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FEATURES OF PERFORMANCE MEASUREMENT SYSTEMS IN TUNISIAN SMES: RESULTS OF AN EMPIRICAL STUDY

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Abstract:
Evolving in a globalized economy and facing increasing pressure from their business partners, Tunisian SMEs are facing new challenges in managing their performance. To meet these challenges, Tunisian SMEs must adopt management tools that allow them to maintain the excellence they need, i.e., tools that measure their performance in a multidimensional, efficient and effective manner.
However, this need to measure and manage performance facesan absence of tools adapted to this type of companies that take into account both their limited resources and their expertise to be able to use them effectively.
Furthermore, in recent years the evolution of management control systems has resulted in the questioning of the relevance of financial measures as representative of business success and the diffusion of performance measurement systems designed to take into account different complementary strategic perspectives.
Developed for large firms, the approaches advocated would be incompatible with the practice of performance measurement in small firms (Hudson, Smart and Bourne, 2001). The paucity of empirical research on performance measurement systems in SMEs has been highlighted by many studies.
Lack of knowledge about performance measurement systems developed in SMEs invites the study of the features of these systems in this type of businesses. This study also contributes to documenting the specific problem of performance measurement systems in SMEs.
Using the results of an empirical study based on a quantitative survey of 57 Tunisian companies, this paper analyzes the features of performance measurement systems implemented in small and medium-sized enterprises and shows the diversity of practices of SMEs. This study provides Tunisian SMEs managers and advisors with an empirical framework for the design, improvement and evaluation of performance measurement systems.
Key words: Performance, financial and non-financial indicators, management control, SMEs.

Introduction

Evolving in a globalized economy and facing increasing pressure from their business partners, Tunisian SMEs are facing new challenges in managing their performance. To meet these challenges, they must adopt management tools that allow them to maintain the excellence they need, i.e., tools that measure their performance in a multidimensional, efficient and effective manner. However, this need to measure and manage performance facesan absence of tools adapted to this type of companies that take into account not onlytheir limited resources but also their expertise to be able to use them effectively.
The issue of performance measurement has been widely debated over the last three decades by both academics and practitioners. The evolution of management control systems has resulted in the questioning of the relevance of financial measures as representative of business success and the diffusion of performance measurement systems designed to take into account different complementary strategic perspectives.
Lack of knowledge about performance measurement systems developed in SMEs invites the study of the features of these systems in this type of firms. This study also contributes to documenting the specific problem of performance measurement systems in SMEs. The research question addressed by this paper is then the following: A performance measurement system is generally defined in the context of large companies, but what does it consist of in SMEs? What are its features?
From the results of an empirical study based on a quantitative survey of 57 Tunisian companies, the paper analyzes the features of performance measurement systems implemented in small and medium-sized enterprises and shows the diversity of their practices. This study provides Tunisian SMEs managers and their advisors with an empirical framework to design, improve and evaluate performance measurement systems.
This paper is then structured in two sections. First, we will present the conceptual framework of the study. Second, we will present the methodology and the results of the study.

I- The conceptual framework of the study

Although there is no consensus on the definition of performance at either the academic or empirical level, there is at least one methodological compromise on the subject: performance is a construct, which has been expressed by

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several less abstract explanatory concepts. Failure of the classic financial and quantitative indicators-based measurement system can be explained by the fact that there is no single way of evaluating the performance of all companies. On the contrary, each measure is considered identical, depending on a given context and on the strategic objectives pursued by the company. This line of thinkingprompted the shift from the financial performance approach to organizational performance in two ways: conceptualization of performance and measurement methods should integrate new procedures and qualitative performance indicators.

Furthermore, researchers interested in the study of business operations often focus on large organizations. The latter generally have sufficient resources to develop and apply management concepts that can improve the measurement and management of their performance. Then, thanks to a large number of studies on large companies, we can claim a better understanding of its functioning in several fields related to management; information systems, strategy, structure and control etc.

2.1- SMEs as a field of research

Unquestionably, SMEsrepresent a principal component of the economic fabric of most economies, whether developed or developing. In Tunisia, the economic and industrial landscape cannot be dissociated from that of SMEs, which represent the main segment of its productive fabric. According to the ANPME, 98% of SMEs are present in all sectors of economic activity: agriculture, industry, crafts, construction, trade and finally services which include tourism, communication, transport and financial services. With 40% of production and 31% of exports, SMEs are the nerve center of the Tunisianeconomy. According to the ANPME, the share of SMEs is more than 90% in all sectors except that of production and distribution of electricity, gas and water, where theirshare is only 50%.

Could we be tempted to consider SMEs as large companies butsmall? It is difficult to answer this question. If the answer is yes, this postulate would allow us to transpose all the management tools of large companies to SMEs. However, the study of SMEs shows that there are differences in nature between SMEs and large companies, which justify the use of management methods specific to this type of companiesHowever, the excessive assertion of this postulate could lead to the assumption that all SMEs are specific.

Research on SMEs began to develop in the late 1970s. A lively debate took place during this period between two antagonistic approaches. According to the first approach, the size effect is preponderant and therefore transcends other differences between organizations. The proponents of this approach therefore take into account the specificity of SMEs (Julien and Marchesnay, 1988), and try to unify it by a single approach. The supporters of the rival approach adopt a contingent approach and thus consider that it is impossible to speak of a single theory of SMEs. Generally speaking, we can distinguish two currents of research; the one for which the size effect is the predictive variable par excellence (the size effect being then considered as universal) and the one which relativizes the importance and the role of size (the size effect becoming contingent). These two currents are controversial because each has a set of advantages and disadvantages.

In our study, we have adopted the current that follows the specificities of SMEs, while highlighting their diversity. We assume that we cannot ignore a contingent approach due to the fact that SMEs are heterogeneous, but without being oblivious to their common similarities. Indeed, we consider that the central role of the manager is an invariant and specific to SMEs despite their heterogeneity. This approach attempts to create an analytical framework that reconciles "specificity" and "diversity" (Torrès, 1997).

2.2- Features of Performance Measurement Systems

A multitude of criteria have been used to identify performance measurement systems. To our knowledge, no unifying reading grid has been proposed to date for SMEs. Globerson (1985) and Maskell (1989) had presented a set of guidelines detailing the characteristics of performance measurement. These have been frequently reiterated in the more recent literature (Dixon et al., 1990; Lynch and Cross, 1991; Neely et al., 1996a). A comprehensive review of this literature was undertaken by Neely et al. (1997), and a set of 22 characteristics was identified. However, a review of this set revealed that many of the features are duplicated or are deemed to be desirable. The features of the performance measurement systems examined in this study were selected from a review of the literature.

- Traditional versus strategic:

Lack of links between performance measures and strategy in traditional models has been identified as the primary barrier to effective performance measurement systems (Atkinson and Waterhouse 1997; Bourne et al. 2000; Dixon et al. 1990; Goold 1991; Kaplan and Norton 1992, 1996; Keegan et al. 1989; Lynch and Cross 1991; McAdam and Bailie 2002; Neely et al. 1994; Sink 1986).

In fact, the models that were proposed after the 1980s, such as the BalancedScorecard (Kaplan and Norton 1996) and the performance pyramid (Lynch and Cross 1991), emphasized the interest of companies in linking performance measures to the strategy pursued.

The link between strategy and performance measurement is particularly important in SMEs. The scientific literature seemed to explain that SMEs managers look at planning with some skepticism, and the implementation of a

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performance measurement system could encourage managers to give importance to strategic activities. In addition, the relationship between strategy and operational activities needs to be made explicit to avoid losing focus on operational dimensions.

A number of studies support these conclusions. Abernethy and Lillis (1995) show that companies following a more flexible strategy, moving towards differentiation, use fewer traditional financial indicators and more qualitative performance indicators. Langfiels-Smith K. (1997) reviewed research on the relationship between different types of strategies and different types of control systems between 1972 and 1992. The author concludes that these studies clearly show that the features of the control systems used by firms differ depending on whether they follow a differentiation (or prospector-type) strategy or a cost leadership (or defendant-type) strategy.

- Financial versus multidimensional:

The most considerable criticism to traditional performance measurement systems is their focus on financial measures. In fact, all models that were developed after the mid-1980s are more balanced. However, there is no agreement on what notion of balance the performance measures should have. Different perspectives on and approaches to the balance of performance measures have been developed by authors minding the notion of balance of performance measures. Keegan et al (1989) wrote about balancing internal and external measures; Lynchez and Cross (1991) propose balancing measures across organizational levels; Fitzgerald et al (1991) pay particular attention to the relationship between outcome and determinants; and Kaplan and Norton (1992) propose balancing all four perspectives through type of measures (financial and non-financial) and objectives of measures (internal and external). These works are nonetheless complementary rather than antagonistic, since the balance defined in one approach complements and enriches those of other approaches.

- **Proactive versus reactive:**

Performance measurement systems can be identified by the function they perform within the company. Thus, some systems have a preventive, anticipatory function and are qualified as "proactive". On the other hand, reactive systems have a more informative function intended to allow the implementation of corrective actions.

However, an important mission of management control is to enable risk management (strategic, operational, financial). Performance measurement systems, whose content is based on the company's strategy and key success factors, can play a role in managing these risks. Indicators should inform managers in a timely manner of events that could adversely affect the achievement of objectives. Managers should be able to react in a timely manner to control these risks.

Because they incorporate non-financial data in the form of objectives to be achieved or performance monitoring indicators, performance measurement systems provide information to act upstream on the determinants of financial results (Chiappello and Delmond, 1994). This search for responsiveness is a feature of performance measurement systems, as pointed out by many authors(White, 1994; Kaplan, 1995; said, Hassabelnaby and Wier, 2003). It implies that the content of performance measurement systems should be updated and disseminated quickly and should consist of indicators that predict financial results. Indicators should inform managers in a timely manner about events that could adversely affect the achievement of objectives. Managers should be able to react in a timely manner to control these risks.

- Centralized versus decentralized:

Several authors (Burns and Waterhouse, 1975; Whitely, 1999) have pointed out that some companies have a centralized management control system, with a "top-down" type of control approach in which little autonomy is left to the staff. On the other hand, the system can be decentralized, with staff having more autonomy.This decentralization often implies a certain formulation of control.

Decentralization of control and performance measures is one of the features of performance measures to be considered. It indicates the degree of diffusion of the strategy in the company, knowing that it is recommended to implement performance measurement systems at the lowest hierarchical levels of the company so that operational employees act in accordance with the company's strategy (Chiapello and Delmond, 1994; Kaplan, 2000; Atkinson, Waterhouse and Wells, 1997).

II- Research methodology

Our sample consists of Tunisiancompanies from different sectors with less than 250 employees. The face-to-face administration of 60 questionnaires allowed us to collect data from 57 companies. In total, data from 54 SMEs could be used for processing, as some questionnaires had to be withdrawn because of missing data. The questionnaire was addressed to the head of the company. The main sectors represented are shown in the table below.

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	Frequency	Percent	Cumulative Percent
Agro-food industry	4	7,4	7,4
Chemistry-Pharmaceuticals	7	13,0	20,4
Electrical/electronic industry	10	18,5	38,9
Services	11	20,4	59,3
Textiles and leather	6	11,1	70,4
Mechanical/metallurgical industry	8	14,8	85,2
Construction and public works	5	9,3	94,4
Tourism (Hotels and Restaurants)	3	5,6	100,0
Total	54	100,0	

Table 1: The distribution of companies by industry

Mainly, four main categories of variables were measured: degree of responsiveness of the performance measurement systems; diversity of the scope of the performance measurement systems; diversity of the performance indicators of the performance measurement systems and degree of decentralization of the performance measurement systems.

The respondents should rate the questions related to performance measurement systems. The respondent should rate the questions for each of the four variable categories on a 5-point Likert-type scale. Measurement reliability was validated by Cronbach's alpha coefficients greater than 0.75. In addition, a more descriptive set of data was collected, which will provide a more detailed picture of the practices of financial and non-financial performance indicator systems in TunisianSMEs.

III- Presentation and Analysis of Results

Before conducting more elaborate statistical analyses, we thought it appropriate to present in a descriptive way the answers obtained from our questionnaire administered to 54 TunisianSMEs managers. Indeed, few descriptive surveys on performance measurement practices are available in either the academic or professional literature.

1- Complexity of SME performance measurement systems

The performance measurement systems used by the managers of the companies in the sample are relatively technically complex. Indeed, 48.2% of the companies consider that their performance measurement systems have a "high" or "very high" degree of complexity. On the other hand, only 11.1% of the managers consider that they use tools that are not very technically sophisticated. The four dimensions that have been retained to describe the tools are as follows:

1.1- Degree of responsiveness of performance measurement systems;

Overall, companies have responsive tools. More than a quarter of the companies (24.1%) produce the data in real time or in less than a day, and 20.4% of SMEs have a turnaround time of less than a week.

Most of the time, performance measurement systems are published monthly (63.4% of companies), but the tools are published weekly and daily in 16.7% and 3.7% of companies respectively. It seems therefore that the managers of small and medium-sized companies feel the need to produce and distribute formalized data at short intervals, enabling them to evaluate the performance of their organization. This tendency to seek responsiveness is confirmed by the nature of the indicators present in the performance measurement systems. Monitoring indicators are "High" or "very high" integrated into the tools of 51.8% of organizations. Most often, these are indicators relating to sales, cash flow, margins, order book, customers, productivity, production and delivery times, and to a lesser extent, inventories, production costs, overheads and quality. The percentage of SMEs with "important" or "very important" forecasting indicators is lower (48.2%), but still significant.

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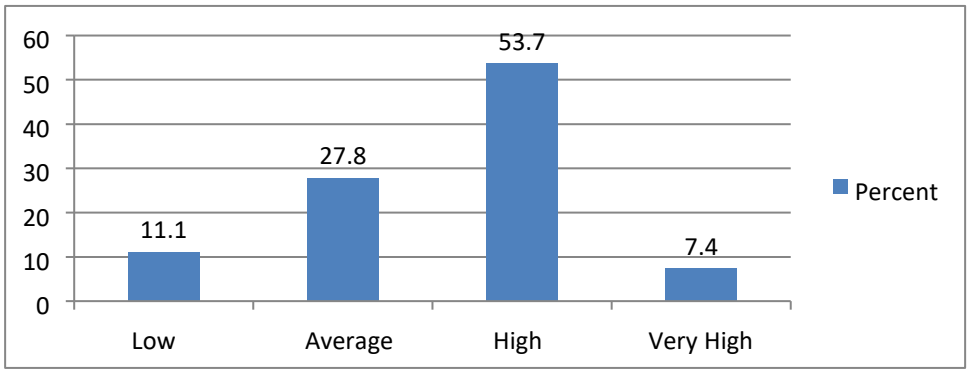

Figure 1: Degree of responsiveness of performance measurement systems

1.2- Diversity of the scope of SME performance measurement systems ;

Analysis of the questions on the content of the tools indicates that SME performance measurement systems mainly consist of financial and physical data, with little representation of qualitative and external data. Most managers (66.6%) acknowledge that financial data is "important" or "very important" in their tools. The same is true for 54.7% of managers regarding physical data, while the proportion drops to 33.4% in the case of external data and 23.4% in the case of qualitative data.

Overall, degree of diversity in the content of the performance measurement systems of TunisianSMEs managers can therefore be described as average, since it is essentially based on the significant presence of two types of data.

This finding reveals, however, that the orientation of the performance measurement systems is not only financial insofar as most firms are equipped, as recommended in the literature, with operational measures that relate to classic performance elements (productivity, quantities sold or ordered, volume produced, stocks), but also to variables that are recognized today as having an important place in the value creation process: quality, flexibility, deadlines (Mendoza and Zrihen, 1999).

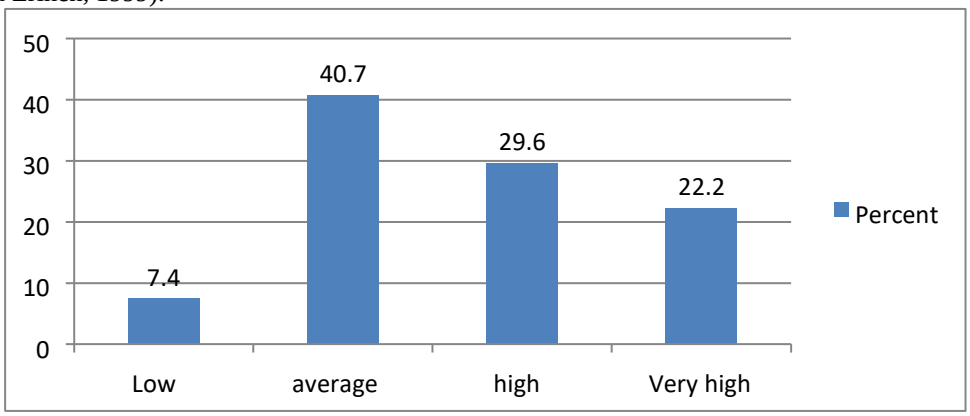

Figure 2: Diversity in the scope of performance measurement systems

1.3- Diversity of SME performance indicators;

In detail, it seems that mostTunisianSMEs managers use indicators representing financial performance (sales, profitability, margins, cash flow, costs, operating income, value added, etc.). The proportion of companies that have measures for customers, however, is low. The proportion of companies that have customer metrics is low, however, with 18.6% of executives admitting that they do not track this dimension. Only about one in four companies significantly assesses its performance vis-à-vis its customers. The trend is the same for the monitoring of processes or key variables that allow companies to track the implementation of their strategy. 44.4% of managers do not have indicators representing this dimension. Only one third have them to any significant degree (32.6%).

Finally, the proportion of companies that adopt measures of intangible capital, such as employee satisfaction, motivation, quality of information systems and capacity to innovate, is very low. 44.4% of the managers do not have indicators representing this dimension. This means that companies do not formally monitor variables focused on intangible capital.

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The results finally show that SMEs use relatively diversified performance measurement systems. The performance measured is primarily financial in nature. Most companies make moderate use of indicators targeting customers and key processes. As for the "intangible capital" dimension, it is hardly represented in the performance measurement systems of TunisianSMEs. These results should be put into perspective, as the practices observed are heterogeneous.

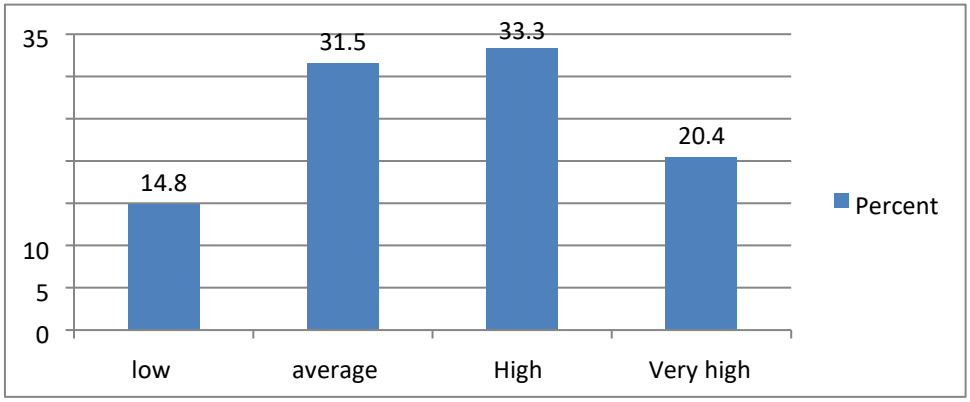

Figure 3: Diversity in the content of performance measurement systems

1.4- Degree of decentralization of SME performance measurement systems;

A small proportion of companies decentralize their tools. The manager is the sole designer and recipient of the performance measurement system in most companies (42.6%). The tools are implemented at the level of functional and operational management in 38.5% and 45.8% of cases respectively. Functional managers who use performance measurement systems are, as the content of the tools suggests, primarily the sales manager, the production manager, the administrative and financial manager (or the head of the accounting or management control department), and to a lesser degree, the head of purchasing or supply. On the other hand, the human resources, personnel, communication and marketing departments are only rarely mentioned as recipients of the tools. For the operational hierarchical levels, it is the department heads, the workshop managers, the sector managers, and finally the profit center managers who most often have the tools. Interviews with managers revealed that performance measurement systems are applied in different ways when they are decentralized to operational managers. These are not "data banks" with a single content intended exclusively for general management and imposed on managers at lower hierarchical levels, but genuine steering instruments designed locally to monitor the performance of activities within a particular scope.

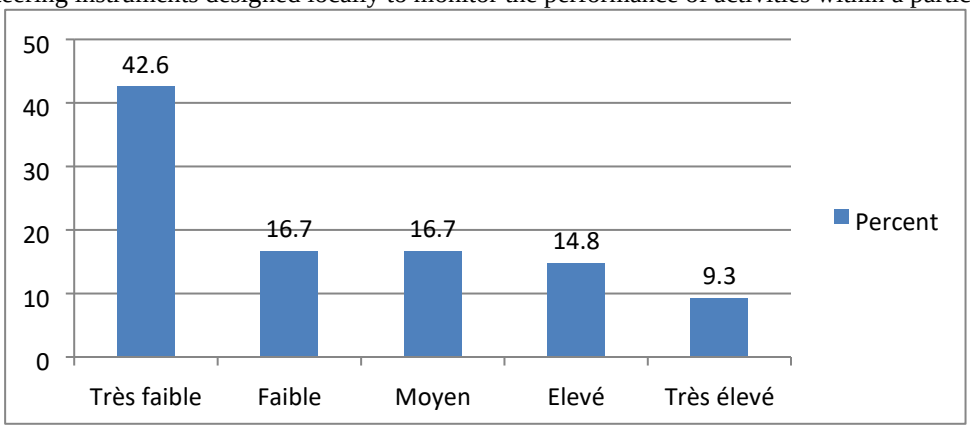

Figure 4: Degree of decentralization of performance measurement systems

The descriptive statistics of our questionnaire provide a better understanding of the performance measurement practices and sometimes challenges of SMEs managers and certain widely held beliefs about the relative relevance of performance measures in SMEs. We thenformulate the following patterns:

- The performance measurement systems of the companies in the sample are relatively technicallycomplex. Despite the criticism about the limitations of financial performance measures, we find that they are still very much present and used by TunisianSMEs managers. The production and use of non-financial performance measures is not as high as expected. These results are not surprising given the growing recognition of the difficulties faced by TunisianSMEs

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managers in measuring and reporting on intangible factors such as intellectual capital, innovation, and environmental management;
- The survey reveals that there are wide variety of practices behind the term performance measurement system. In the following section, we will attempt to classify these practices and propose a typology. The first step in developing this typology is the validation of the measurement model proposed to describe the performance measurement practices of SMEs.

2- Two ways of using performance indicators

To examine the validity of our latent variable measurement scales, a two-stage factor analysis was carried out: an exploratory analysis carried out on the SPSS software (version 17.0) and a confirmatory analysis carried out on the AMOS software (version 18.0). For each of the statistical approaches used, we will follow the standard methods recommended by the literature (in particular Thietart, 1999, Evrard, Pras and Roux, 2000).

We have defined the features of performance measurement systems as the combination of four dimensions (Table 2) but we do not know if this theoretical decomposition corresponds to a representative breakdown of the features of the performance measurement systems actually adopted by SMEs, i.e. to check whether some of them adopt performance measurement systems whose features differ from those developed in the literature.

Variables representing the dimension	**Variables measuring the dimension**	**Label of variable**
Level of responsiveness of SMEs performance measurement systems	Frequency of dashboards production.	DCRFR
	Dashboards production time.	DCRDL
	Degree of integration of monitoring indicators.	DCRIS
	Degree of integration of forecast indicators.	DCRIP
Diversity in the scope of SMEs performance measurement systems	Degree of integration of financial data in the dashboards.	DCDCF
	Degree of integration of non-financial quantitative data in the dashboards.	DCDCQN
	Degree of integration of qualitative data in the dashboards.	DCDCQL
	Degree of integration of external data in the dashboards.	DCDCEX
Diversity of performance indicators in SMEs performance measurement systems	Degree of integration of financial performance indicators in the dashboards	DCDIPF
	Degree of integration of customer performance indicators in the dashboards	DCDIPC
	Degree of integration of management strategic objectives indicators in the dashboards.	DCDIPVG
	Degree of integration of the management of intangible elements indicators in the dashboards.	DCDIPEI
Degree of decentralization of performance measurement systems of SMEs	Degree of decentralization of dashboards.	DCDEC

Table 2: Variables of the model measuring the complexity of performance measurement systems

2.1- Presentation and interpretation of the PCA results

The principal component analysis performed on the collected data allowed us to retain three factors (or principal components) to summarize the initial information from the 14 variables representing the features of the performance

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measurement systems of TunisianSMEs. The three factors have a percentage of explained variance of 62.52% in total (Table 3). The fourth principal component does not provide any usable information, although its eigenvalue is greater than 1. Analysis of correlation between the variables and the first principal component indicates that all features of the performance measurement systems significantly load on the first factor.

A number of initial variables were dropped from the analysis either because they were not well represented by the factors or because they diminished the fit of the empirical model to the data (CFA Iteration). This phenomenon represents a cleansing of the measurement scales of the features of performance measurement systems and the complexity of their uses and retains only the representative variables.

Factor	Initial Eigenvalues		
	Total	% of variance	% cumulative
1	**4,550**	**35,003**	**35,003**
2	**2,261**	**17,390**	**52,393**
3	**1,318**	**10,135**	**62,528**

Table 3: Eigenvalues and percentage of explained variance

2.2- Interpretation of the factors

We can then proceed to the interpretation of the factors. They are structured as follows:

Factor 1: The first factor includes the items representing the diversity of performance indicators and the diversity of the fields of application of performance indicators. This factor includes six items, three of which relate to the diversity of performance indicators and three of which relate to the diversity of scope of performance measures. This suggests that the two dimensions "diversity of performance indicators" and "diversity of the fields to which the performance indicators relate" are quite similar. We will keep the name ‘differentiation of the content of performance measurement systems’ for this first factor.

Factor 2: The second factor groups together the items representing the diversity of field of application, the diversity of performance indicators and responsiveness. This factor includes four items, two of which relate to the degree of integration of financial performance indicators into performance measurement systems and two of which relate to the degree of responsiveness of performance measurement systems. This dimension therefore groups together items that relate to financial performance and the responsiveness of performance measurement systems, so we name this factor‘financial responsiveness of performance measurement systems’.

Factor 3: The third factor includes three items, two representing degree of responsiveness and one represents degree of decentralization. Decentralization aspect strongly correlates with degree of responsiveness, specifically degree of integration of monitoring indicators and frequency of updating performance measurement systems. We name this factor ‘anticipatory decentralization of performance measurement systems’.

Conclusion:

The objectives of this study were to develop a picture of practices in terms of the features of financial and non-financial performance indicator systems adopted by SMEs. Our study examined 54 companies and found that the performance measurement systems of the companies in the sample are relativelytechnically complex. These tools are used significantly by company managers and can therefore be described as information systems. The principal component analysis carried out on the collected data enabled us to identify three features of the performance measurement systems of TunisianSMEs: differentiation of the content of the performance measurement systems; financial responsiveness of the performance measurement systems; and anticipatory decentralization of the performance measurement systems. TunisianSMEs attribute differentiated features to their performance measurement systems. They are distinguished mainly by the extent of performance measurement systems and the proactiveness of performance indicators. TunisianSMEs have a variety of performance measurement systems ranging from simple collection of financial and non-financial indicators with systems having a higher degree of complexity and technical sophistication, which essentially play an important role in performance measurement and monitoring. We suggest that further research is needed to determine whether the use of integrated strategic dashboard systems, based on the balanced scorecard models advocated by Kaplan and Norton (1996), could help improve the quality of current performance measurement systems.

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Another contribution of the study is that there is room for improvement, especially in the areas of intellectual capital management, innovation capacity, environmental management, health and safety, and stakeholder relations (investors, partners, the public, suppliers, etc.), and that much work remains to be done. More in-depth studies will have to be carried out to try to measure these elements and integrate them into a performance management system. This topic is one of the main challenges for accounting researchers, both in terms of standardization and development of management control tools.

Finally, it is important to point out certain limitations to this study. The theoretical limitation of the study is its essentially descriptive nature. Indeed, we initially found that, while the performance measurement practices of large companies were widely described, this was not the case for the performance measurement practices of SMEs. We therefore deliberately chose an approach in line with Mintzberg's (1979) recommendations, for whom "the researcher and teacher must produce and present descriptive work in order to be useful to management", i.e. to generate knowledge. The empirical limitations of the studyrelate to the size of the sample: although the sampling was carried out in such a way as to ensure a variety of sizes and sectors, the relatively small number of firms does not allow us to extend the conclusions we have reached to the entire population of SMEs. The studied companies operate in environments that are open to research and new management methods, which means that they cannot be considered representative of all SMEs. In addition, SMEs are a heterogeneous population exposed to significant changes, which affects the "generalizability" of our results. Finally, it should be noted that in the absence of performance measurement systems, the sample does not allow us to show the "marginal" usefulness of these systems for SMEs. However, this was not our objective.

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