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Analyzing the Impact of Management Control Tools on Organizational Performance: An Empirical Study of Moroccan Companies.

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ABSTRACT

The commitment of a company to excellence is largely determined by the use of management control systems tools have been implemented. In this context, the objective of this article is to analyze the effect of using such tools on the organizational performance of companies in Morocco. To achieve this, we relied on data collected in 2023 from a sample of 29 companies operating in the country. Descriptive statistics such as frequency tables were used for qualitative variables, while measures of central tendency and dispersion were applied to quantitative variables. Principal Component Analysis that (PCA) was employed to construct synthetic indices of organizational performance, budgeting process, and balanced scorecard usage. To assess the relationship between management control systems tools and organizational performance, the Ordinary Least Squares (OLS) method was applied. Overall, the results show that budgeting process is one of the most effective tools for enhancing organizational performance, while the balanced scorecard does not have a statistically significant impact in the Moroccan context. Although the relationship between management control systems tools and performance has been examined in the literature, there is still a lack of studies focusing specifically on the Moroccan setting. The findings of this empirical study highlight nuanced insights and, at times, contradictory conclusions, offering limited cumulative or generalizable knowledge. Nevertheless, our study contributes to the ongoing debate on the relationship between management control systems tools and organizational performance, with particular emphasis on the importance of the budgeting tool in helping managers align with strategic objectives and foster organizational learning.

Keywords: Management control systems tools, budgeting process, organizational performance, contingency theory, agency theory.

1. Introduction

In a constantly evolving global economic environment characterized by intensified competition, increased market volatility, and rapid technological transformations, companies face continuous pressure to improve their performance and ensure their sustainability (Anthony & Govindarajan, 2007). These challenges reinforce the importance of management control systems, which provide managers with essential tools to steer their activities, align resources with strategic objectives, and anticipate risks (Simons, 1995). Management control encompasses a variety of instruments, such as budgeting, the balanced scorecard, and variance analysis, which play a fundamental role in planning, monitoring, and evaluating organizational outcomes (Kaplan & Norton, 1996). These tools facilitate coordination and informed decision-making, thus contributing to continuous performance improvement, defined in a multidimensional manner through financial, operational, and social criteria (Neely et al., 1995).

From a theoretical perspective, contingency theory emphasizes that the effectiveness of control systems largely depends on the organizational, cultural, and environmental characteristics specific to each company (Otley, 1980). Furthermore, agency theory highlights the role of control mechanisms in reducing conflicts of interest between shareholders and managers (Jensen & Meckling, 1976). The Moroccan context presents particular features that make the question of management control especially relevant. As an emerging country, Morocco is undergoing accelerated economic transformation with a diverse range of companies, from small and medium-sized enterprises (SMEs) to large multinational firms operating locally. This diversity is accompanied by specific challenges such as the formalization of managerial practices, institutional and regulatory constraints, as well as the influence of cultural values on organizational behavior (Benabdeljlil, 2007). Moreover, the socio-economic situation in Morocco, marked by a strong commitment to industrial development and integration into the global economy, pushes companies to adopt adapted management control systems to enhance their competitiveness.

Yet, despite these challenges, research on the use and impact of of management control systems tools in Moroccan companies remains limited. Few empirical studies have explored how these tools are deployed in this specific context, or to what extent they effectively contribute to local organizational performance. Understanding this dynamic is crucial to help managers better adapt their practices to the realities on the ground and to enrich academic literature by

integrating often neglected contextual perspectives (Chenhall, 2003). This research therefore seeks to fill this gap by analyzing the relationship between the use of key of management control systems tools and organizational performance within Moroccan companies. It aims to contribute to the scientific debate on the relevance of classical models in emerging environments and to provide practical insights to strengthen local managerial capabilities.

2. Literature Review on Management Control Systems Tools

Management control is a function within an organization or institution that implements a steering system aimed at optimizing the performance of services and improving the relationship between resources employed and results achieved. The term “control” refers to the act of evaluating or verifying the status or condition of something, while “management” describes the process or method of managing that encompasses the overall administration of the organization. Therefore, management control can be understood as a set of tasks that allow the assessment of results from management centers based on predefined objectives.

Several management scholars have proposed definitions of management control. Anthony (1965) defines it as “the process by which managers obtain assurance that resources are acquired and used effectively and efficiently to achieve the organization’s objectives.” He later expanded this definition by describing management control as “the process by which managers influence other members of the organization to implement strategies”. According to Anthony, management control presupposes the existence of prior objectives that managers must achieve through the actions of others while ensuring the implementation of strategies and efficient use of resources.

Similarly, Khemakhem (1976) describes management control as “the process implemented within an economic entity to ensure the effective and continuous mobilization of energies and resources in order to achieve the entity’s objectives.” Khemakhem highlights the flexibility of management control to adapt to the specificities of each company and situation, as well as the dynamic mobilization of energies and resources necessary to reach set objectives. Bouquin (1994) defines management control as the “mechanisms and processes that ensure consistency between strategy and concrete, daily actions.” He emphasizes that managers responsible for strategy need systems and processes to guarantee that daily activities align with strategic goals, positioning management control as a behavioral regulator within organizations. The mission of

management control is to ensure the achievement of an organization's strategic objectives by optimizing economic and financial performance. This involves collecting and analyzing information related to the company's activities to identify gaps between set goals and actual results. Management control also entails implementing performance measurement and monitoring tools, such as indicators and dashboards, to better oversee operations. Additionally, it involves proposing corrective actions and action plans aimed at reducing discrepancies and enhancing organizational performance. Management control supports various departments in decision-making processes related to investment, cost management, and pricing strategies. It also includes developing financial forecasts over short, medium, and long terms to help the company anticipate future changes and prepare accordingly.

Therefore, management control is a key factor in ensuring the sustainability and growth of the company. It enables efficient activity management by aligning with strategic objectives while optimizing resources and financial performance (Anthony, 1965). Management control plays several important roles within an organization. Firstly, it facilitates planning by helping to define short- and long-term goals and establishing necessary action plans to achieve them. Secondly, it monitors organizational performance, identifying deviations and anomalies and proposing corrective measures. Thirdly, management control provides clear and precise reporting on the company's financial situation, enabling leaders to make informed decisions based on reliable data. Fourthly, it aids resource allocation through cost and performance analysis to ensure more efficient use of resources. Fifthly, management control contributes to performance management by defining key performance indicators (KPIs) and measuring the performance level of each function or department. Moreover, it helps prevent risks by anticipating potential problems and suggesting actions to avoid or mitigate them. Finally, it promotes continuous improvement by regularly evaluating processes and recommending enhancements (Khemakhem, 1976 ; Bouquin, 1994).

Performance is a measure of effectiveness or efficiency in accomplishing a task, objective, or result. It can be evaluated in terms of quality, quantity, cost, time, or customer satisfaction. Performance applies to various fields such as sports, work, or economic outcomes. Generally, high performance indicates an improvement in results, while low performance may signal failure or a need for improvement.

Khemakhem (1976) in his work Dynamique du contrôle de gestion, highlighted the complexity and ambiguity surrounding the concept of performance. He explained that "performance" is a relatively new term in French, originating from English with Latin roots. The Latin root "performare" and the English terms "to perform" and "performance" help clarify its meaning in management control. Performance means fully shaping or realizing something. In an organizational context, it refers to actualizing the system of standards planned by managers. "To perform" means carrying out a task regularly, methodically, and effectively, fulfilling obligations, promises, or contractual clauses. Thus, performance can be understood as the successful and relevant achievement of set objectives, combining both effectiveness and efficiency.

Effectiveness answers the question, "Is the objective achieved?" It further raises, "Is there a more effective alternative to achieve the same results?" Effectiveness examines the relationship between effort and performance. According to the Office of the Auditor General of Canada (2001), effectiveness is "the extent to which a program achieves its intended outcomes or desired effects." For example, a program designed to increase income by creating jobs can be evaluated based on the number of jobs created and the consequent income increase, which measures the program's effectiveness. Efficiency refers to the ratio between goods or services produced and the resources used to produce them. An efficient operation either maximizes output for a given set of resources or minimizes resource use for a given quality and quantity of products or services. Efficiency represents the optimal management of resources and capacities in relation to results. Relevance is a subjective and difficult-to-measure concept. However, it can be understood as the alignment of means and actions implemented to achieve a specific objective. In other words, being relevant means reaching the set goal effectively and efficiently. Economy refers to the conditions under which human and material resources are acquired. For an operation to be economical, resource acquisition must be of acceptable quality and at the lowest possible cost. Performance requires a comprehensive and interconnected view of all internal and external parameters quantitative and qualitative, technical and human, physical and financial within management.

Therefore, managers must strive for overall performance, which integrates multiple levels of evaluation. In production, this involves continuous productivity improvement, combining

physical output with high quality. In sales, it refers to market competitiveness or value-cost differentiation. In finance, it involves profitability, which can be defined in various ways.

3. Explanatory Theories of the Relationship Between Management Control and Organizational Performance in Companies

There are several theories that explain the relationship between management control and organizational performance in companies. The agency theory explains that the managers of a company (the agents) have interests that differ from those of the shareholders (the principals). Management control helps limit opportunistic behavior by managers by encouraging them to achieve the objectives set by the shareholders. Thus, management control improves organizational performance by aligning the interests of managers with those of the shareholders. Contingency theory posits that there is no single model of management control that suits all companies. The implementation of a management control system must be adapted to the characteristics of the company, such as the industry sector, size, and organizational culture. By choosing the right management control systems tools, a company can improve its performance by maximizing the use of its resources.

The value creation theory emphasizes the importance of creating value for shareholders. Management control should therefore optimize value creation by identifying the levers that maximize the company's profitability. By using performance measurement tools such as ROI (Return on Investment) or ROCE (Return on Capital Employed), a company can ensure that it deploys its resources effectively. Strategy theory suggests that management control must be aligned with the company's strategy. The implementation of a management control system should contribute to achieving the company's strategic objectives. For example, if a company's strategic goal is to increase its market share, management control should enable the measurement and optimization of investments made toward that goal.

In summary, these different theories highlight the importance of management control in improving organizational performance. By selecting the appropriate management control systems tools and adapting them to the company's characteristics, a company can ensure that it meets its objectives and maximizes value creation for its shareholders. Explanatory factors of organizational performance include contingency factors and management control systems tools. This study considers these factors as explanatory variables of organizational performance. The

literature review will present both the relationship between contingency factors and organizational performance, and the relationship between management control systems tools and organizational performance.

Contingency factors and organizational performance include structural and behavioral factors that may influence organizational performance. Structural contingency factors considered include the company's age, size, and sector of activity. Some empirical studies concluded that company age negatively influences performance as measured by growth. However, Boukar (2009) found that company age is not linked to growth when measured by changes in revenue and number of employees. Birch (1987) argued that among small businesses, older companies show higher growth scores than younger ones.

Organization size plays a crucial role among contextual variables that may affect performance. demonstrated that size is significant for explaining organizational performance. Literature also shows that non-financial performance indicators are more commonly used by large companies than by medium-sized ones. Nobre (2001) confirms this point, noting that companies with fewer than 100 employees use few or no dashboards, and that company size is a contingency factor explaining performance management practices. Early studies in the United States questioned the influence of sector of activity on company performance, as well as the impact of heterogeneity among companies on their performance. Some studies concluded that company heterogeneity and diversification affect performance more than sector of activity. Nonetheless, research by Schmalensee (1985), as well as Wernerfelt and Montgomery (1988), confirms the impact of industry on firm performance.

Behavioral contingency factors such as the gender, educational level, and experience of managers have been widely examined in relation to firm performance. Cooper et al. (1994) found that entrepreneur gender negatively affects the growth of small firms but does not influence their survival. Similarly, Dahlqvist et al. (2000) observed a negative association between female entrepreneurs and firm growth in Sweden. In contrast, Boukar (2009) identified a positive relationship between firm growth measured by turnover and number of employees and male managers in micro and small enterprises. The influence of managerial education on performance is inconclusive, with studies reporting negative, positive, or no significant relationships (Boukar, 2009).

Empirical findings consistently show that managerial experience, particularly in management or supervisory roles, positively impacts firm performance. Boukar (2009) corroborated these findings, showing that managers with prior business experience are better positioned to develop their enterprises. Concerning management control systems tools, the literature demonstrates their varied effects on organizational performance. While budget adoption generally enhances performance. Nkengwou et al. (2020) revealed that objective budgeting positively influences SME profitability but adversely affects innovation outcomes. This leads to the hypothesis that budget use positively affects organizational performance. Regarding the balanced scorecard, studies mainly in public firms show mixed results with both positive and negative associations reported. Given the lack of consensus and the scarcity of research in private firms, it is posited here that the use of balanced scorecards significantly improves organizational performance. Overall, organizational performance appears to be influenced by both behavioral contingencies and management control systems tools, which form the foundation for the empirical model developed in this study.

4. Methodology

This section is organized around three main axes. The first presents the theoretical research model and the operationalization of variables. The second describes the study's sample and data. The third outlines the analytical tools used.

4.1.Theoretical Research Model and Operationalization of Variables

The literature review established the relationship between management control systems tools and organizational performance of firms. This study therefore adopts a positivist epistemological stance. The aim is to test the theoretical postulates and the previously stated hypotheses. The theoretical linear regression model is presented as follows.

$$\boldsymbol{PERF = \alpha_0 + \sum_{i=1}^{n} \alpha_i X_i + e}$$

Where: $PERF$ represents organizational performance; X_i, are the explanatory variables; α_0, is the constant term; α_i, are the regression coefficients; and e is the error term. Thus, the full empirical form of the model is:

$$PERF = \alpha_0 + \alpha_1 AGE_E + \alpha_2 TAIL_E + \alpha_3 SEC_ACT + \alpha_4 GENR_D + \alpha_5 NIV_ETU + \alpha_6 EXP + \alpha_7 UT_BUD + \alpha_8 UT_TB + e$$

The first six variables (AGE_E, $TAIL_E$, SEC_ACT , $GENR_D$, NIV_ETU et EXP) are control variables, while the last two (UT_BUD et UT_TB) are the main explanatory variables.

- **Organizational Performance**

To assess the level of organizational performance of firms, we calculated a composite index based on five items (see Table 1 below) derived from the literature. We then tested their unidimensionality and reliability using Cronbach's alpha, which yielded a value of 0.807. These items were measured using a 5-point Likert scale ranging from "Very low" to "Very high."

Table 1. Measurement of Organizational Performance of Firms in the Sample

Variable	Indicators	Items	References
Organizational Performance	Composite index calculated based on five items	Degree of company prosperity	Cho and Pucik (2005)
		Level of company market share	Yatna and Yulianah (2024)
		Level of company growth (based on turnover)	García-Lopera et al. (2022)
		Level of company profitability	García-Lopera et al. (2022)
		Level of company innovation	Cho and Pucik (2005)

Source: Prepared by the authors

The method used to calculate this index is Principal Component Analysis (PCA), as suggested by authors such as Boudt et al. (2022). These authors highlight that the most commonly used PCA-derived indices are either based on the first factor alone or on the weighted average of all factors, with weights represented by the proportional variances of each factor (the eigenvalues). In the present study, the first method was adopted, since the first factor retains most of the initial information selected to characterize the various dimensions of the study variables.

An initial PCA was performed on the five items constituting organizational performance. Following this analysis, two items (degree of company prosperity and company innovation)

were eliminated because they exhibited a representation quality below 0.5, despite a total variance of 57.127%. After removing these two items, a second analysis was conducted on the remaining three items, which yielded a Cronbach's alpha of 0.808. According to the results of this second analysis, only one factor can be retained to explain organizational performance. This factor captures 72.410% of the total information.

Thus, the organizational performance index was calculated based on the mean of the extracted factor, which was then standardized on a scale from 0 to 1, with 0 indicating the lowest level and 1 the highest level of the constructed index.

Table 2. Representation quality

	Initial	Extraction
DPE_PERF	1,000	0,532
NPME_PERF	1,000	0,664
NCE_PERF	1,000	0,637
NPE_PERF	1,000	0,568
NIE_PERF	1,000	0,574

Extraction method: Principal Component Analysis (PCA).

- **Structural Contingency Factors**

- **Age of the company (AGE_E):** This is a binary variable taking the value 1 if the company has been in existence for more than 10 years, and 0 if it has been in existence for less than 10 years.
- **Company size (TAIL_E):** This is a nominal variable coded as 1 if the company has fewer than 50 employees, 2 if it has between 50 and 100 employees, 3 if between 100 and 150 employees, 4 if between 150 and 200 employees, and 5 if it has more than 200 employees.
- **Sector of activity (SEC_ACT)**: This is a nominal variable coded as 1 if the company operates in the industry sector, 2 if it operates in trade and distribution, and 3 if it operates in the service sector.

- **Behavioral Contingency Factors**

- **Gender of the manager (GENR_D):** This is a dichotomous variable coded 1 if the company manager is male, and 0 otherwise.
- **Level of education (NIV_ETU):** This is a binary variable coded 1 if the company managers have a higher education level, and 0 if their highest education level is secondary.
- **Previous experience (EXP):** This is a dichotomous variable coded 1 if the company manager has had prior professional experience in another company before working in the current organization, and 0 otherwise.

- **Budget Utilization**

To assess the level of budget utilization by companies, we constructed a synthetic index based on five proxies (see Table 3 below) derived from Germain (2009). These items were measured using a 5-point Likert scale ranging from "Very low" to "Very high." A reliability test was conducted on these five items that constitute the observed dimensions of budget usage.

Table 3. Assessment of the Degree of Budget Utilization by Managers

Variable	Indicators	Items
Budget Utilization	Synthetic index calculated based on five items	Level of participation of budget managers in the budgeting process
		Level of budget detail
		Difficulties in achieving budget objectives
		Frequency of budget forecast updates
		Level of performance evaluation and compensation

Source : Prepared by the authors

Applying this test to the five items used to construct the index, we obtained a Cronbach's Alpha of 0.747 using SPSS software. A Principal Component Analysis (PCA) was performed on the five items representing budget observation modalities. The results identified two factors with eigenvalues greater than 1, which together explained 77.710% of the total variance. As previously mentioned, the first factor was retained because it captured most of the initial

information (56.075%) with an eigenvalue of 2.804. Consequently, the budget index was constructed based on the mean of the extracted factor, which was then standardized on a scale ranging from 0 to 1, where 0 indicates the lowest level of budget utilization and 1 indicates the highest level of the constructed index.

Table 4. Representation quality

	Initial	Extraction
NPR_BUD	1,000	,803
ND_BUD	1,000	,881
DAO_BUD	1,000	,086
FRP_BUD	1,000	,798
NER_BUD	1,000	,735

Extraction method: Principal Component Analysis (PCA).

- **Use of the Balanced Scorecard**

To assess the level of use of the balanced scorecard, we calculated a composite index based on five items (see Table 5 below) that encompass the qualities of a balanced scorecard as proposed by Kaplan and Norton (1996). These items were measured using a five-point Likert scale ranging from “Very Low” to “Very High.”

Table 5. Measurement of the Balanced Scorecard

Variable	Indicators	Items
Balanced Scorecard	Synthetic index calculated from five items	Level of integration of financial indicators
		Level of customer satisfaction
		Level of internal process improvement
		Level of innovation and organizational learning
		Level of increasing employee involvement

Source: Prepared by the authors

The reliability test performed on these items yielded a Cronbach's Alpha of 0.907, which is well above the threshold established in the literature. After analysis, it was found that only one factor could be retained; this factor captures the majority of the initial information (73.192%) and has an eigenvalue of 3.660. To construct the index, Principal Component Analysis (PCA) was used. The resulting index is standardized on a scale from 0 to 1, where 0 indicates the lowest level of balanced scorecard usage and 1 the highest level.

Table 6. Representation quality

	Initial	Extraction
NII_TB	1,000	,733
NS_TB	1,000	,244
NA_TB	1,000	,644
NI_TB	1,000	,821
NIC_TB	1,000	,830

Extraction method: Principal Component Analysis (PCA).

4.2.Sample and Study Data

The data used come from a survey conducted in 2023 by our team among 29 Moroccan companies operating in various sectors, regardless of their legal form. The data collected are primary in nature. The sample was selected using purposive sampling, a method that allows savings in both time and cost. The analysis of this database enabled, among other things, the collection of information on the characteristics of the sample (contingency factors), budget observation modalities, the degree of balanced scorecard utilization, and the organizational performance of the companies.

4.3.Data Analysis Tools

The collected data were processed using SPSS software. Regarding statistical tools, we employed frequency distributions to describe the qualitative variables of the study, and measures of central tendency and dispersion for the quantitative variables. Principal Component Analysis (PCA) was used to calculate the synthetic indices of organizational performance, budget utilization, and balanced scorecard usage, as presented above. To examine the relationships between contingency factors, management control systems tools, and organizational performance, we used Pearson's correlation test and linear regression through the Ordinary Least Squares (OLS) method.

5. Results, Discussions, and Recommendations

First, we will present the results of the descriptive analyses; second, the results of the correlation test; third, the parameter estimates of the model using the Ordinary Least Squares (OLS) method; followed by the discussions and, finally, the recommendations.

This section aims to present the characteristics of the sample, including the respondent profiles and the profiles of the companies, which primarily represent the control variables and the continuous variables of the study. Table 7 below describes the profile of the respondents.

Table 7. Respondent Profile

Variable	Category	Frequency	Percentage
Position Held	Internal Auditor	1	3%
	Cashier	1	3%
	Business Development Officer	1	3%
	Accountant	8	28%
	Management Controller	7	24%
	Chief Financial and Administrative Officer	5	17%
	General Manager	4	14%
	Civil Servant	2	7%
	Total	**29**	**100%**
Previous Experience	No	8	28%
	Yes	21	72%
	Total	**29**	**100%**
Gender	Female	13	45%
	Male	16	55%
	Total	**29**	**100%**
Age	Between 25 and 35 years	15	52%
	Between 35 and 45 years	5	17%
	Between 45 and 55 years	5	17%
	Under 25 years	4	14%
	Total	**29**	**100%**
Education Level	Secondary	5	17%
	Higher education	24	83%
	Total	**29**	**100%**

Source: Survey results prepared by the authors.

The table below (Table 8) presents the profile of the surveyed companies.

Table 8. Profile of the Surveyed Companies

Variable	Category	Frequency	%
Company Size	Between 100 and 150 employees	5	17%
	Between 150 and 200 employees	3	10%
	Between 50 and 100 employees	1	3%
	Fewer than 50 employees	10	34%
	More than 200 employees	10	34%
	Total	**29**	**100%**
Company Age	Less than 10 years	9	31%
	More than 10 years	20	69%
	Total	**29**	**100%**
Sector of Activity	Agri-food	1	3%
	Commerce and Distribution	1	3%
	Industry	8	28%
	Services	5	17%
	Total	**29**	**100%**
Legal Status	Public Limited Company (SA)	11	38%
	Limited Liability Company (SARL)	18	62%
	Total	29	100%

Source: Survey results prepared by the authors.

Table 9 shows that the organizational performance of the surveyed companies is generally high, with an average score exceeding 50%. Moreover, the frequency of use of management tools specifically budgeting and the balanced scorecard is relatively high, with average scores of 71.38% and 73.97%, respectively. This indicates a significant integration of these tools into the managerial practices of the surveyed firms.

Table 9. Statistiques descriptives

	N	Minimum	Maximum	Mean	Standard Deviation	Variance
UT_BUD	29	1,50	5,00	3,5690	,95173	,906
UT_TB	29	1,25	5,00	3,6983	,83018	,689
PERF	29	2,00	5,00	3,6345	,75983	,577
N valide (listwise)	29					

Source: Survey results prepared by the authors.

Table 10 below presents the correlation matrix between variables related to contingency factors, management control systems tools, and organizational performance of the sampled companies. This correlation matrix shows that organizational performance is positively and significantly correlated with company size (at the 5% significance level) and with the use of the balanced scorecard (at the 1% significance level). This result suggests that company performance improves, on the one hand, with the use of the balanced scorecard, and on the other hand, when the company is larger in size. Regarding the correlations among the explanatory variables, although some correlations are statistically significant, no serious multicollinearity issues are identified, as the correlation coefficients remain below 0.8, following the approach of Deal and Kennedy (1982).

Table 10. Correlation Matrix of the Study Variables Correlation[c]

		EXP	GENR_D	NIV_ETU	SEC_ACT	TAIL_E	AGE_E	UT_BUD	UT_TB	PERF
EXP	Corrélation de Pearson	1	,064	,127	,047	-,338	-,081	,087	,363	,173
	Sig. (bilatérale)		,741	,512	,809	,073	,678	,654	,053	,369
GENR_D	Corrélation de Pearson	,064	1	,139	-,084	-,045	-,305	-,230	-,036	-,256
	Sig. (bilatérale)	,741		,471	,663	,817	,108	,230	,853	,181
NIV_ETU	Corrélation de Pearson	,127	,139	1	-,052	-,143	-,109	,009	-,057	-,077
	Sig. (bilatérale)	,512	,471		,790	,461	,574	,962	,769	,692
SEC_ACT	Corrélation de Pearson	,047	-,084	-,052	1	-,118	-,114	,309	,292	,168
	Sig. (bilatérale)	,809	,663	,790		,541	,558	,103	,125	,382
TAIL_E	Corrélation de Pearson	-,338	-,045	-,143	-,118	1	,466*	,263	,239	,080
	Sig. (bilatérale)	,073	,817	,461	,541		,011	,169	,212	,681
AGE_E	Corrélation de Pearson	-,081	-,305	-,109	-,114	,466*	1	,129	,072	,131
	Sig. (bilatérale)	,678	,108	,574	,558	,011		,504	,712	,499
UT_BUD	Corrélation de Pearson	,087	-,230	,009	,309	,263	,129	1	,756**	,760**
	Sig. (bilatérale)	,654	,230	,962	,103	,169	,504		,000	,000
UT_TB	Corrélation de Pearson	,363	-,036	-,057	,292	,239	,072	,756**	1	,507**
	Sig. (bilatérale)	,053	,853	,769	,125	,212	,712	,000		,005
PERF	Corrélation de Pearson	,173	-,256	-,077	,168	,080	,131	,760**	,507**	1
	Sig. (bilatérale)	,369	,181	,692	,382	,681	,499	,000	,005	

***The correlation is significant at the 0.05 level (two-tailed)**

****The correlation is significant at the 0.01 level (two-tailed).**

The ANOVA table 11 provides this information. It allows us to determine whether to reject the null hypothesis (H_0) or not. In our study, we aim to determine, first of all, whether the characteristics of the company and the profile of the management controller better predict performance.

Table 11. ANOVA of the Model ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	10,469	8	1,309	4,595	,003[b]
1 Residual	5,696	20	,285		
Total	16,166	28			

a. Dependent Variable: PERF

From the examination of Table 11, it can be observed that, based on the F-value obtained for the model, the null hypothesis can be rejected. Indeed, the F-value of 4.595 is significant at $p < 0.003$, indicating that there is less than a 0.3% chance of making an error by stating that the model predicts performance better than the simple mean.

Now that we know the model is significant, the model summary table allows us to determine the contribution of each block of variables. According to Table 12, the significance of R^2 is evaluated based on the contribution of each step. The F-change associated with the first model is significant ($p < 0.003$). Therefore, this model explains a significant proportion of the variance in the performance variable. We moved from $R^2 = 0$ to $R^2 = 0.648$.

Table 12. Model Fit Test Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,805[a]	,648	,507	,53367	,648	4,595	8	20	,003

a. Predicted Values: (Constant), UT_TB, GENR_D, NIV_ETU, TAIL_E, SEC_ACT, AGE_E, EXP, UT_BUD

b. Predicted Values: (Constant), UT_TB, GENR_D, NIV_ETU, TAIL_E, SEC_ACT, AGE_E, EXP, UT_BUD

Finally, recall that the R^2 value, when multiplied by 100, indicates the percentage of performance variability explained by the model (the predictors). The results suggest that 80.5% of the performance is explained by the company characteristics and the profile of the management controller.

Now that we know our model is significant and that the second model explains the most variance, it is possible to construct the regression equation to predict a performance value (PERF). The base equation was as follows:

$$\boldsymbol{PERF = \alpha 0 + \alpha 1 AGE_E + \alpha 2 TAIL_E + \alpha 3 SEC_ACT + \alpha 4 GENR_D + \alpha 5 NIV_ETU + \alpha 6 EXP + \alpha 7 UT_BUD + \alpha 8 UT_TB + e}$$

Let us now substitute the coefficients provided in Table 13 below.

$$\boldsymbol{PERF = 2.015 + 0.095 AGE_E - 0.051 TAIL_E - 0.071 SEC_{ACT} - 0.037 GENR_D}$$

$$\boldsymbol{- 0.264 NIV_{ETU} + 0.284 EXP + 0.788 UT_{BUD} - 0.240 UT_TB}$$

The sign of the coefficient indicates the direction of the relationship. In our case, the older the company, the greater the controller's experience, and the higher the budget utilization, the better the performance increases.

We also observe that when the company size, sector of activity, gender of the manager, level of education, and use of the balanced scorecard increase, performance decreases.

The standard error informs us about the variability of the coefficient in the population. It also allows us to calculate the t-value. The latter tells us whether the coefficient is significant. While Table 13 on the model summary confirmed that the model was significant, the significance of the t-value helps answer the question: "Is the predictor's coefficient different from zero?" In other words, whether each variable contributes significantly to the model.

The higher the t-value and the smaller the p-value, the more the predictor contributes to the model. We therefore note that only one variable is significant (BUD_UTIL).

Table 13. Linear Regression Coefficients Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)		,602		3,346	,003
EXP	2,015	,290	,170	,980	,339
GENR_D	,284	,225	-,024	-,164	,872
NIV_ETU	-,037	,274	-,134	-,963	,347
SEC_ACT	-,264	,138	-,084	-,576	,571
TAIL_E	-0,079	,080	-,117	-,645	,526
AGE_E	0,095	,260	,059	,364	,719
UT_BUD	,788	,183	,988	4,312	,000
UT_TB	-,240	,229	-,262	-1,045	,308

- **Interpretation of the Results from the Table**

- The age of the company (AGE_E) has a positive but not statistically significant effect on organizational performance at the 5% significance level. This suggests that organizational performance tends to improve for companies that have been in existence for more than 10 years.
- The size of the company (TAIL_E) exerts a negative but not statistically significant effect at the 5% level on performance. According to this result, the larger the number of employees within the company, the lower its performance tends to be.
- The gender of the leader (GENR_D) has a negative but not statistically significant effect at the 5% level on organizational performance in the sample companies. This suggests that the organizational performance of companies in the sample is better when led by a female executive.
- The use of the balanced scorecard (UT_TB) negatively influences organizational performance at the 5% significance level. Similarly, the sector of activity (SEC_ACT), the experience of the leader (EXP), and the education level (NIV_ETU) do not have a

significant impact on the organizational performance of the companies. According to this result, the organizational performance in the sample significantly decreases.

- The use of budgeting (UT_BUD), on the other hand, has a positive and statistically significant effect on organizational performance.

These findings could be partly explained by the small sample size. The lack of significance of the balanced scorecard's effect on organizational performance leads us to reject hypothesis 1.

For greater robustness, control variables were excluded from the model to focus solely on the effect of management control systems tools on organizational performance. According to Table 14 below, the Fisher statistic is overall significant at the 5% level, with an R^2 of 59% and a positive constant significant at the 5% level.

Table 14 also confirms that only budget use has a positive and significant influence at the 5% level on organizational performance in the sample companies, thus reinforcing the previous results.

Table 14. Impact of Management Control Systems Tools on Organizational Performance Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,767 [a]	,588	,556	,50631

a. Predicted Values: (Constant), UT_TB, UT_BUD

Table 15. Impact of Management Control Systems Tools on Organizational Performance Significance of Management Control Systems Tools

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,664	,440		3,782	,001
	UT_BUD	,702	,154	,879	4,567	,000
	UT_TB	-,144	,176	-,158	-,820	,420

a. Dependent Variable: PERF

Overall, this study shows that budgetary usefulness is one of the management control systems tools that most improves organizational performance in companies, unlike the balanced scorecard.

The findings of this study can be comprehensively interpreted through the lenses of contingency theory, agency theory, and organizational learning theory. These theoretical frameworks collectively provide a robust understanding of how management control systems tools interact with contextual factors to influence organizational performance.

Contingency Theory posits that there is no one-size-fits-all approach to management control; rather, the effectiveness of control mechanisms depends on their alignment with specific situational variables or contingency factors, such as company size, age, sector, and organizational structure. This theoretical perspective aligns with Lorino's (1997) assertion that no universal model exists for business steering. Instead, company performance is largely contingent upon the fit between management control systems tools and the unique environmental and internal contingencies faced by the organization. Our results reinforce this view, highlighting that tools like budgetary control and balanced scorecards do not uniformly impact performance; their effectiveness varies according to the company's characteristics and context.

Agency Theory, on the other hand, provides an explanation rooted in the principal-agent relationship, emphasizing the importance of control systems in regulating behaviors and mitigating agency problems. Management control systems function not only as performance measurement tools but also as mechanisms to reduce information asymmetry and limit opportunistic behavior by aligning the interests of managers (agents) with those of owners or stakeholders (principals). Our findings suggest that budgetary control, as a management tool, plays a crucial role in this regulation process. The significant positive effect of budgetary utility on performance underscores its function in enhancing accountability and providing clear financial targets that guide managerial decision-making.

From the perspective of Organizational Learning Theory, management control systems tools can be viewed as instruments facilitating continuous learning and adaptation within firms. Tools

such as the balanced scorecard integrate both financial and non-financial performance indicators, fostering a broader understanding of performance drivers. Although in our study, the balanced scorecard did not demonstrate a statistically significant positive effect, its conceptual contribution to strategic learning and feedback loops should not be dismissed. It remains a valuable tool for organizations aiming to align short-term operational activities with long-term strategic goals.

Practically, the results of this study have several implications for managers and decision-makers. First, companies should prioritize the adoption and effective use of budgetary control systems to improve organizational performance, particularly in environments where financial discipline and resource allocation are critical. Second, the lack of significant impact from the balanced scorecard suggests that organizations may need to tailor this tool better to their specific context or enhance the way it is implemented to realize its full potential. Moreover, the insignificant or negative effects of certain variables such as company size, sector, and leadership gender highlight the complexity of performance determinants and caution against simplistic conclusions. This reinforces the need for a nuanced approach in designing management control systems one that carefully considers the company's unique profile and environmental demands.

Finally, the study encourages further research into the dynamic interactions between contingency factors and management control systems tools. Future investigations could explore how these relationships evolve over time and under different economic conditions, or examine the role of organizational culture and technological advancements in shaping the effectiveness of control systems.

6. Conclusion

Management control plays a crucial role in the performance of companies in Morocco. It not only allows the measurement of results and informed decision-making but also enables the adjustment of activities based on strategic objectives and performance indicators. Beyond its traditional role, management control helps companies anticipate risks, seize opportunities, and adapt within an increasingly complex and competitive economic environment.

Organizational performance is no longer limited to financial profitability. It also encompasses market competitiveness, customer satisfaction, and the optimal use of internal resources. Consequently, management control must integrate various dimensions such as operational efficiency, product and service quality, innovation, and the development of new markets to ensure sustainable and lasting growth.

This study aimed to examine the role played by management control systems tools in improving the organizational performance of Moroccan companies. To this end, we relied on contingency theory, agency theory, and organizational learning theory to explain the nature of the relationship between these control systems tools and performance. Multivariate analyses on data collected from a sample of 29 companies highlighted two main findings. First, company age, size, and the gender of the leader are contingency factors influencing organizational performance. Second, among the control systems tools considered, only budgetary use has a positive and statistically significant effect on performance, whereas the balanced scorecard showed no significant relationship. These findings validate the relevance of the theoretical frameworks used and emphasize budgetary control as a key strategic lever.

However, this research has several limitations that should be acknowledged. Firstly, the relatively small sample size (29 companies) restricts the generalizability of the findings, which may affect the external validity and calls for cautious interpretation. Secondly, the measurement of management control systems tools was based on a limited number of indicators, which does not capture the full richness and diversity of these tools in operational reality. Finally, the cross-sectional nature of the study prevents observation of dynamic effects and changes over time.

To address these limitations and deepen the understanding of management control in Morocco, several avenues for future research are suggested. Expanding the sample size to include more

companies and diverse sectors would strengthen the external validity of the results. Additionally, incorporating a broader range of control systems tools—such as benchmarking, general accounting, financial reporting, and Activity-Based Costing (ABC)—would better capture their combined impact on organizational performance. Further contextual variables, including competitive environment, corporate strategy, and cultural contingencies specific to Morocco, should also be considered to better understand the adoption mechanisms and effectiveness of control systems tools. Exploring the influence of digitalization in management control, which is profoundly transforming practices, could provide important insights into future performance drivers.

Finally, an original perspective would be to study organizational power mechanisms and their influence on the implementation of control systems tools, drawing particularly on Foucault's theoretical approach. This human and political dimension of management control offers a complementary understanding of the factors shaping its real effectiveness.

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