PROPOSAL OF A PERFORMANCE MODEL BASED ON THE BALANCED SCORECARD FOR THE MOROCCAN TEXTILE INDUSTRY

Adil CHRIYHA[1], Zitouni BEIDOURI[2] and Otmane BOUKSOUR[3]

[1] Department of Mechanical & Industrial Engineering Production Engineering (LMPGI) , University Hassan II Ain Chock, School of Technology, Km 7 Route El Jadida, Casablanca, Morocco.

[2] Department of Mechanical & Industrial Engineering Production Engineering (LMPGI) , University Hassan II Ain Chock, School of Technology, Km 7 Route El Jadida, Casablanca, Morocco.

[3] Department of Mechanical & Industrial Engineering Production Engineering (LMPGI) , University Hassan II Ain Chock, School of Technology, Km 7 Route El Jadida, Casablanca, Morocco.

Abstract:

The textile industry represents a significant share of total Moroccan industrial production; it is one of the first industries purveyors of employment in Morocco, which shows the importance of studying performance aspects of this industry. Indeed, among a multitude existing performance models, the BSC (Balanced scorecard) is chosen because it is considered simple, comprehensive and the most used in the world. It will be detailed that determinants related to Moroccan textile industry performance, require a study which must take into account the realities and constraints associated with this sector. In this paper, the BSC determinants will be studied and ranked in order of importance. Finally, the results of this work can be regarded as an action plan for Moroccan textile companies that are concerned with performance and improvement of their activities.

Keywords: Performance, Balanced Scordcard, Moroccan Textile Industry, Performance determinants.

1. Introduction:

In Moroccan textile industry, performance became a concern. In international level, interpretation and evaluation modes have progressed considerably since the beginning of the industrial era. In Moroccan textile industry, performance remains mono-criterion, it's only interested in productivity and economic results. Performance in the Moroccan textile industry must now be considered globally (productivity, flexibility, cost, deadline, quality, safety, social performance, environmental performance ...), and in the entire product life cycle (design, implementation, operation and disposal / recycling)[1].This development of evaluation criteria for the Moroccan textile industry, stimulated by logic of sustainable development generates a challenge to pilot instrumentation of production systems, piloting whose purpose is to obtain the global performance. So, the objective of this work is to provide key points for the establishment of a performance system for Moroccan textile industry, which will be based on the BSC, since this model is the most used worldwide. This study will cover the main areas of the BSC (financial, customer, internal processes, organizational). Another objective is to distinguish determinants priority to develop within textile companies to ensure the development of all areas of performance simultaneously. Results of this research are based on data collected from survey conducted on several textiles' companies in Morocco, it allowed to identify factors that are more important in terms of performance improvement, and covering BSC axes.

2 The Global performance and its models

2.1 Definition of the global performance:

Performance has long been reduced to its financial dimension. This performance was to achieve the profitability required by the shareholders with the turnover and market share that preserved the continuity of the company. But in recent years, industry has moved from financial representation of performance to more comprehensive approaches including social and environmental dimensions. The global performance concept is appearing in this context [2]. The performance management can be

defined as a systematic process for improving organizational performance by developing the performance of the individual and group [3]. The performance management is to provide managers and employees on all levels, the ability to develop their orientation, their braking systems and their speeds, and most importantly, to move towards the right direction. This direction must be defined and clear, and meets the strategic orientations of the company [4].

2.2 The models and tools of global performance:

There are 15 model and performance tools [5], for example: the balanced scorecard, Business Process Reengineering, Statistical Process Control, etc.... Before selecting a model or a performance tool, stakeholders must define clearly their sought results. This involves answers on a range of questions: The purposes intended by the change, the desired results, change fields, target dates, resources required and involvement level of staff in change. The approaches and tools vary; however they aim to address one or more of the following objectives, which permit the ultimate objective of improving performance:

1. Help understand what customers need;
2. Help organizations and employees become more results orientated;
3. Improve the quality of service to customers by improving processes or practices;
4. Provide a structured approach to strategic management;
5. Create links between individual, service and corporate objectives;
6. Translate strategy in to performance measures and targets and in doing so rationalize performance information;
7. Help demonstrate individual staff contribution to organizational objectives and create ownership of performance by staff involvement in the improvement process;
8. Identify strengths and areas for improvement;
9. Develop internal and external communication.

The performance improvement models and tools are summarized below in table 1, in alphabetical order:

Table 1: Improvement models and tools reviewed[6]

Performance improvement model or tool	Summary description
1. Balanced Scorecard	A multi-dimensional framework for managing strategy by linking objectives, initiatives, targets and performance measures across key corporate perspectives
2. The Big Picture	Organizational development framework and toolbox designed to make an organization think about every aspect of its work and take action to improve it.
3. Business Process	Reengineering An approach to review and redesign organizational processes in order to achieve improved performance in terms of cost, quality of service and timeliness
4. Charter Mark	The Government's national standard and quality improvement scheme for customer service in the public sector
5. EFQM Excellence Model®	Organizational improvement framework for assessing strengths and areas for improvement across the spectrum of an organization's activities
6. EFQM Excellence Model™ - Dolphin	Organizational improvement framework for conducting self-assessments. The Dolphin approach builds on the success of the EFQM Model® while greatly simplifying the process
7. Investors in People	National standard for improving organizational performance by training and developing people to achieve organizational goals
8. ISO9001 Quality System	Global standard and approach for quality management systems. The standard focuses on the management of processes and documentation in order to meet customer needs and expectations
9. Kaizen Blitz	Short term and intensive performance improvement approach to improving business processes
10. Performance Prism	A stakeholder centric, three dimensional framework for performance measurement and management
11. PQASSO	Practical Quality Assurance System for Small Organizations, or projects within larger organizations based on a self assessment work pack
12. Public Service Excellence Model	Organizational improvement framework and diagnostic tool for identifying strengths and weaknesses within an organization or programs of work
13. Six Sigma	A disciplined methodology for process improvement that deploys a wide set of tools based on rigorous data analysis to identify sources of variation in performance and ways of reducing them.

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 5, No 1, September 2012
ISSN (Online): 1694-0814
www.IJCSI.org

412

14. Statistical Process Control	A technique used to reduce waste and improve consistency through a reduction in variation
15. Value management	Organizational improvement framework incorporating a toolbox of proven methods that aim to raise productivity and optimize customer outcomes within the resources available

2.3 Balanced scorecard:

Background:

Doctors Robert Kaplan and David Norton developed the balanced scorecard in the 1990s in the USA. Having begun as a performance measurement tool, the Balanced Scorecard was quickly being used as a multi-dimensional framework for managing strategy by linking objectives, initiatives, targets and measures across key corporate perspectives. Kaplan and Norton noticed that financial measures being used to gauge performance in many organizations were not necessarily related to achieving strategic objectives. The scorecard sought to remedy this by providing a more balanced suite of performance measures across a number of key perspectives. Typically these look at customers, finances, internal processes and organizational learning [7] (Figure 1). However they can be adapted depending on what factors are considered important for the success of the particular organization [8].
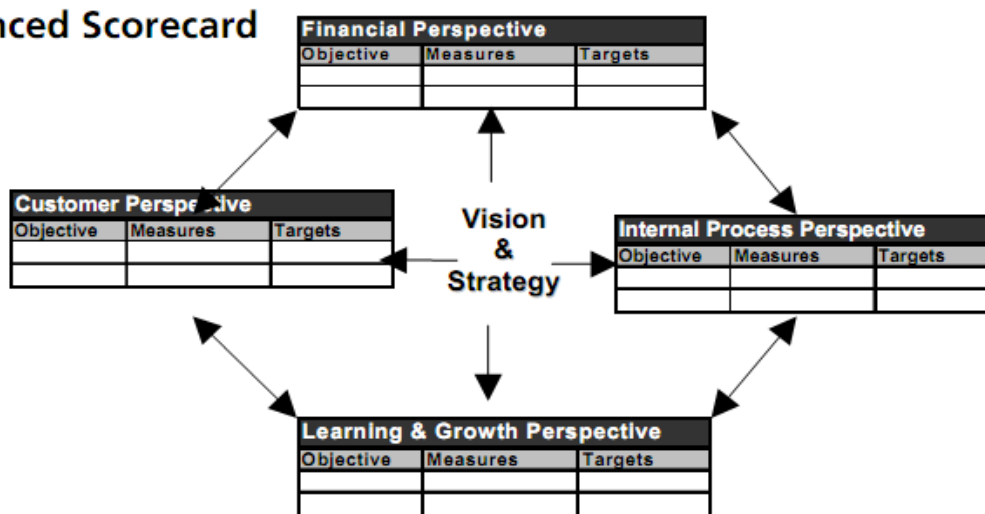

Figure 1: The Balanced Scorecard

Objectives:

The Balanced Scorecard aims to:
1. Enable organizations to manage strategy by linking corporate objectives, initiatives, measures and targets at all levels in the organization;
2. Achieve a balanced set of performance measures and targets that allow managers to track progress in key areas.

Scope:

The Balanced Scorecard is a holistic model that can be used at various levels across the organization, service, team or group. It is used to manage strategy by linking objectives to initiatives, targets and measures across a range of corporate perspectives. These perspectives are determined by the organization using the model.

How the model is used:

The balanced scorecard can be used at various levels in an organization (Figure2).
Many organizations now use a Balanced Scorecard to:
• formulate and refine strategies;
• communicate strategies and priorities throughout the organization;
• Link strategic objectives to long term targets and budgets;
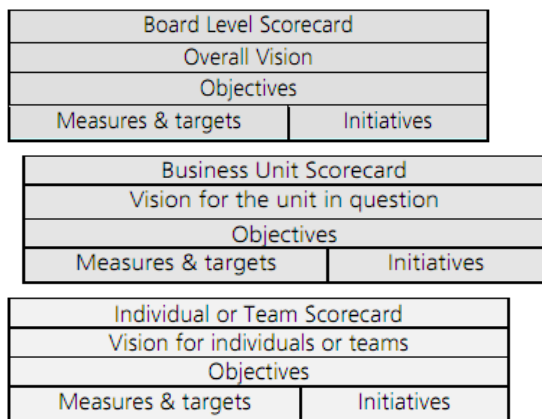• monitor progress and introduce initiatives to improve performance.

Figure 2: Cascading scorecard

How widely is the model used?

While the scorecard was designed for private sector use, the take-up by the public sector has been widespread. It now has a wide range of public sector users ranging from small local commune to large county and metropolitan councils. The model is equally widely used in the private sector among organizations as diverse as Johnson and Johnson Medical and the Royal Bank of Canada. A survey undertaken by the International Institute of Banking and Financial Services, Leeds University Business School revealed that 15% of private sector firms apply Balanced Scorecard methodology. Among the largest UK companies this figure rose to 30%. Today, more than half of the top 500 U.S. companies have adopted it as a navigational strategy. [9]

3. Proposed performance indicators for the textile industry in Morocco based on the BSC:

3.1 Definition of performance indicators:

Performance indicators help an organization define and measure its progress compared to defined goals [10]. Once they are selected, depending on the company's business, they should reflect its objectives, they must be the key to success, and they must be measurable [11].
The indicators are not limited just to the finding, but they must allow dynamic management in real time. They can be classified into three categories:
• The warning indicators, report a dysfunction, then an abnormal condition involving remedial actions. In contrast, their silence indicates a normal state.
• Indicators of equilibration, report progress against targets. They can induce corrective actions.
• Indicators of anticipation notify the system in its environment and allow reconsidering the strategy [12].

3.2 The interest to study the Moroccan textile industry:

With 16% of total industrial production, the textile sector plays a very important role in the Moroccan economy, contributing around half of manufacturing exports, over 61% of production units of this sector are exporters. This sector represents one of the earliest providers of employment; it provides the activity for more than 40% of the workforce in manufacturing. Finally, it is characterized by the predominance of SMEs, since half of the business establishments have fewer than 50 employees. These numbers do not include the informal sector of the textile and clothing sector, whose importance cannot be underestimated if we can believe the information provided by AMITH and central labor, who consider this informal sector employs a large number of employees in the disrespect of the effective labor legislation [13]. These statistics, justify our interest to study Moroccan textile sector, since it is an important part of the country's economy.

3.3 Performance indicators for the textile industry based on the BSC:

The general analytical framework of the BSC is sufficiently complete to serve as a starting point to evaluate the systems performance measurement existing in the Moroccan textile industry, and suggest possible improvements that will potentially increase their performance. Table 2 summarizes this system for SMEs in general. Categorization of performance indicators related to the four axes of the BSC, shows that some factors are more relevant and more priority than others in the context of textile companies, which like all Moroccan SMEs suffer many difficulties, namely:
• Lack of transparency of account
• Low productivity and cultural obstacles to improving competitiveness (strong centralization of decision making, low supervision, oral culture of business, lack of rigorous accounting, inadequate financial culture)
• The limited opening of leaders abroad [14].

The next section will be devoted to a discussion aimed to detail the four axes of the BSC for the textile industry in Morocco. This will determine a weighting of different factors in each axis, which was defined in a survey we did with managers operating in the textile and clothing sector in Morocco. The survey was carried out from January to June 2012, through E-mails and interviews. The survey is composed of twenty questions divided into five sections: General information, financial axis, customer axis, internal process and organizational learning. The scale adopted in the questionnaire was "yes" (if the practice is fully adopted), "no", "in part", "don't know" and "not

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 5, No 1, September 2012
ISSN (Online): 1694-0814
www.IJCSI.org

414

applicable", well as the classification of the determinants according to the method followed in the management company [15].The majority of the respondents to the survey were upper or middle management who were likely to have a good overview of performance management because of their involvement in performance reviews and planning processes. In total, 97 companies were emailed by this questionnaire, 18 questionnaires have been returned (19% response rate), of which four had to be discarded because of insufficient data, in addition to nine direct interviews, yielding 23 usable questionnaires [16].

Table 2: Categories of performance indicators for SMEs according to BSC

Axis	*Performance determinants*	*Indicators examples*
Financial	▪ Increase in turnover ▪ Cost reduction and productivity improvement ▪ Use of assets ▪ Risk Reduction	▪ Sales Growth ▪ % profit from sales ▪ Return on invested capital ▪ Unit Costs
Customer	▪ Market Share ▪ Conservation of new customers ▪ Acquisition of new customers ▪ Customer Satisfaction ▪ Profitability by segment	▪ % of sales to existing customers ▪ % of sales to new customers ▪ Degree of customer satisfaction ▪ Rate of return of goods
Internal process	▪ Innovation ▪ Production ▪ After-sales service	▪ Money invested in R & D ▪ % of sales with new products ▪ Response time to service calls ▪ Standard costs
Organizational Learning	▪ The potential of employees ▪ Re-orientation skills ▪ Capacity Information Systems ▪ Aligning individual goals with those of the company.	▪ Employee Satisfaction ▪ Money invested in training ▪ Availability of Information ▪ Number of suggestions per employee

4. Discussion

4.1 Financial axis

From the four financial axis related determinants, we find that reducing costs and improving productivity remains a primary determinant for performance of Moroccan Textile Company, This will involve an automatic increase in turnover, which ranks second. Then, the use of assets which results in better use of stocks, receivables and cash. Finally, reducing financial risks to ensure sustainability for the company.

4.2 The customer axis:

According to the survey, ranking in the table above do not represent the optimal order of priority for a good customer management axis in the context of Moroccan textile sector. Knowing that all the companies are SMEs, and their production capacity is limited, the market share is not a concern for them, since a limited number of local customers or for export may provide an optimal loading compared to capacity. So the most important determinant for any textile company in Morocco is to satisfy its own customers, retain them, and if necessary, due to lack of support, or lack of solvency of customers or other business reasons, the company has to acquire new customers. On the other hand, several textile companies in Morocco

are working on several product segments, for example, spinning units produce both cotton and viscose, and their fit yarns to the needs of knitters and weavers. as well as units of textile finishing, dyed yarn and fabrics that can be tubular or open, weavers manufacture velvet and cloth dish .... So these companies have an interest to keep profitability of all product segments that manufacture, to keep their customers and to maximize their production lines.

4.3 The internal business process:

Productivity is the key word for success for all SMEs, including the textile companies in Morocco. Then, the optimization of production process remains the first priority in this area of performance. After sales service, which is reflected in textile by the needs of customers, as well as treatment with the responsiveness required of any claim or return, is a very important point in the internal process. Finally, in need of development, the textile companies in Morocco must always be at the forefront of innovation, which is explained in the context of our country, by creating new products and technology watch.

4.4 The organizational learning axis:

The adaptation of employee skills, especially machine operators is the most important point in this axis, since it is directly related to production and product quality. Then, to ensure continuous improvement, managers have to always working on

developing of employees' potential through training and motivational material. And for a perfect mastering of internal data and better analysis of performance indicators, information systems should be well developed in terms of modules related to company management and in terms of capacity and speed of treatment. Finally, any individual target of all staff must be aligned with company goals, which

will avoid wastage of energy from employees as well as money and time from company. Table 3 shows the ranking and weights we deduced for determinants following our survey.

Table 3: Weighting of the performance determinants for Moroccan textile companies according to the BSC axis

Axis	Determinant	Weighting of the importance
Financial	• Cost reduction and productivity improvement • Increase in turnover • Use of assets • Risk Reduction	• 40 % • 30 % • 20 % • 10 %
Customer	• Customer Satisfaction • Profitability by segment • Conservation of new customers • Acquisition of new customers • Market Share	• 30 % • 30 % • 25 % • 10 % • 5 %
Internal process	• Production • After-sales service • Innovation	• 50 % • 30 % • 20 %
Organizational Learning	• Re-orientation skills • The potential of employees • Capacity Information Systems • Aligning individual goals with those of the company.	• 40 % • 30 % • 20 % • 10 %

According to Kaplan and Norton, there is a causal link between the different axes of the BSC: a good working knowledge of internal processes associated with research and continuous improvement, with the promotion of a sense of organizational learning, will improve customer satisfaction, leading to the achievement of financial objectives of the enterprise [17]. We deduce that the four axes have the same weight in terms of importance. So, we classify cumulatively in table 4 all determinants that we have cited in Table 3, without taking

account of axes to which they relate, to distinguish highest priority determinants for improving Moroccan textile companies performance. This is illustrated by Figure 3 which can be an action plan for any industrial area in order to enhance the performance of his company. It is clear that if one is interested only in the first nine factors listed, he can ensure 80% of the expected performance.

Table 4 : Cumulative weighting of BSC determinants

Determinant	Weighting of the importance / AXIS	Global weighting of importance	Cumulative weighting
Production	50%	13%	13%
Cost reduction and productivity improvement	40%	10%	23%
Re-orientation skills	40%	10%	33%
Increase in turnover	30%	8%	40%
Customer Satisfaction	30%	8%	48%
Profitability by segment	30%	8%	55%
After-sales service	30%	8%	63%
The potential of employees	30%	8%	70%
Conservation of new customers	25%	6%	76%
Use of assets	20%	5%	81%

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 5, No 1, September 2012
ISSN (Online): 1694-0814
www.IJCSI.org

416

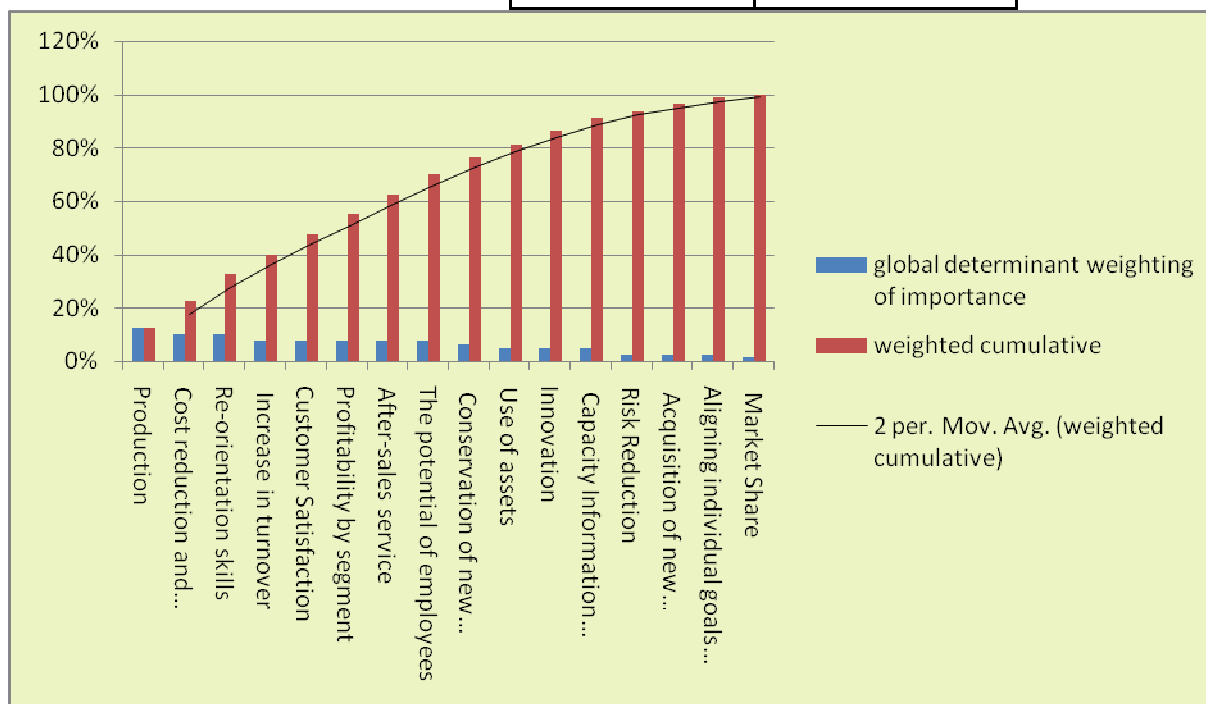| Innovation	20%	5%	86%
Capacity Information Systems	20%	5%	91%
Risk Reduction	10%	3%	94%
Acquisition of new customers	10%	3%	96%
igning individual goals with those of the company.	10%	3%	99%
Market Share	5%	1%	100%
		100%	

Figure 3: Ranking of determinants of performance according to the BSC in descending order in terms of importance

5. Conclusion and Future Research:

To remain competitive, the textile companies looking to build a strategy allowing them to place themselves in the best conditions to face competitive forces present in the market. As for textile companies in Morocco and to support their strategies, they will try to identify determinants of performance which going directly contribute to achieving their strategic objectives on which they can act. It is around these determinants of performance that will organize any activity monitoring, management and control since their mastering is key to competitiveness. Following an analysis based on a survey that targeted the textile industrial in Morocco, we have identified a improvement plan of performance based on the BSC, and a classification of its determinants from the most important level to the lower one, thus facilitating the quest for performance improvement. Finally, in terms of prospects, we find that the analysis carried in this study is based on the BSC, and focused on four main areas, which do not cover the social and societal aspects, which represent principal axis in the global performance. So the subject of future research for Moroccan textile sector, will be the establishment of the global performance, affecting social and societal aspects, and the development of the financial aspect that we discussed in this work.

References

[1] A.AMRI, "Tableau de bord économique et social de l'industrie du textile et de l'habillement au Maroc", 2005.

[2] A.DOHOU, N.BERLAND: "Mesure de la performance globale dans les entreprises" Institut d'Administration des Entreprises, http://www.iae.univ-poitiers.fr/afc07/ Programme/PDF/p154.pdf, 2008.

[3] M.Armstrong: "Performance management: key strategies and practical guidelines" Kogan page, British Library Cataloguing-in-Publication Dat, 2006.

[4] T.Adkins: "Case studies in performance management" John Wiley & Sons, Inc, Library of Congress Cataloging-in-Publication Data, 2006.

[5] [5]IDeA, "Performance management", Improvement and Development Agency for local government (IDeA): http://www.idea.gov.uk/idk/core/page.do?pageId=76209.

[6] A. W. Brown, "Review of Performance Improvement Models and Tools", IDeA, 2006, pp 6-7.

[7] A.FERNANDEZ, "Les 4 perspective du BSC" http://www.piloter.org/balanced-scorecard/balanced-scorecard-perspectives.htm, 2010.

[8] S.Blondeau : "Le Balanced Scorecard", Livre Blanc Comprendre les Outils du Nouveau Management, 100% Satisfaction

[9] A.FERNANDEZ, "Les 4 perspective du BSC" http://www.piloter.org/balanced-scorecard/balanced-scorecard-perspectives.htm, 2010.

[10] F.J.Reh, "Key Performance Indicators (KPI)"http://management.about.com/cs/generalmanagement/a/keyperfindic_2.htm.

[11] B.Fninou, "Le Balanced Scorecard Au Service De La Performance : Cas De Reuters" Mémoire mastère spécialisé en contrôle de gestion, octobre 2006.

[12] H.Bergeron : "Les indicateurs de performance en contexte PME, quel modèle appliquer? " Université du Québec à Trois-Rivières.

[13] R.Meddeb, "L'industrie du textile-habillement au Maroc: les besoins des chefs d'entreprise et les conditions des femmes dans les PME" Bureau international du Travail, Genève, Août 2000.

[14] L.M'Chirgui, T.Lorne, "Les PME-PMI marocaines face au défi de la mise à niveau" ambassade de France au Maroc - mission économique de Rabat, 2004.

[15] M.Cavalcanti & al, "A comparative understanding of corporate social responsibility of textile firms in Brazil and China", Journal of Cleaner Production, VOL 20, pp 119-126, 2012.

[16] C. Okar & al, "A maturity model for SCPMS project: an empirical investigation in large sized Moroccan companies", IJCSI International Journal of Computer Science Issues, Vol. 8, Issue 2, March 2011, pp 203-212.

[17] Y.Errami, "les apports du BSC à la recherche de la performance", Université de PAU et des pays de l'Adour, http://cermat.iae.univ-tours.fr/IMG/pdf/Actes_texte_9.pdf.