DOI: 10.36347/sjebm.2016.v03i09.004

Scholars Journal of Economics, Business and Management e-ISSN 2348-5302
Zouheir Housni *et al.*; Sch J Econ Bus Manag, 2016; 3(9):456-462 p-ISSN 2348-8875

(An International Publisher for Academic and Scientific Resources)

The Balanced Scorecard Approach within Moroccan Industrial Firms: A Contingency Variables Analysis

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Abstract: The present study was to analyse the practices of performance measurement of Moroccan firms then the study of their explanatory factors. However, achieving these goals require the use of an analytic framework capable of understanding the different dimensions of performance, the Balanced Scorecard is one that is widely used. The results led to two major conclusions. First, the content of performance measurement system is consistent with the balance established by the Balanced Scorecard. Second, five factors relating to the degree of structural centralization, size, perceived environment uncertainty, competition intensity and differentiation strategy have significant effects on the diversity of performance system measures.
Keywords: Balanced Scorecard, Performance Measurement system, Contingency, Performance Indicator

INTRODUCTION

Nowadays, the world continues to concede consequences of one of the most high-pitched economic crises of this contemporary epoch. Not to doubt there, if actual crisis causes several decisions of expenses reduction, processes simplifications, risk management improvement, it is still probable that many firms are going to see again their making decision system to predict better the future. The classical systems are maladjusted in the new environment marked by unpredictability on political, socioeconomic, and technological plan.

These concerns could fit with the new Balanced Scorecard (BSC) approach. It is about a strategy deployment steps and performance measurement. It aims to help managers in formulation and communication of their strategy, in the form of strategic objectives, actions plan and performance indicators, in a dynamic and participative process.

In Moroccan firms, the cases of Balanced Scorecard adoption are disparate and not much mediatised compared with foreign experiments in this domain. We consequently established question: Do indicators used by the Moroccan firms allow catching the different performance dimensions, as those identified by BSC, and provide information on ongoing performance and future performance drivers?

BALANCED SCORECARD APPROACH: THEORETICAL FRAMEWORK

The Balanced Scorecard

Robert Kaplan and David Norton [24]conceived the Balanced Scorecard in 1992, in objective to palliate the financial information insufficiency. The BSC is a combination of financial and operational measures ranked according to four performance metrics or perspectives that form its backbone: Customers; Internal processes; Financial; Learning and growth. According to R. Kaplan and D. Norton, the BSC structure allows any company to translate the strategy into actions and monitor performance variables by adopting a vision of 'comprehensive and balanced' of the company's business.

Research problem

The BSC based on a generic model of performance equilibrium of which a variety of indicators structured around four perspectives: financier, customers, internal processes, and organizational study. Nevertheless, the BSC structure was determined without taking consideration of the contingent aspect of performance measurement.

On this basis, it is possible to fix the research problem: What is the influence of contingent factors on the performance measurement systems diversity, as defined by the BSC?

Sub-question 1: Into what degree the Moroccan firms insert the four performance dimensions defined by BSC in their performance measurement systems?

Sub-question 2: What is the influence of the internal characteristics of the firm on the degree of compliance of the systems of measure of performance used in the structure suggested by BSC?

Sub-question 3: What is influence the uncertainty of external environment on the degree of compliance of the contents of the systems of measure of performance in the balanced structure offered by BSC?

EMPIRICAL FOUNDATIONS AND HYPOTHESIS

Contingency theory foundations and empirical studies in this domain validate the hypothesis according to which the performance measurement practices are influenced by internal and external variables to the firm.

As a result, we can formulate the main hypothesis as follows: « the rapprochement of the contents of the performance measurement systems of the Moroccan industrial firms to the balanced structure offered by BSC is dependent on many internal and external contingent factors».

Building on the findings of Chanhall and previous research in this area, we will examine, through this research, the influence of contingency variables on the performance measurement practices of Moroccan industrial firms, specifically the degree of use of various indicators covering the four areas of performance offered by Kaplan and Norton. In particular, we will consider the firm size, strategy, centralisation, formalisation, management style, perceived incertitude environment, competitive intensity and technology.

Although researches on the measure of performance are abounding, not enough works study contingent's factors who affect the use of the Balanced Scorecard approach. Besides, Chanhall R.H. [1] sums up researches in this domain and affirm: "*it is not clear how balanced scorecards should be measured. It seems likely that the content and implementation of balanced scorecards vary widely between organizations. It would seem useful to develop a valid measure of balanced scorecards that could then be used by researchers to explore its context*".

Firm size

The size of the company is considered one of the most decisive factors in the organisation form. The size growth causes several changes within the organization. Thus, it is recognized that the greater organisation was, the more there are specialized tasks, its units are more differentiated, and the administrative component is developed.

Several previous research suggests that firm size may affect the design and the use of management control systems. Organizational growth requires increased communication and poses control problems. Also, larger companies may have greater access to the necessary resources to implement systems that are more complex. Moores and Chenhall [2] find that size is a significant factor in the adoption of more complex management systems. Hence, we assume that:

Hypothesis 1: *the performance measurement systems will conform to the equilibrated structure, as proposed by BSC, in larger than in smaller Moroccan Industrial Companies.*

The strategy

It has long admitted in the management control literature that management control systems must be designed according to the strategy adopted by the company. Shank, J. K. & Govindarajan, V. [3] argue that companies that have opted for a cost leadership strategy be developing a range of indicators to monitor and compare costs standard. However, companies pursuing a differentiation strategy inclines to develop other types of indicators on the quality, efficiency, etc.

All these considerations led us to state the following two assumptions:

Hypothesis 2: *Differentiation strategy has a positive impact on the diversity of performance measurement systems.*
Hypothesis 3: *Cost leadership strategy has a negative impact on the diversity of performance measurement systems.*

Organizational structure

Centralisation

Decentralisation appears, as an adjustment to a perceived uncertain environment may be associated with a preference for less accounting dashboards and more focused on the external. Thus, the Balanced Scorecard is an ideal example.

For his part, Kalika M [4] argues that the most differentiated and structurally decentralised organizations have the most developed planning and control systems. These results confirm the conclusions Bruns, W.J. & Waterhouse, J.H. [5], who observe that the most sophisticated budgeting practices are found in the most decentralised structures. Consequently, we deduce the fourth research hypothesis:

Hypothesis 4: *The performance measurement system is more balanced, as recommended by the BSC, on the decentralised structure.*

Formalisation

In a structurally high environment, employees assume standardised responsibilities that are regulated by strict rules and operational procedures. The

formalisation is likely to increase the level of certain types of information transmission and use. Employees tend to respond less readily to exploit opportunities encountered.

Therefore, we assume the fifth Hypothesis: *The performance measurement system is less balanced, as recommended by the BSC, on the formalized structure.*

Management style

A management style reflecting the traditionalist classical doctrines of management has often been associated with more formalised control systems and especially organised around the accounting control tools [6, 7].

A more progressive management style, defined as people and change oriented, should, however, lead to more pronounced use of new management systems.

It is then possible to make the sixth research hypothesis: *A progressive management style will lead to use more varied indicators covering the four performance aspects identified by the BSC.*

Technology

The technology organizational complexity is a contingency factor mentioned for a long time in research to explain the characteristics of the control system. Several empirical studies have confirmed the relationship between control systems and technology [1, 8]. Besides, Otley [9] argues that the production technique and the processes complexity affect the information system and internal cost control.

Several authors [10, 11] argue that organizations have changed their control system to make it more efficient and effective, thereby enabling them to compete in their markets. Therefore, it is possible to provide the seventh hypothesis: A high level of technology leads to high use of the Balanced Scorecard approach

The perceived environment uncertainty

Gordon and Narayanan specify that the environment should be the major consideration in the design of management control systems. Chenhall and Morris [12] found a positive correlation between the perceived environment uncertainty and the application of universal information systems incorporating non-financial indicators. Hence, we expect that:

Hypothesis 8: *The perceived higher environmental uncertainty will lead to higher performance measurement system diversity, and thereby follows the Balanced Scorecard approach.*

Competitive intensity

Many studies have focused on the intensity of competition as a factor among others in the literature on the contingency of performance measurement systems [13]. The companies are in fierce competition over several resources such as raw materials, network sales and distribution, quality and variety of products offered, and price [14, 15].

As the competitive environment becomes more intense, sophisticated management control system is needed to facilitate optimal decision-making by managers [16]. From the above developments, it is possible to provide the final hypothesis: *the competitive environment becomes more intense, will lead the performance measurement system to be diversified and equilibrated as defined by the BSC.*

EMPIRICAL STUDY RESULTS

A quantitative approach based on a hypotheticodeductive logic was adopted. Data were collected from 84 Moroccan industrial companies from different industrial sectors by surveys. Then a detailed analysis was carried out followed by a statistical analysis to identify the causal relationships and confirm or reject, therefore, hypotheses.

Investigation of performance measurement practices

The results, presented in Table 1, also shows that there is a predominance of indicators measuring the financial dimension and the customer dimension, the first two pillar of the BSC. However, the extent use of the last two BSC pillar is average: 59% for the internal processes axis and 53% for the organizational learning axis.

Table 1: The extent use of the 4 BSC perspectives

	Min %	Max %	Average %	Standard deviation
Extent of the 1st BSC pillar usage	68,00	88,00	80,0000	4,86335
Extent of the 2nd BSC pillar usage	68,00	84,00	74,3333	4,70584
Extent of the 3rd BSC pillar usage	30,00	80,00	59,8333	12,05663
Extent of the 4th BSC pillar usage	26,00	84,00	53,3333	17,16079
Extent of performance measurement diversity usage	**57,00**	**83,00**	**66,8750**	**8,30041**

We can conclude that the control tools implanted in the manufacture companies' surveyed can qualify as "moderately compliant" in reference to the analysis axis that BSC suggests developing. We also note that the variety degree of the contents of the performance measurement systems is, overall, medium as the shows the average score obtained by the whole of the firms, and on each type of assessed performance.

Hypotheses validation

The multiple linear regression is used to explore the relationships between the performance measurement system diversity (dependent variable) and the contingent factors (independent variables). Table 2 display the results from the regression model (executed by SPSS) highlighting the independent variables influencing the dependent variable.

Table 2: Results of the regression model (executed by SPSS)

Independent variables	Unstandarised coefficients		Stand. Coeff.	t-value	p-value.
	B	Std. Error	Beta		
(Constant)	172,629	31,020		5,565	,000
PEU	2,113	,606	,284	3,490	,001
Size	1,155	,373	,271	3,093	,003
Competition	2,053	,627	,211	3,276	,002
Differentiation	1,642	,614	,182	2,673	,009
Centralisation	-1,701	,777	-,190	-2,190	,032
Variables eliminated					
Management style	-,044		-,700	,486	
Formalization	,073		1,087	,280	
Low cost strategy	,095		1,530	,130	
Technology	,101		1,639	,105	
R	R 2		Adjusted R2	Std. Error	
,871	,759		,743	29,713	

Hypothesis No 1 relating to the firm size

The statistics relating to the Assumption No. 2 indicates the existence of a significant impact, with a beta 0,271 (t-value= 3,093), the variable size on the diversity of content of the systems of performance measurement. In conclusion, the hypothesis 1 is validated.

Hypothesis No. 2 relating to the differentiation strategy

The regression statistics relating to the hypothesis 2 indicates that the differentiation strategy has a significant effect on the diversity of to the performance measurement systems with a beta 0.182 (t-value= 2,673). The Hypothesis 2 is, Therefore, validated.

Hypothesis No. 3 relating to the low-cost strategy

The statistics relating to the hypothesis 3 show that the low-cost strategy adoption has no significant effect on the diversity of the performance measurement systems with beta 0.095 (t-value = 1,530). The Hypothesis 3 is, therefore, not validated.

Hypothesis No. 4 relating to the centralization

As shows in the statistics relating to the hypothesis 4 (Table 2), the variable centralization has a significant negative impact on the performance measurement systems diversity, with beta -0,190 (t-value= -2,190). Consequently, the Assumption 3 is validated.

Hypothesis No. 5 relating to the formalization

The statistics relating to the variable formalisation (Table 2) shows the absence of significant impact on the degree of the performance measurement systems diversity, with beta 0.073 (t-value = 1,079). This indicates that the hypothesis N° 5 is refuted

Hypothesis No. 6 relating to management style

The regression statistics relating to the hypothesis 6 indicates that the management style has no significant effect on the degree of the performance measurement systems diversity with a beta -0,044 (t-value= -0,700). In effect, the hypothesis 6 is not supported.

Hypothesis No. 7 relating to the organizational technology

It emerges from the statistics relating to the hypothesis 7 that the use of high technology level has no significant effect on the diversity of the performance measurement systems with a beta 0.101 (t-value = 1,639). The Hypothesis 7 is not validated.

Hypothesis No. 8 relating to the uncertainty of the Environment

The statistics relating to this hypothesis indicate that the perceived environment uncertainty has

a significant impact on the degree of performance measurement systems diversity, with a beta 0.284 (t-value = 3,490). Consequently, the hypothesis 8 is validated.

Hypothesis No. 9 relating to the competitive intensity

In accordance with the hypothesis No. 9 relating to the competitive intensity, the statistics show a significant impact on performance measurement systems diversity, with a beta 0.194 (T-2,964 value). Consequently, the *hypothesis 9 is validated.*

Research results summary

Several conclusions could be retained about the performance measurement systems characteristics applied in the Moroccan industrial companies, but also in relation to the drivers of the performance measurement practices.

Predominance of indicators relating to the financial and customer perspectives

Concerning number of BSC performance axes covered by performance measurement systems, we found a concentration on the two first BSC pillars (financial and customer). Only 28% of firms put in place a balanced structure of indicators representing the four dimensions of the BSC.

The financial axis reflects the financial constraint, the financial resources available and the requirements in terms of efficiency.

Moreover, the results also show that all firms interviewed usually use indicators measuring the financial dimension and client dimension, which is a non-financial performance. In effect, this interest is due in part to the requirements of the new environment characterised by the crisis effects and the fierce competition.

Average use of internal processes and organisational learning axes

The "internal processes" and "organizational learning" perspectives highlight the action levers to mobilise and achieve the final company objectives.

Only 45% of companies use frequently indicators measuring the internal processes dimension. The shortcomings found on this axis are due to the disregard by some companies of their key process.

Similarly, 40% of the surveyed companies cover the "organizational learning" perspective in their performance measurement system. This axis is seen as the more ambiguous and the more difficult to understand. This ambiguity comes sometimes from the abstract character of the phenomena under control in this axis. The essential elements of this axis, as defined by Kaplan and Norton are strategic knowledge, motivation, the involvement, the values, the atmosphere and the social climate, the strategic technologies, etc.

The considerable influence of the firm size

The size is significantly influential on the variety of performance measurement system. This means that the large companies tend to balance more their performance measurement system by integrating financial of a non-financial nature information (customers, internal process, organizational learning, innovation, etc.). In other words, these are the large companies, which tend to vary the content of the performance measurement system so that it conforms to the balanced structure proposed by Kaplan and Norton.

These results are consistent with the new approaches literature in the performance measurement which confirms that the large firms are more attracted by the new performance measurement system as the BSC. In this way, several empirical works have associated the adoption of the BSC to large enterprises [17], Lawson *et al*. [18], and Speckbacher [19]. One of the possible explanations given by researchers to this observation is that large manufacturer companies have the human resources and especially equipment to innovate their management control system.

In effect, it is possible to conclude that the large companies have the necessary resources and capabilities to innovate their performance measurement method.

The effect of strategy of differentiation

The companies pursuing a differentiation strategy, in the context of industrial enterprises Moroccan, tend to vary and balance their performance systems indicators.

This conclusion is consistent with the contingency theory that suggests that certain forms of management control systems are more compatible with some kinds of strategies. Therefore, several studies have shown [3, 20, 21] that the differentiation strategy is related to the complex coordination and flexible systems based on non-accounting results or even patterns of behaviour controls.

In this way, Ittner and Larcker [22] think that differentiation strategy by the products quality may very well be installed and measured through of strategic management control systems. The results measures in these cases are clearly non-financial, and oriented toward the long term. Similarly, Govindarajan [20] asserts that a differentiation strategy must be accompanied by an evaluation-oriented profit style to

ensure the best organizational effectiveness.

The causal role of the structural decentralisation

The variety of the of performance measure systems contents is closely related to the degree of structural decentralization. The trends updates by the work of Bruns and Waterhouse [5] and merchant [23], which associated greater sophistication of performance measurement practices to organizational structures the more decentralized, have been confirmed in the industrial context of Morocco.

In effect, the performance measurement practices are therefore faithfully related to the structural characteristics of the manufacture companies surveyed. Knowing that the companies in the sample belong to branches of different industry, this result may be explained by the fact that more there is a decentralisation of decision-making and responsibilities, most employees have a tendency to develop their expertise, and by that develop the work methods. Of this fact, it is very likely that this need to develop the work skills and methods will push the responsible for the management control to adopt new approaches of performance assessment.

Ultimately, the result shows that the more the decision-making and responsibilities are decentralised that manufacture companies have performance evaluation systems the more balanced.

The influence of the uncertainty of the Environment

The positive relationship to which leads the statistical tests between the perceived environment uncertainty and the variety of the performance indicators that this is the companies who perceive their environment as complex and uncertain who hold the greater variety of performance indicators.

This result is in the logic of the conclusions of Gordon and Narayan [15], Chenhall and Morris [12]. These authors found that the increase in the perceived environment uncertainty led to greater use of external non-financial information. Environmental uncertainty engenders necessarily more difficult planning and control.

Therefore, we can say that in the presence of a complex and uncertain environment, companies are no longer satisfied with a post-evaluating of their performance, that is to say, the financial results. They feel the need to increase their reactivity in a way to be able to respond swiftly to changes that may occur in their environment. The four dimensions of the BSC are thus significantly represented in the performance measurement systems of companies who operate in a complex and uncertain environment.

The impact of the competitive intensity

The results show that a company faced with a strong competition has a tendency to diversify and balance its battery of performance indicators.

The performance measurement systems literature supports the results found, in which the combined use of financial and non-financial measures is necessary to cope with the intensity of market competition.

Empirically, Hoque *et al*. [11] found a positive impact of the competition on the use of both financial and non-financial indicators. In the final analysis, the use of these two performance measures forms is a necessary step for industrial companies to handle with the market competition intensity.

CONCLUSIONS

If the contingent approach has undoubtedly enriched our understanding of how organizations work, the fact remains that there are still problems in defining and measuring the variables being studied. Indeed, several actions are proposed by researchers. This lack of consensus can justify the fact that different results emerge from studies with different methodologies, and the discussion of the performance management remains far from closed to open the contrary abound.

To enable the realisation of a wider and more comprehensive study, it would be interesting for future research taking into account, in addition to four axes of the BSC, the fifth dimension of performance that relates to the social and environmental responsibility of the company.

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