business performance namely.

Several studies have focused on the performance measurement systems such as the study of Bui and de Villiers (2017) examines the types and role of carbon management control systems by analyzing in-depth interviews undertaken with 38 individuals from 30 organizations that use carbon management control systems.

García-Onetti et al. (2018) have sought to establish bridges between the Environmental Management systems and Tools (EMT) of economic sectors and the Integrated and Ecosystem Based Management models (IEBM). Virapongse et al. (2016) test the limits of current management approaches and pushing demand for innovative approaches that integrate across traditional disciplinary boundaries. Brzozowska et al. (2015) examine the effects of implementing systems informing about the environment in an enterprise, usually focus on typical areas of their use in environmental management, with particular reference to the evaluation of their practical importance.

2.2 Corporate Social Responsibility

For many years, social responsibility has been a problem for organizations. This consisted of a theme that is still emerging. It was the result of a great debate that seeks to meet the obligations of companies to its global environment and the limitations that companies can overcome their obligations other than economic and legal towards its social, human, political and ecological aspects. Bowen (1953) concludes that companies are responsible for their actions in a wider sphere than the mere economic sphere.

Thus, he defined CSR as an obligation of businessmen to carry out policies to make decisions and to follow the guidelines that meet the goals and values that are considered desirable in our society. Carroll (1999) argues that social responsibility refers to the Decisions and actions taken by businessmen due, at least partially, considerations that transcend those directly related to the technical and economic interests.

In a first initiative, Zenisek (1979) marked the rise of unions, which induced an increasing consideration of employees during the period 1900-1950. Carroll (1979) proposed to retain the three dimensions of social responsibility, which emerges a feature liable to the ethical, what made into account the respect of social, philanthropic and discretionary. In this approach, companies must consider the various stakeholders they have with them in trade.

Similarly, Gond (2004) discussed the company's social performance dimensions and the process distinguished between corporate behavior that could be called social engagement, social responsibility and social response. Thus, social responsibility is still an emerging concept which has a somewhat vague meaning.

The literature review identified theorists and practitioners have continued to explain the meanings and boundaries of the concept of social responsibility of the company.

First the basic work of Carroll (1979), the model Wartick and Cochran (1985) and finally that of Wood (1991). Carroll (1979) defines social performance of the company so as, "Corporate Social Responsibility", "Social Response" and "Social issues" under one concept. In this model social responsibility is defined as one that "includes all economic, legal, ethical and philanthropic expectations (discretionary) can have the company in respect of a business at some point."

According to Carroll (1979), the discretionary responsibility plays an active role in the development of solutions to social problems such as those of racial discrimination, pollution, transport, health and safety, etc.

So, the social response was referring to the possible management responses to different social pressures. For social, Carroll (1979) identifies as the environmental, occupational safety and shareholder satisfaction.

Watrick and Cochran (1985) defend the idea that the three dimensions of accountability, responsiveness and social response are related and form a system he calls corporate social involvement" (Corporate Social Involvement). They developed a third dimension synonymous with "social issues of management" (social issues management) which aims to minimize the surprises that may come from the turbulent environment of firms.

In fact, Watrick and Cochran (1985) picked up the idea of the three dimensions of Carroll (1979) (social responsibility, social response and social issues) and suggested to management principles, management and policy processes Management.

The model of Wood (1991) was an extension of the Carroll model (1979) and Wartick and Cochran (1985). In his contribution Wood (1991) identified some breaks in the model Wartick and Cochran (1985), which consisted in the absence of a dimension focused on action and results. For this, they suggests taking into account the dimensions originally developed by Carroll (1979).

In this case, Wood (1991) defined social responsibility as interplay of three principles: legitimacy, public accountability and managerial discretion, the principles arising from the distinction of three levels of analysis, institutional, organizational and individual.

On this basis, the literature has been for long a preliminary source for researchers and professionals wishing to express a real good picture of this concept. Hence, it was very necessary to better understand its different meanings in the management domain.

In fact, the content of this concept and its various attempts at understanding, asked a lot of

trouble especially for management control. However the questions that were asked are moving towards the conceptualization of a more comprehensive model capable of measuring property, evaluate and improve overall performance.

For Lim and Greenwood (2017) corporate social responsibility (CSR) emphasizes the important role of corporate communication in establishing and maintaining transparent and open dialogues with diverse stakeholders to foster ethical and socially responsible courses of action for various issues. And they results that CSR engagement strategy had a positive effect on achieving all three CSR goals we identified through factor analysis: business, community, and employees. Austin and Austin and Gaither (2017) contribute that companies engaging in effective corporate social responsibility (CSR) initiatives have the potential to both influence stakeholders and establish competitive success.

Then for Fet and Knudson (2017) gives an overview of the main elements of environmental management systems (EMSs) from a systems perspective. It provides two step-wise and continuous improvement models. In this context, the performance was gradually expanded to take into account the "social responsibility" toward society and stakeholders.

Finally, Ali et al. (2017) find that firm characteristics such as company size, industry sector, profitability, and corporate governance mechanisms predominantly appear to drive the CSR reporting agenda. On the basis of the literature review, we present the first hypotheses:

H1: Corporate Social Responsibility (CSR) dimensions influence the environmental management control systems (EMCS).

2.3 Stakeholder Theory

For Clarkson (1995), the stakeholder theory is frequently used as a framework of analysis for CSR. In this context, the contractual parties are the partners that are related contract with the company (shareholders, employees, customers, suppliers,). Thus, stakeholders are defined as persons or groups with legitimate interests in the procedural aspects in the activity of the organization. This shows that the stakeholder theory one objective of interests satisfaction perspective of each group and not as a means to other ends.

Yet, stakeholder theory is a political theory, ethics and integrative forms of analytical frameworks of different designs measures of societal performance systems. At this stage, the management control beyond the borders of the company and include in its systems concerns other than financial ones, to meet the needs of different stakeholders of the organization. Therefore, management control is a powerful tool to drive a broader performance capable of supporting a sustainable and competitive advantage.

Actually, Aste, et al. (2017) studies the possibility of creating a unified methodological approach of the management control system , which could guarantee multiple feed-backs from measured data, useful for the evolution, first of all, of design and operation practices but also, more in general, of the whole value chain of the building sector. In this case, our second hypothesis is:

H2: Stakeholders interest promotes the performance management system.

2.4 Environmental Management Control

Environmental management control systems are defined as control systems aimed at monitoring environmental performance through skilled traditional tools provided by the management control, they are able of applying environmental strategies, Dashboards, and budgets are the most common tools for declining environmental strategies.

In this context, Simons (1991) defined the environmental management control system as systems that provide indicators related to environmental performance that companies use to influence the behaviour of managers towards the environmental achievement of organizational goals.

In addition, the study of Pondeville et al. (2013) examines the role of contextual and strategic factors in the development of environmental management control systems in manufacturing companies. They main results from a survey of 256 manufacturing companies suggest that companies that perceive greater ecological environmental uncertainty are less inclined to develop a proactive environmental strategy, environmental information system, or formal environmental management control system. Market, community, and organizational stakeholders motivate environmental proactivity, as well as the development of different environmental management control systems. And finally, regulatory stakeholders only encourage the development of an environmental information system. Later, Greve et al. (2017) aims to study is to investigate whether certain configurations of management controls dominate in certain societies (socio-cultural contexts) and whether the effectiveness of a given archetype of management control systems (MCSs) varies depending on the socio-cultural setting the society in which it operates.

Thereafter, Heidi and Andrew (2017) suggests in their paper to adopt an agency theory approach to investigate the integration of environmental issues into management control systems (MCS). Prior environmental accounting research has focused on increasing organizations' environmental accountability by "monitoring" through external reporting to stakeholders.

Also, the paper of Grace and Hengky (2017) aims to test a conceptual framework that describes the relationship between environmental strategy, environmental management accounting and environmental performance. The authors argue that environmental strategy can directly influence environmental performance through environmental management accounting.

Furthermore, Lundgren and Zhou (2017) analyses the interactions between three dimensions of firm performance, productivity, energy efficiency, and environmental performance, and especially sheds light on the role of environmental management. In this context, environmental management is investments to reduce environmental impact, which may also affect firm competitiveness. Thereby, our third hypothesis is:

H3: Environmental preoccupations contribute to develop the performance management system.

As mentioned in the work of Clarkson (1995), companies do not include in their strategies or

approaches the concerns of their stakeholders with them. In this context, companies must address a wider performance, more global, more economic than to appreciate the constant changes of the environment. In operation, the quality of the partnership management can be in terms of the indicators informing about the level of satisfaction of key stakeholders (employees, shareholders, customers, suppliers, environment, and civil society).

Firstly, Quairel (2006) called global performance management system. From a theoretical point of view, it represents a new form of control system that can be compared to other innovations. Indeed, the various contributions in the field of control systems were a source of research for scholars who wish to understand the functions of management control systems according to social demands, environmental, economic and environmental. The choice of strategic orientations companies influence the behavior of managers and accordingly steering systems.

Finally, Amores-Salvadó et al. (2015) propose a novel measure of environmental management systems that takes into account not only the certification but also the degree of development of the distinctive elements that are part of these systems. The results of the study show that environmental management systems positively moderate the relationship between environmental product innovation and firm market performance. Through the literature review, our fourth hypothesis is: Strategy has a positive impact on the Performance Management System (PMS).

2.5 Management Control Systems and Performance

The emergence of the issues of social responsibility has been accompanied by a proliferation of studies on the publication and the voluntary disclosure of social information. The strategic management of social responsibility is a practice uncommon in business. This finding argues for the idea that the problem of social responsibility remains today confined to external communication objectives. In addition, we can define control subsystems such as, social control systems and environmental control systems.

Pietroand and Matteo (2017) find that the utilization of a comprehensive PMS enables the implementation of both differentiation and cost-leadership strategies. Specifically, a comprehensive PMS positively mediates the effect of differentiation strategy on organizational and innovative performance and of cost-leadership strategy on organizational performance.

For Pryshlakivsky and Searcy (2017) sustainability performance measurement system presents the potential for certain trade-offs or opportunity costs for organizations. And the competitive advantage takes into consideration interactions between the internal capabilities of an organization and two elements within the performance management system, namely decision making and intangible assets. And contributes to present a heuristic model for establishing trade-offs in corporate sustainability performance measurement systems.

Especially, Sainaghi et al. (2017) perform a meta-analysis of tourism performance measurement by synthesizing tourism and hospitality research. A framework for understanding and advancing knowledge about tourism performance measurement is presented to overview three important dimensions of the tourism performance measurement literature.

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Moreover, Abdel-Maksoud, et al. (2015) investigates the role of strategic performance measures (SPM) in strategic decision-making and their impact on organizational performance. Based on 143 online survey responses from senior administrators across Canadian public organizations, the study found that SPM of efficiency and effectiveness are positively associated with performance, as well as, the former with both strategy implementation and strategy assessment decisions. The study extends prior research by linking both SPM and their use in strategic decision-making to organizational performance.

In addition, Phan and Baird (2015) contributes to the environmental management systems (EMS) literature by providing a more detailed insight into the comprehensiveness of environmental management systems (EMSs) by focusing on the intensity of use of environmental management practices.

In addition, the study examines the influence of institutional pressures (coercive, mimetic and normative) on the comprehensiveness of environmental management systems (EMSs), and the impact of the environmental management systems (EMS) comprehensiveness on environmental performance.

For Dubey et al. (2017) Sustainability benchmarking is gaining importance in industry. Despite its increasing popularity, the existing research utilizing theory to explain the organizations intention to shape performance measurement systems (PMS) for sustainability benchmarking is limited. In this case the authors studied the sustainability benchmarking literature. They integrate the perspectives of external pressures and organizational culture and its influence on the performance measurement systems (PMS) for sustainability benchmarking.

While, Salim et al. (2018), nominates that the environmental management systems EMS allows for incremental changes in production and consumption via technological fixes that improve efficiency as means to address the complex environmental challenges we are facing today, known as the 'reformist the concept of sustainable consumption and production position'. EMS supporters traditionally oppose calls for comprehensive transformation of societal structures, such as capitalism, materialism, and consumerism.

Although, Geels et al. (2015) provides a critical appraisal of Sustainable Consumption and Production research, which is currently framed by two generic positions. And aims to provide conceptual clarity in the concept of sustainable consumption and production debate by grouping heterogeneous approaches into three analytical positions that advocate different scales and depths of change have different views on production and consumption, take inspiration from different academic disciplines, represent different views on policy, and embody different epistemological and normative assumptions. Our hypothesis is: Environmental Management Control Systems (EMCS) influence positively the sustainable competitive advantage (SCA)

Guenther et al. (2016) argues that the concept of environmental management control systems (EMCS) provides a promising approach for integrating presently fragmented lines of inquiry concerning the internal drivers and managerial processes that may foster firms' environmental performance.

Addressing the apparent fragmentation of research on EMCS, we develop a 'positioning framework' to locate EMCS within the topic of sustainability and to show how EMCS relates to other subsystems of management, especially to environmental management accounting (EMA) and to environmental management systems (EMS).

For Caron et al. (2005), environmental management control system is a management control system that contains a social component that aims to empower businesses to meet its environmental goals to his environment. These objectives are presented in the form of performance indicators that meet the organizations objectives in sustainable development.

Based on the work of Simons (1987), we quote a qualified definition of modern control systems, control systems expressing such procedures and formalized systems, which are based on the information used by managers for operating his organization.

However, Simons (1987) proposed a renewed definition of control systems, which qualifies them as a set of formalized procedures and systems based on the information that managers use to maintain or change certain configurations of the activities of the organization. In the same context, Dohou and Berland (2007) define the overall performance as the result of the combination of three dimensions of sustainable development.

The contribution of Escrig-Olmedo et al. (2017), links the assessing corporate environmental performance (CEP) that is both comprehensive and consistent with sustainable development both for society and companies, while at the same time taking heed of the facts and interests of each stakeholder, is not a simple feat. Our hypothesis is: The integrated ecological Business model (IEBM) influence positively the sustainable development.

3. Data and Methodology

3.1 Methodology

The researcher adopted a quantitative approach to causal type. We conducted a field survey, adopting the technique of investigation of a direct interview based on a questionnaire. Our sample is 306 Tunisian industrial companies employing between 50 and 500 employees and operating in various sectors. This study examines secondary data.

3.2 Measures

The constructs of this study were measured by means of multi-item scales. Variables in the research model are nine in number: CSR, Stakeholders, Environment, Strategy, the performance management system, the environmental management control systems (EMCS), the Integrated and Ecosystem Based Management models (IEBM), the Sustainable development and the Sustainable competitive advantage.

These variables were operationalized with various items, formulated as questions, and measured based on four-point Likert scales. The quality of the measurement scales used is provided by two successive optimizations. First, a factor analysis of type PCA (Principal Component Analysis) was performed to verify the validity of the scales and thus confirm the sought after factors.

The second phase of optimization scales is a confirmatory structural analysis performed with the AMOS software. The structural equations modeling are used to test the research proposal.

3.3 Research Model

This model is particularly interested in the behavior of management control systems through the influence of the corporate social responsibility, strategy, stakeholders and environment. And its influence on Integrated and Ecosystem Based Management models (IRBM) and the environmental management control systems (EMCS)
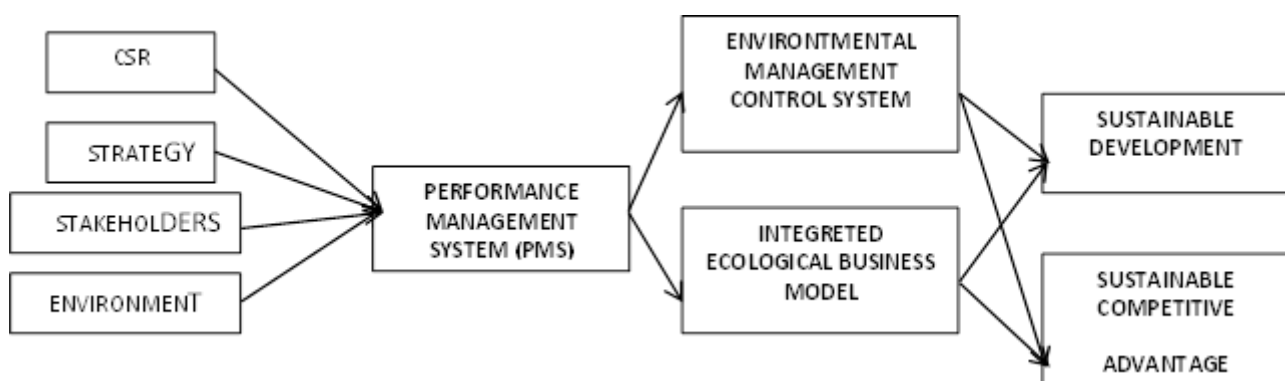

Figure 1. The Research Model

3.4 Estimation of Model Parameters

This estimation is performed iteratively with the method of maximum likelihood. This method, advocated by default, is the best of the methods tested. The level of fit of the model is evaluated by the chi-square statistic (χ^2). The model fit to the data is considered adequate when the p-value associated with (χ^2) is greater than 5%. This condition is satisfying for our model measure, p-value associated (χ^2) obtained is equal to (0,065). The χ^2 is often supplemented by various ad hoc fit indices that are more practical and robust to indicate how well the model explains the data.

In this perspective, the author can use statistical indicators proposed by Joreskog and Sorbom (1982), the GFI (Goodness of Fit), the RMR (Root Mean Square Residual), as well as other comparators such as AIC (Akaike Information Criterion).

4. Results

4.1 Exploratory and Confirmatory Factor Analysis

Using SPSS, we first tested the reliability and validity of the scales measures by adopting an exploratory factor analysis. In this context, we repeat the principal component analysis where the communalities are lower (0.5). Similarly, the Cronbach's alpha of (0.60) was used as the threshold to decide whether or not to include an item in a scale.

As an additional tool for evaluating reliability, inter-item correlations were calculated for each dimension. This allowed through the KMO index and Cronbach's alpha to purify the different scales of measurement object variables of our empirical study. Thus, our results are presented in the table below:

Once the exploratory analysis is completed, we move to confirm the internal validity of the scales, where a confirmatory factor analysis is required. We have adopted in this case the different indices of adjustment provided by the AMOS software namely index RMSEA, RMR, CFI, GFI, CAIC, etc.

Table 1. Indices of goodness of fit

Indices of goodness of fit	KMO Indices	Cronbach Alpha	Significance of Bartlett
CSR	0,770	0,887	0,000
Strategy	0,557	0,771	0,000
Stakeholders	0,613	0,749	0,000
Environment	0,742	0,817	0,000
PMS	0,597	0,697	0,000
EMCS	0.886	0,788	0,000
IRBM	0.889	0,838	0,000
SD	0.779	0,821	0,000
SCA	0.744	0,856	0,000

The Cronbach's alpha values for the constructs were ranged from 0.771 to 0.887, which denoted that reliabilities were excellent. All items loaded significantly on their corresponding latent construct. Once the exploratory analysis is completed, we move to confirm the internal validity of the scales, where a confirmatory factor analysis is required. We have adopted in this case the different indices of adjustment provided by the AMOS software namely index RMSEA, RMR, CFI, GFI, CAIC, etc..

4.2 Testing the Structural Model

To test the structural model, we transformed models measures containing items retained in the factor scores by adopting the method of Anderson Rubin. This method provided by the SPSS statistical software to calculate factor scores for each measurement scale based on items selected. Thus our structural model is as follows:
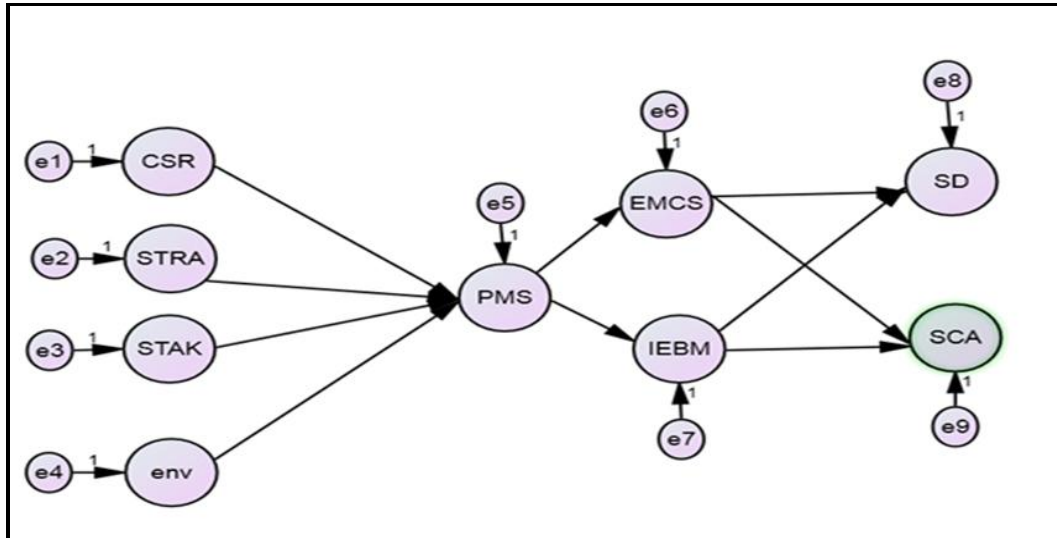
Figure 2. The structural model

After testing the model using structural equations, it appears that the conditions tested model fit the data are generally observed: The associated p-value equals (0.068), which is greater than (0.005). GFI coefficient is higher than the norm (0.9), the GFI = 0.985. This value reflects a good "fit" between model and data. At this level, our two research hypotheses and our overall hypothesis can be broadly adopted. In addition, the RMR index (in terms of residual variance, that is to say, unexplained variance) is very low, it is equal to 0.040. Side indices to judge the quality of fit of the model such as the CFI is equal to 0.995. The RMSEA is equal to 0.041; AIC is equal to (75.083) strictly less than the saturated model (94,000). The values of χ2 (37.053) and CFI (0.994) estimated by AMOS indicate that the level of overall fit of the model is very high. We can therefore conclude that the fit of the proposed model is acceptable According to the results, indices assessment used.

Thus, the following table shows the test results of the structural model show a very good fit judged by indices.

Table 2. Quality Adjustment Index

Quality adjustment index	Valeur trouvé
χ²(valeur p associed)	37.053
χ²/ddl	P=0,058
GFI	0.985
TLI	0,992
CFI	0.994
RMR	0.040
RMSEA	0,042
CAIC Tested model	75,083
CAIC Saturated model	94,000

Through these results, all the indices show a very good quality of fit of the theoretical model. Similarly, the P associated with the calculated value of χ^2 is strictly greater than the minimum threshold of (0.05). Further, the incremental indices also show a good fit and finally the CAIC of the tested model which is equal to (75,083) strictly inferior to the saturated model (94,000). Nevertheless, we note that not all structural links are significant at the (0.1) level.

4.3 Analysis of the Significance of the Model Parameters

The results of the analysis of the structural model of table 3 ride all the coefficients are significant at the 5% level. Indeed, the results express a strong and significant relationship between corporate social responsibility, strategy, stakeholders and environment and the performance management system.

Table 3. Estimate of Regression Coefficient

Regression coefficient			Estimate
CSR	<---	PMS	1,110
STRA	<---	PMS	2,114
STAK	<---	PMS	2,145
ENV	<---	PMS	2,192
PMS	<---	EMCS	1,136
PMS	<---	IEBM	2,145
EMCS	<---	SD	2,172
EMCS	<---	SCA	2,240
IEBM	<---	SD	2,559
IEBM	<---	SCA	2,174

With a coefficients regressions equal successively to (1.110, 2.114, 2.145, 2.192, 1.136, 2.145, 2.172, 2.240, 2.559, 2.174), these relationships are represented by a successive positive relationship between the corporate social responsibility, strategy, stakeholders and environment. That's influence on the Integrated and Ecosystem Based Management models (IRBM) with positive coefficients equal (1.136) and the environmental management control systems (EMCS) with positive coefficients (2.145)

This confirms our hypothesis which states that corporate social responsibility, strategy, stakeholders and environment are positively associated with performance management system. This leads to the environmental management control systems (EMCS) and the integrated ecological Based Management models (IEBM)

These results confirm those found by Heidi and Andrew (2017), Grace and Hengky (2017) and Aste et al. (2017). Subsequently, the same results suggest a positive and significant relation at the 5% level between the environmental management control systems (EMCS) and the Integrated and Ecosystem Based Management models (IEBM) and the sustainable development and competitive advantage.

5. Discussion of Results

The overall results obtained from the fit indices of the global model, the significance test of the model parameters (correlation coefficients standardized and associated CR), and the verification of causal relationships between the model and the variables associated with it, confirms that the model tested is acceptable.

In addition, the quality of the fit between the data and the conceptual model of the research is confirmed by the significant coefficients of determination of the dependents variables of the model and the existence of a significant causal relationships direct links between variables. This brings us to confirm our initial research proposal argues that performance management system who is influenced by the dimensions of the social responsibility, the environment, the strategy and the interests of stakeholders impact positively the Integrated and Ecosystem Based Management models (IRBM) and the environmental management control systems (EMCS). Therefore we can conclude:

Firstly, Corporate Social Responsibility (CSR) dimensions influence the environmental management control systems (EMCS). This ascertainment is conforming the (Lim and Greenwood (2017), Gaither (2017), Fet and Knudson (2017), Ali et al. (2017) results.

Secondly, stakeholder's interest promotes the performance management system conform to the Clarkson (1995) and Aste, et al. (2017) results

Thirdly, strategy has a positive impact on the Performance Management System (PMS) which is confirm to the results of Clarkson (1995), Quairel (2006), Amores-Salvadó et al. (2015)

Thereafter, environmental preoccupation contributes to develop the performance management system conform to the results of Pondeville et al. (2013), Greve et al. (2017), Heidi and Andrew (2017), Hengky (2017), Lundgren and Zhou (2017)

Then, EMS is positively associated with environmental performance, this findings are conform to the Phan and Baird (2015) results

Especially, Performance Management System influence positively the sustainable competitive advantage (SCA) and influence positively the integrated ecological Business model (IEBM) confirm the results of Sainaghi et al. (2017), Abdel-Maksoud, et al. (2015), Phan and Baird (2015), Dubey et al. (2017), Pietroand and Matteo (2017), Pryshlakivsky and Searcy (2017), Salim et al. (2018), Geels et al. (2015)

Finally, the integrated ecological Business model (IEBM) influence positively the sustainable development confirm the results of Escrig-Olmedo et al. (2017), Dohou and Berland (2007) and Guenther et al. (2016)

6. Conclusion

The study clarifies the links between strategy and performance measurement, and it is the first to identify the mediating effect of comprehensive PMS between strategy and company performance. We investigated the relationship of societal steering performance with the

management control system. This is becoming increasingly relevant, following the emergence and integration of corporate responsibility indicators in management control systems.

Thus, the concept of social business performance is a central concept in business management research that has evolved to identify different relationships between the company and its environment. Through extensions of earlier theoretical work found by Bowen (1953), Carroll (1999) and Wartick and Cochran (1985) emphasized in their research on the company's ability to properly express their social responsibility.

Moreover, to Kaplan and Norton (1992), the panel defined as the dials of an airplane, which gives managers complex information at a glance. According to work by Wegmann (2001), this approach is in the strategic management control. Indeed, this is an issue that has been for consisted as a major issue for academic and professional researchers to specifically know the work of Wegmann (2001).

Modeling the management performance system has been the subject of numerous empirical investigations. Similarly, Margolis and Walsh studies (2001), Geels et al. (2015) and few empirical studies such as (Adams, et al. 2006; Agarwal 2008; Aggarwal and Rous 2006; Akman and Yilmaz 2008; Al -Hajj 2008; Amabile 1996; Arundel, et al. 2016; Atuahene-Gima 1996; Baeşu and Bejinaru 2015; Breznitz and Etzkowitz 2016) have focused on the study of the management performance system. In this context, relevant efforts have been made to a new look and a new performance approach that tried to cross traditional boundaries of financial performance, to overcome that of global performance. These are embodied in recent studies developed by Greve et al. (2017) and Salim et al. (2018)

These results could serve as a specific reference for policymaking at firms to continuously improve their environmental performance. In addition, this study has an important implication for management practices by illustrating the potential of environmental strategies and environmental management accounting to improve environmental performance.

Further, research could be undertaken in other contexts and consider additional factors, such as the structure, maturity and different uses of PMS, and the cost of measuring performance. Qualitative studies could examine the role of PMS in dynamic environments, as well as the evolution of PMS during strategic transitions. Practical implications Greater consideration should be given to the utilization of different types of performance indicators when implementing and re-formulating strategy.

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