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Article

Impact of management control on the organizational performance

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Abstract: Our study aims to investigate the impact of management control on the performance of Moroccan companies. Through an in-depth literature review and a survey conducted among companies from various sectors in Morocco, the crucial role played by tools such as cost accounting methods, budgetary control, and balanced scorecard in ensuring effective management were identified and highlighted. These tools enable accurate cost assessment, sound financial planning, and significant improvement in organizational performance. In light of these findings, the adoption and effective utilization of these tools as a means to enhance the competitiveness and sustainability of Moroccan companies were recommended.

Keywords: management control; cost calculation method; budgetary control; balanced scorecard; organizational performance

1. Introduction

In a dynamic and increasingly complex economic landscape, Moroccan companies face significant challenges that threaten their competitiveness and long-term sustainability. The rapid pace of globalization, technological advancements, and market volatility necessitate the adoption of effective management practices. Recent studies highlight the importance of integrating contemporary management control tools to address these challenges (Anvari et al., 2016; Babeľová and Stareček, 2021; Falahat et al., 2021; Mata et al., 2021; Pambreni et al., 2019; Soltani et al., 2018). Management control tools play a crucial role in guiding operations, achieving strategic objectives, and ensuring the overall efficiency and effectiveness of organizational performance. Management control encompasses a range of practices and tools designed to help managers ensure that resources are used efficiently and organizational goals are met. These tools include cost calculation methods, budgetary control, and the balanced scorecard, each serving distinct yet complementary roles in the management process. Cost calculation methods enable accurate determination of product or service costs, facilitating informed decision-making regarding pricing, profitability, and resource allocation. Budgetary control allows organizations to plan and monitor expenses and revenues, ensuring financial discipline and optimal resource utilization. The balanced scorecard provides a comprehensive framework for integrating financial and non-financial performance indicators, aligning day-to-day operations with long-term strategic goals.

The primary objective of this study is to analyze the impact of management control on the organizational performance of Moroccan companies. By examining the use and effectiveness of various management control tools, this research seeks to

answer the following question: What is the precise influence of management control on the organizational performance of Moroccan companies? This study contributes to the existing body of knowledge by providing empirical insights into the specific context of Moroccan companies and offering practical recommendations for enhancing organizational performance.

To achieve this objective, the study draws on two prominent theoretical frameworks: the organizational learning theory and the contingency theory. Organizational learning theory posits that organizations enhance their performance by continuously acquiring and applying knowledge, while contingency theory suggests that management control systems must be tailored to the specific context of each organization to be effective.

The research methodology employed in this study follows a hypothetico-deductive approach, beginning with the formulation of hypotheses based on the literature review and theoretical foundations. These hypotheses are then tested through empirical observation, using data collected from a survey of Moroccan companies across various sectors.

This article is structured as follows: First, the existing literature on management control and organizational performance, along with the relevant theories were reviewed. Next, our hypotheses and describe the operationalization of our research variables formulated. We then present the empirical validation of our hypotheses within the Moroccan context, followed by a discussion of the results. Finally, we conclude with practical recommendations for practitioners and suggestions for future research.

By investigating the relationship between management control and organizational performance, this study aims to provide valuable insights for managers and researchers alike, highlighting the importance of adopting and effectively utilizing management control tools to enhance the competitiveness and sustainability of Moroccan companies.

2. Theoretical foundations: Management control—Organizational performance

2.1. Management control

In recent years, there has been significant development in the field of management control. According to Robert Anthony (1988), management control can be defined as the process by which managers ensure the effective and efficient acquisition and utilization of resources in order to achieve the organization's objectives. Anthony also highlights the role of management control in influencing other members of the organization to implement corporate strategies in an effective and efficient manner.

Influenced by behavioural approaches, modern management control has expanded beyond its traditional functions and has become a comprehensive tool for managing organizations. Over time, management control has undergone significant changes, transitioning from a simple method of controlling and monitoring financial information to a form of control that influences individuals' behaviour, ensuring

their efforts are aligned with the organization's objectives. Currently, management control is considered an essential tool for contributing to the development of strategies and translating them into actionable objectives.

Moving forward, now delve into an examination of the primary management control tools utilized for measuring and managing a company's organizational performance.

Cost calculation method:

Costing is a method employed by businesses to ascertain the total expenses associated with the manufacturing of a product or the delivery of a service. This encompasses a thorough examination of both direct costs, such as labor and materials, and indirect costs such as manufacturing overheads and administrative expenses. While the specifics of this approach may vary depending on the industry and company objectives, it typically involves allocating fixed and variable costs, utilizing cost accounting systems such as activity-based costing or full costing, and assessing costs per unit of production. The aim of this analysis is to facilitate informed decision-making regarding pricing, profitability, and resource allocation.

Budgetary control:

Budgetary control plays a pivotal role in organizational management. It enables organizations to effectively oversee, assess, and adapt their expenditures and revenues, ultimately enabling them to achieve specific financial objectives. The process involves consistent comparisons between actual performance and planned budget, promptly identifying any variances, and undertaking remedial measures accordingly. Through the implementation of this control mechanism, organizations can ensure efficient financial stewardship, mitigate the risk of budgetary excesses, optimize resource allocation, and sustain long-term financial stability.

Balanced scorecard:

The Balanced Scorecard (BSC) is a strategic management tool that seeks to achieve a balance among the financial, customer, internal process, and organizational learning perspectives within an organization. Its purpose is to facilitate the transformation of the organization's vision and strategy into measurable goals for each perspective. Subsequently, performance is monitored and assessed using designated metrics. Through the incorporation of both financial and non-financial measures, the BSC fosters a comprehensive understanding of organizational outcome (Lu et al., 2024). Consequently, it facilitates well-informed decision-making that aligns with long-term strategic goals.

2.2. Organizational performance

In recent years, the topic of organizational performance has gained prominence in the field of management science. It is a central focus of organizational theories that aim to address the challenges of growth and development within organizations. According to Georgopoulos and Tannenbaum (1957), organizational performance can be defined as the extent to which an organization, as a social system with available resources and means, achieves its objectives without overburdening its resources or exerting excessive pressure on its members. While there are multiple definitions of organizational performance, for the purpose of this article, the

following definition were adopted: organizational performance refers to the ability of a company to effectively and efficiently achieve its objectives while meeting the expectations and aspirations of its various stakeholders.

The concept of performance is multifaceted, particularly within the realm of management control. However, it is important to note that performance is primarily emphasized by management control departments within organizations. These departments bear the responsibility of measuring and reporting performance at different levels of the organizational hierarchy. As companies recognize the significance of performance, the role of management control within organizations becomes increasingly important.

Performance is at the heart of management control processes. Implicitly, performance is linked to the principles and practices of management control, particularly those related to the evaluation of predetermined actions. These actions are assessed based on the objectives assigned to them. This understanding leads us to acknowledge that performance cannot exist without clearly defined, measurable objectives and the necessary resources for their achievement.

In conclusion, Bessire (1991) argues that exploring the concept of performance ultimately prompts a broader examination of evaluation methodologies.

2.3. Theories explaining the relationship: Management control—Organizational performance

Theory of Contingency:

The theory of contingency is grounded on the principle that a uniform control system cannot be universally applied to all organizations, regardless of the circumstances. The fundamental tenet of the contingency approach to measuring organizational performance is that these systems, along with the indicators they encompass, must be tailored to, or even mirror, the context within which they function.

Indeed, it underscores the significance of adapting management control practices to the specific external and internal contingencies of each company. According to Burns and Scapens (2000), this approach emphasizes the necessity for control systems to possess flexibility and adaptability in order to account for environmental and organizational changes. This adaptability enables the optimization of a company's performance while considering variables such as its size, sector of operation, organizational culture, and encountered challenges.

Within this framework, Otley (1980) emphasizes the importance of comprehending structural and behavioural contingencies in order to design an effective management control system that fosters organizational performance.

Theory of organizational learning:

According to Senge (1990), organizational learning is an ongoing process wherein companies enhance their capacity to generate, acquire, and disseminate knowledge. This enables them to innovate and adapt to changes in their environment. Within the realm of management control, this theory suggests that organizations learn by collecting, analyzing, and utilizing both financial and non-financial data to make more informed decisions. Ultimately, this optimizes their overall

organizational performance.

Numerous authors have extensively examined the connection between organizational learning and corporate performance. An organization that effectively engages in learning activities tends to outperform its competitors in the long run. Industrial economists frequently emphasize productivity as the primary objective of organizational learning.

Consequently, organizational learning plays a pivotal role in enhancing organizational performance. It facilitates the development of more effective management control practices that prioritize innovation and adaptation.

3. Research methodology

3.1. Theoretical model

Organizational Performance (abbreviated as "ORG-PER") is the focus of our study, which examines its relationship with three independent variables: Cost Calculation Method (CCM), Budgetary Control (BDG), and Balanced Scorecard (BSC).

In order to accomplish the objectives of our research, a model has been proposed that elucidates the connection between organizational performance and management control tools (**Figure 1**).

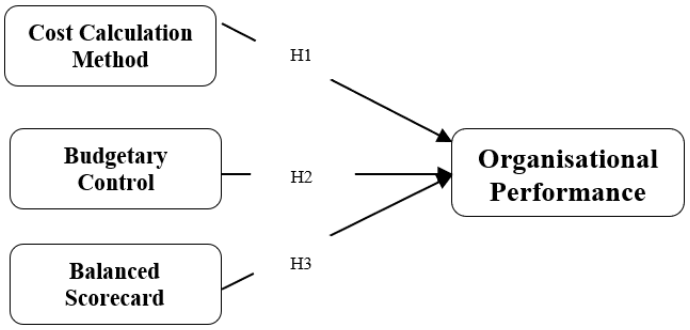

Figure 1. Conceptual model.

Dependent variable:

The major challenges in measuring organizational performance lie at three levels. The first is the validity of the organizational performance construct. The second is the relationship between the purpose of the research and the appropriate definition of organizational performance to provide a suitable measure of this variable. The final challenge is how organizational performance is measured. Is it a market measure versus an accounting measure; a financial measure versus a non-financial measure; or a measure based on objective criteria versus subjective criteria?

Desphandé et al. (1993), Lassaad and Khamoussi (2010), measure organizational performance in terms of the following five items: "Prosperity", "Market share", "Growth rate", "Profitability" and "Innovation", Refer to **Table 1**.

Table 1. Operationalization of the construct "organizational performance".

Variable	Items
Organizational performance	Prosperity level
	Market share
	Growth rate level
	Profitability level
	Innovation level

Source: Adapted from Desphandé et al. (1993), Lassaad and Khamoussi (2010).

Independent variables:

In this study, three independent variables relating to management control tools: the Cost calculation method, budgetary control and the balanced scorecard were used.

To measure the "Cost calculation method" variable, Ben Ayed (2015) adapted through five items: "Control of performance and strategy deployment", "Minimization of operating risks", "Decision-making support", "Degree of goal attainment", and "Means of coordinating strategic players", Refer to **Table 2**.

Table 2. Operationalization of the construct "cost calculation method".

Variable	Items
Cost calculation method	Level of performance mastery
	Degree of operational risk minimization
	Degree of decision support
	Degree of target achievement
	A means of coordinating strategic players

Source: Adapted from Nadia ben AYed (2015).

Therefore, Therefore, the following assumption can be made.

H1: The use of the cost calculation method by companies has a positive influence on their organizational performance.

To measure the "Budgetary Control" variable, Christophe Germaine (2013) measurement adapted who selects 5 items: "Participation in the budgetary process", "Budget detail", "Budget target difficulty", "Frequency of budget achievements", and "Performance appraisal and remuneration", Refer to **Table 3**.

Table 3. Operationalization of the construct "Budgetary Control".

Variable	Items
Budgetary Control	Level of involvement of managers in setting their budget targets
	Level of budget detail
	Contribution of budgets to the achievement of objectives
	Frequency of budgeting
	Contribution of budgets to performance

Source: Adapted from Christophe Germaine (2013).

Therefore, the following assumption can be made.

H2: The use of budgetary control by companies has a positive influence on their

organizational performance.

To measure the "Balanced Scorecard" variable, Bouquin (1994), Kaplan and Norton (1996) and Zian (2013), measurements were adapted and selected 4 items: "Level of integration of financial performance indicators", "Level of customer satisfaction", "Level of internal process improvement" and "Level of innovation and organizational learning", Refer to **Table 4**.

Table 4. Operationalization of the construct "Balanced Scorecard".

Variable	Items
Balanced Scorecard	Level of integration of financial performance indicators
	Customer satisfaction
	Level of internal process improvement
	Level of innovation and learning organizational

Source: Adapted from Kaplan and Norton (1996).

Therefore, the following assumption can be made.

H3: The use of Balanced Scorecards by companies has a positive influence on their organizational performance.

3.2. Sampling and data collection

We have selected Moroccan companies as the focus of our study, specifically examining the period from June 2022 to January 2023. This period allowed us to capture the transitional phase of businesses adapting from the constraints of the COVID-19 pandemic to the new normal. The insights gained during this time are particularly valuable as they reflect the strategies and management practices that companies have employed to navigate and thrive in a post-pandemic environment. Our research adopts a positivist paradigm and employs a hypothetical-deductive approach. In order to gather the necessary information and address our research questions, a quantitative methodology has been chosen.

To carry out our research, the field surveys were conducted by distributing questionnaires to 250 Moroccan companies. Ultimately, 180 completed questionnaires were received. Prior to the main survey, a pre-test conducted to ensure the effectiveness of the questionnaire. This involved testing the questionnaire with a small and diverse sample of individuals to identify any potential issues and enhance its quality (Malhotra, 2004; Van der Stede et al., 2005). The aim of this technique was to detect and rectify any errors, ensure the clarity and comprehensibility of the questions, and evaluate the average response time (Converse and Presser, 1986; Evrard et al., 2003; Jolibert and Jourdan, 2006; McLaughlin, 1999).

The **Table 5** below shows the number of questionnaires sent and returned.

Once data had been collected from 180 Moroccan companies, they were subjected to an exploratory analysis using SPSS software. The data thus collected were subjected to various analyses: an exploratory factorial analysis, followed by a confirmatory factorial analysis.

Table 5. Results of survey of Moroccan companies.

Target	Questionnaires administered	Questionnaires returned		Questionnaires not recovered	
	Number of questionnaires administered	Number of questionnaires returned	Percentage %	Number of questionnaires not recovered	Percentage %
Moroccan companies	250	180	72%	70	28%

These statistical analyses involved validating our measurement scales and then testing the hypotheses of our research model, namely the effect of the (independent variable) management control on organizational performance (dependent variable).

In a questionnaire, the ways of answering may change, and some may be used instead of others. In this context, Steven (1946) proposes four types of measurement scale: nominal, ordinal, interval and ratio.

For the purposes of this research, the interval scale was chosen to measure the variables in our model. To this end, all items are presented on the most commonly used 5-point Likert scale. This attitudinal scale has the advantage of being richer in terms of information, making it possible to operationalize the various statistical analysis tools (descriptive statistics, principal component analysis (PCA), correlation matrices, etc.).

Similarly, the adoption of the Likert scale was guided, on the one hand, by its ease of administration for our target audience. Secondly, it is a measurement scale often used in management research.

In our case, the 5-point Likert scale appears to be the most appropriate for the present research, to assess the perception of organizational performance in relation to management control. According to Selltiz et al. (1977).

The results of the descriptive analysis of our sample are now presented in **Table 6**:

Table 6. Sample characteristics.

Sample characteristics	Workforce	Percentage	Percentage cumulative
Legal form			
SA	20	11.11	11.11
SARL	160	88.89	100
Total	180	100	
Sector of activity			
Industrial	99	55	55
Commercial	48	26.6	81.6
Service provision	33	18.4	100
Total	180	100	
Number of employees			
Between 10 and 99 employees	40	22.2	22.2
Between 100 and 200 employees	98	54.5	76.7
Over 200	42	23.3	100
Total	180	100	
Company year of existence			
Less than 5 years	20	11.1	11.1
Between 5 and 10years	55	30.6	41.7
Between 10 and 25 years	96	53.3	95
Over 25 years	9	5	100
Total	180	100	

3.3. Presentation and discussion of the results

3.3.1. Checking scale reliability: Exploratory factorial analysis (EFA)

Validation test results for the "cost calculation method" measurement scales

The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's sphericity test reveal a high KMO index of 0.727, with significance close to 0 Sig: 0.000 as illustrated in **Table 7**. This indicates that there is a statistically acceptable factorial solution that represents the relationships between the variables. Thus, both indices are satisfactory, justifying the use of principal component factor analysis.

Table 7. Presentation of the KMO index and bartlett test.

Precision measurement of Kaiser-Meyer-Olkin sampling.		**0.727**
Bartlett's sphericity test	Approximate chi-square	625.430
	ddl	1
	Meaning of Bartlett	0.000

Source: From the author's survey.

Analysis of this **Table 8** shows that no item deletion would improve the reliability of the measurement instrument. Cronbach's Alpha is above the acceptability threshold for the Cost calculation method. These results indicate good internal consistency of the measurement scales. In this phase, it was decided to retain all the items presenting the scale.

Table 8. Total variance explained.

Component matrix	**Representation quality**		
	Component Axis 1	**Initial**	**Extraction**
CMM1	0.989	1	0.978
CMM2	0.992	1	0.985
CMM3	0.992	1	0.985
CMM4	0.924	1	0.855
CMM5	0.992	1	0.971
Eigenvalues	3.803		
Total variance explained	95.065		
Cronbach's Alpha	98.3		

Source: From the author's survey.

Validation test results for the "budgetary control" measurement scales

The analysis carried out on the items of the "Budgetary control" variable shows a KMO index of 0.677 and a Bartlett significance equal to 0 as illustrated in **Table 9**. The scale meets the application conditions of the exploratory factorial analysis of the sub-variable.

Analysis of this **Table 10** shows that no item deletion would improve the reliability of the measurement instrument. Cronbach's Alpha (97.8%) is above the acceptability threshold for budget control. These results indicate good internal consistency of the measurement scales. In this phase, it was decided to retain all the

items presenting the scale.

Table 9. Presentation of the KMO index and Bartlett test.

Precision measurement of Kaiser-Meyer-Olkin sampling.		**0.677**
Bartlett's sphericity test	Approximate chi-square	602.412
	ddl	1
	Meaning of Bartlett	0.000

Source: From the author's survey.

Table 10. Total variance explained.

Component matrix	**Representation quality**		
	Component Axis 1	**Initial**	**Extraction**
BDG1	0.988	1	0.976
BDG2	0.988	1	0.976
BDG3	0.987	1	0.975
BDG4	0.910	1	0.829
BDG5	0.981	1	0.988
Eigenvalues	3.757		
Total variance explained	93.913		
Cronbach's Alpha	97.8		

Source: From the author's survey.

Validation test results for the "balanced scorecard" measurement scales

The analysis carried out on the items of the "Balanced scorecard" variable shows a KMO index of 0.711 and a Bartlett significance equal to 0 as illustrated in **Table 11**. The scale meets the conditions for application of exploratory factorial analysis of the sub-variable.

Table 11. Presentation of the KMO index and bartlett test.

Precision measurement of Kaiser-Meyer-Olkin sampling.		**0.711**
Bartlett's sphericity test	Approximate chi-square	629.500
	ddl	1
	Meaning of Bartlett	0.000

Source: From the author's survey.

Upon analysing this **Table 12**, it was determined that deleting any item would not improve the reliability of the measurement instrument. The Cronbach's Alpha is above the acceptability threshold for the Balanced Scorecard, indicating good internal consistency of the measurement scales. Therefore, it was decided to retain all items in the scale during this phase.

In short, the analysis of the reliability of this measurement scale constituting the "Management control" variable resulted in very satisfactory Cronbach's alpha values and significant explanatory power as mentioned in **Table 13**.

Table 12. Total variance explained.

Component matrix	**Representation quality**		
	Component Axis 1	**Initial**	**Extraction**
BSC1	0.997	1	0.995
BSC2	0.997	1	0.995
BSC3	0.997	1	0.995
BSC4	0.997	1	0.995
Eigenvalues	3.980		
Total variance explained	99.49		
Cronbach's Alpha	99.8		

Source: From the author's survey.

Table 13. Measurement of the "management control" variable.

Variable	**Number of items selected**	**Variance restored after factorization**	**Cronbach's Alpha**
Cost calculation method	5	95.065	98.3
Budgetary control	5	93.913	97.8
Balanced scorecard	4	99.49	99.8

3.3.2. Verifying scale validity: Confirmatory Factorial Analysis (CFA)

CFA for "organizational performance" and "cost calculation method" variables

The correlation test in **Table 14** produced highly significant results, indicating a strong positive relationship between the two variables: "Organizational performance" and "Cost calculation method".

Table 14. Correlation test presentation.

		P. Organizational	**Cost. calculation. method**
P. Organizational	Pearson correlation	1	0.853**
	Sig. (bilateral)		0.000
Cost. calculation. method	Pearson correlation	0. 853**	1
	Sig. (bilateral)	0.000	

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

The correlation coefficient between: "Organizational Performance" and "Cost calculation method" gives a value in excess of 80%. This means that there is a very strong positive correlation between these variables, so any increase in one implies an increase in the other, and vice versa.

To determine the direction of the relationship between our variables and test our hypothesis, a linear regression analysis between the variables has been conducted.

The results of the analysis were as follows:

The model's summary **Table 15** provides an adjusted R-two value of 72.5%, which means that the "Cost calculation method" variable has a significant "Organizational performance" power.

Table 15. Summary of models.

Model	*R*	R-two	R-two adjusted	Standard error of the estimate
1	0.853[a]	0.727	0.725	1.09071

a. Predicted values: (constants), the cost calculation method.

In our case a significance level of 0.00, which is less than 0.05 the accepted error threshold, so the "Cost calculation method" variable has an impact on the "Organizational performance" variable mentioned in **Table 16**.

Table 16. ANOVA presentation[a].

Model		Sum of squares	Ddl	Average square	*D*	Sig.
1	Regression	392.808	1	392.808	330.186	0.000[b]
	Residue	147.517	179	1.190		
	Total	540.325	180			

a. Dependent variable: Organizational Performance b. Predicted values: (constants), calculation method costs.

From the **Table 17** a statistically significant influence relationship at a level of 0.000 with a coefficient of 0.853, suggesting that the "Cost calculation method" variable has a direct influence on the "Organizational performance" variable.

Table 17. Presentation of model coefficients[a].

Model		Non-standardized coefficients	Standardized coefficients		*t*	Sig.
		A	Standard error	Beta		
1	(Constant)	1.117	0.138	-	8.099	0.000
	Cost calculation method.	0.804	0.044	0.853	18.171	0.000

a. Dependent variable: Organizational performance.

From this result, the "Cost calculation method" variable exerts a significant apparent impact on the "Organizational performance" variable.

CFA for "organizational performance" and "budgetary control" variables

The correlation test produced highly significant results, demonstrating the existence of a strong positive relationship between the two variables: "Organizational Performance" and "Budgetary Control".

Table 18. Correlation test presentation.

		P. Organizational	Budget. control
P. Organizational	Pearson correlation	1	0.764**
	Sig. (bilateral)		0.000
Budget. control	Pearson correlation	0.764**	1
	Sig. (bilateral)	0.000	

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

The correlation coefficient between: "Organizational Performance" and "Budgetary Control" illustrated in **Table 18** gives a value above 70%. This means that there is a strong positive correlation between these variables, so any increase in

one implies an increase in the other, and vice versa.

Based on these results, the validation of our research sub-hypothesis says that the "Budgetary Control" variable is closely linked to the "Organizational Performance" variable.

To determine the direction of the relationship between our variables and test our hypothesis, a linear regression analysis between the variables was conducted.

The results of the analysis were as follows:

The model's summary **Table 19** provides an adjusted R-two value of 58.1%, which means that the "Budgetary control" variable has a moderately strong influence on the "Organizational performance" variable.

Table 19. Summary of models.

Model	R	R-two	R-two adjusted	Standard error of the estimate
1	0.764[a]	0.584	0.581	1.34636

a. Predicted values: (constants), Budgetary control.

In our case a significance level of 0.00. which is less than 0.05 the accepted error threshold, so we can say that the "Budgetary control" variable has an impact on the "Organizational performance" variable as illustrated in **Table 20**.

Table 20. ANOVA presentation[a].

Model		Sum of squares	Ddl	Average square	*D*	Sig.
1	Regression	315.552	1	315.552	174.080	0.000[b]
	Residue	224.773	179	1.813		
	Total	540.325	180			

a. Dependent variable: Organizational Performance b. Predicted values: (constants), calculation method costs.

According to the **Table 21**, a statistically significant influence relationship at a level of 0.000 with a coefficient of 0.764 is identified, indicating that the "Budgetary control" variable directly influences the "Organizational performance" variable.

Table 21. Presentation of model coefficients[a].

Model		Non-standardized coefficients	Standardized coefficients		*t*	Sig.
		A	Standard error	Beta		
1	(Constant)	1.359	0.167		8.127	0.000
	Cost calculation method.	0.747	0.057	0.764	13.194	0.000

a. Dependent variable: Organizational performance.

From this result, it can be stated that the "Budgetary control" variable has a significant apparent impact on the "Organizational performance" variable.

CFA for "organizational performance" and "balanced scorecard" variables

The correlation test in **Table 22** produced highly significant results, indicating a very strong positive relationship between the two variables: "Organizational Performance" and "Balanced Scorecard".

Table 22. Correlation test presentation.

		P. Organizational	Balanced. Dashboard
P. Organizational	Pearson correlation	1	0.879**
	Sig. (bilateral)		0.000
Balanced. Dashboard	Pearson correlation	0.879**	1
	Sig. (bilateral)	0.000	

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

It is clear that the correlation coefficient between "Organizational Performance" and "Balanced Scorecard" exceeds 87%. This indicates a very strong positive correlation between these variables, meaning that an increase in one implies an increase in the other, and vice versa.

Based on these results, progress is being made in validating the research sub-hypothesis that the "Balanced Scorecard" variable is closely linked to the "Organizational Performance" variable.

To determine the direction of the relationship between the variables and test the hypothesis, a linear regression analysis was conducted. The results of the analysis were as follows:

The model's summary **Table 23** provides an adjusted R-two value of 87.9%, which means that the "Balanced Scorecard" variable has very significant power over the "Organizational Performance" variable.

Table 23. Summary of models.

Model	R	R-two	R-two adjusted	Standard error of the estimate
1	0.879[a]	0.784	0.780	1.46854

a. Predicted values: (constants), Balanced Scorecard.

In this case, the significance level is 0.00, which is less than the accepted error threshold of 0.05. Therefore, it can be concluded that the "Balanced Scorecard" variable has an impact on the "Organizational Performance" variable as illustrated in **Table 24**.

Table 24. ANOVA presentation[a].

Model		Sum of squares	Ddl	Average square	*D*	Sig.
1	Regression	271.906	1	271.906	126.080	0.000[b]
	Residue	265.262	179	2.157		
	Total	537.168	180			

a. Dependent variable: Organizational performance b. predicted values: (constants), calculation method costs.

From the **Table 25**, a statistically significant relationship of influence at a level of 0.000 with a coefficient of 0.811 is observed, suggesting that the "Balanced Scorecard" variable has a direct influence on the "Organizational Performance" variable.

Table 25. Presentation of model coefficients[a].

Model		Non-standardized coefficients	Standardized coefficients		*t*	Sig.
		A	Standard error	Beta		
1	(Constant)	1.643	0.172		9.578	0.000
	Cost calculation method.	0.656	0.058	0.811	11.229	0.000

a. Dependent variable: Organizational performance.

CFA for "management control" and "organizational performance" variables

The correlation test in **Table 26** produced highly significant results, demonstrating the existence of a very strong positive relationship between the two variables: "Management Control" and "Organizational Performance".

Table 26. Correlation test presentation.

		P. Organizational	Management control
P. Organizational	Pearson correlation	1	0.894**
	Sig. (bilateral)		0.000
Management control	Pearson correlation	0.894**	1
	Sig. (bilateral)	0.000	

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

It is evident that the correlation coefficient between "Management Control" and "Organizational Performance" is well over 80%. This indicates a very strong positive correlation between these variables, meaning that an increase in one implies an increase in the other, and vice versa.

Based on these results, progress is being made in validating our second main research hypothesis, namely that the "Organizational Performance" variable is closely linked to the "Management Control" variable. To determine the direction of the relationship between these variables and test our hypothesis, a linear regression analysis was conducted.

The results of the analysis were as follows:

The model's summary **Table 27** provides an adjusted R-two value of 82.6%, which means that the "Management Control" variable has very significant power over the "Organizational Performance" variable.

Table 27. Summary of models.

Model	R	R-two	R-two adjusted	Standard error of the estimate
1	0.805[a]	0.649	0.826	1.24537

a. Predicted values: (constants), controlling.

In this case, the significance level is 0.00, which is less than the accepted error threshold of 0.05 illustrated in **Table 28**. Therefore, it can be concluded that the "Management Control" variable has an impact on the "Organizational Performance" variable.

Table 28. ANOVA presentation[a].

Model		Sum of squares	ddl	Average square	*D*	Sig.
1	Regression	352.041	1	352.041	226.985	0.000[b]
	Residue	190.766	179	1.551		
	Total	542.808	180			

a. Dependent variable: Organizational Performance b. Predicted values: (constants), Calculation method costs.

From the **Table 29**, a statistically significant influence relationship at a level of 0.000 with a coefficient of 0.805 is observed, suggesting that the "Management Control" variable has a direct influence on the "Organizational Performance" variable. This result indicates that the "Management Control" variable exerts a significant apparent impact on the "Organizational Performance" variable.

Table 29. Presentation of model coefficients[a].

Model		Non-standardized coefficients	Standardized coefficients		*t*	Sig.
		A	Standard error	Beta		
1	(Constant)	1.211	0.161		7.529	0.000
	Cost calculation method.	0.856	0.057	0.805	15.066	0.000

a. Dependent variable: Organizational performance.

Overall, this section has brought this research work to a close by assessing the links between the different variables in our research model, using the correlation and simple linear regression methods, and identifying the various influential relationships that exist.

3.3.3. Testing hypotheses and discussing results

Impact of the Cost calculation method on organizational performance

This hypothesis states that there is a significant relationship between Cost calculation method and organizational performance in Moroccan companies. Indeed, the correlation between the two variables is highly significant, with a threshold of 0.853.

The empirical study also confirmed that the Cost calculation method is a significant source of information for decision-making, pricing and measuring product profitability. It provides managers and executives with a tool to help them make strategic and operational decisions, in order to improve the company's profitability, as well as its day-to-day management over the medium and long term. It provides managers with more precise information on the optimization of activities and processes, products and services, and the profitability of products and customers.

In summary, the use of costing has a significant influence on the organizational performance of Moroccan companies. This result corroborates those achieved by Lavigne (2002), who concluded that the most complex companies with powerful accounting players are more likely to adopt management accounting practices to achieve corporate financial and organizational performance. The same is true of Nobre (2001), who asserts that the Cost calculation method plays a fundamental role in any management control system, since it ensures that action is consistent with

overall objectives.

In conclusion, these results underline the significant impact that the choice of Cost calculation method can have on an organization's organizational performance.

Hypothesis H1 is therefore supported.

Impact of budgetary control on organizational performance

This hypothesis states that there is a significant relationship between budgetary control and organizational performance in Moroccan companies. Indeed, the correlation between the two variables is highly significant at a threshold of 0.764.

Our empirical study highlights that the implementation of effective budgetary control is strongly correlated with a significant improvement in organizational performance. Indeed, the results show that companies that adopt rigorous budgetary control practices manage their financial resources more effectively, optimize their decision-making processes and achieve their strategic objectives more consistently. This translates into increased profitability, more efficient cost management and a greater ability to adapt to market fluctuations.

This result is in line with the work of Sponem and Lambert (2010), who argue that the use of budgetary control helps to control costs and is often used as a basis for allocating rewards and sanctions to managers (motivational means). That said, it does contribute to organizational performance.

This study underlines the strategic importance of budgetary control as a fundamental lever for organizational performance.

Hypothesis H2 is therefore supported.

Impact of the Balanced Scorecard on organizational performance

This hypothesis states that there is a significant relationship between the balanced scorecard and organizational performance in Moroccan companies. Indeed, the correlation between the two variables is highly significant, with a threshold of 0.879.

Our empirical investigation has shown that the Balanced Scorecard put forward by Kaplan and Norton groups all the performance indicators (financial and non-financial) that a company can have into four axes covering the following dimensions: financial results, customer satisfaction, internal processes and organizational learning. The dimensions are built around the company's strategic vision, and are mutually dependent. The Balanced Scorecard is the only scalable and appropriate tool for integrating societal concerns into the traditional management control system.

The study also showed that this positive correlation can be explained by the Balanced Scorecard's ability to align strategic objectives with operational actions, foster internal communication and coordination, and reinforce stakeholder commitment. Furthermore, Moroccan companies that have effectively integrated the Balanced Scorecard tend to be more flexible and responsive to changes in their environment, which also contributes to their organizational performance.

Therefore, it can be concluded that the use of the balanced scorecard significantly improves the organizational performance of Moroccan companies. Hypothesis H3 is therefore supported.

4. Discussion

Our study highlights the significant impact of management control tools on various aspects of organizational performance. Recent literature underscores the necessity of these tools in modern business environments. For example, Anvari et al. (2016) found that performance management models oriented around competencies significantly enhance organizational effectiveness. Similarly, Babeľová and Stareček (2021) discussed the varying impacts of performance evaluations by different generations of employees, highlighting the importance of adaptable management control systems.

Pambreni et al. (2019) emphasized the role of Total Quality Management (TQM) in improving organizational performance, which aligns with our findings on the significance of management control tools. Furthermore, Soltani et al. (2018) examined the positive impact of Customer Relationship Management (CRM) systems on organizational performance, reinforcing the need for integrated control mechanisms to support customer-centric strategies. Falahat et al. (2020) explored how product innovation, market intelligence, and marketing capabilities drive SMEs' international performance, providing a comprehensive view of how internal capabilities enhance performance. Additionally, Mata et al. (2021) highlighted the significant impact of institutional support on export performance, emphasizing the role of external support systems in business success.

These contemporary findings reinforce our results, demonstrating that management control tools enable better allocation of resources, anticipation of risks, and regular assessment of performance against objectives. The use of up-to-date control mechanisms ensures that companies remain agile and responsive to both national and global economic shifts.

Marketing Implications:

The use of management control tools, such as cost calculation methods, budgetary control, and balanced scorecards, has significant implications for the marketing strategies of Moroccan companies. Our results indicate that companies utilizing these tools are better equipped to make data-driven marketing decisions, optimize their marketing budgets, and measure the effectiveness of their marketing campaigns. This enhanced capability allows companies to respond more swiftly to market trends, customer preferences, and competitive pressures. On a global scale, these tools enable Moroccan companies to align their marketing strategies with international standards, thereby improving their competitiveness in global markets.

Financial Implications:

Financially, the adoption of management control tools has been shown to improve financial planning, resource allocation, and cost management. Companies that implement robust cost calculation methods and budgetary controls can achieve higher profitability by minimizing waste and optimizing resource use. Our findings suggest that these tools help companies maintain financial discipline, achieve their financial targets, and sustain long-term financial stability. In a global context, these financial improvements enhance the attractiveness of Moroccan companies to international investors and partners, fostering opportunities for cross-border collaborations and investments.

Managerial Implications:

From a managerial perspective, the use of balanced scorecards and other management control tools facilitates better strategic alignment and performance monitoring. Managers can leverage these tools to set clear objectives, track progress, and make informed decisions that drive organizational performance. Our study highlights that companies with effective management control systems are more agile and responsive to changes in the business environment. This agility is crucial for navigating both national and global challenges, such as economic fluctuations, regulatory changes, and technological advancements.

5. Conclusion

In conclusion, the aim of our study was to examine the impact of management control on the organizational performance of Moroccan companies, demonstrating its crucial importance in strategic decision-making and effective resource management.

From a theoretical standpoint, our research explored in depth the various tools of management control, namely the cost calculation method, which enables better allocation of financial resources, budgetary control, which ensures rigorous management of expenditure and investment, and the balanced scorecard, which offers a global and balanced view of performance through various key indicators.

Empirically, our research has corroborated our literature investigation by revealing that companies that implement management control tools in a coherent and context-sensitive manner generally achieve a significant improvement in organizational performance. In particular, these tools enable better allocation of resources, anticipation of risks, and regular assessment of performance against objectives.

However, our study has a few limitations. Firstly, our sample was limited to Moroccan companies, which could limit the generalizability of the results to other geographical or cultural contexts. Furthermore, the quantitative nature of our research prevented us from exploring in depth the qualitative nuances of management control practices in these companies. Future research should consider extending the sample to companies in other countries and combining quantitative and qualitative methodologies to gain a deeper understanding of the impact of management control on organizational performance.

Additionally, our empirical study coincided with the COVID-19 pandemic, and post-pandemic studies would be important to examine whether the changes observed during this period were maintained or evolved with a return to normality. This study can serve as a comparative basis for future research. Extending the sample to include companies from different countries and regions would help to validate and generalize the findings. Combining quantitative and qualitative research methods would allow for the exploration of qualitative nuances of management control practices. Conducting longitudinal studies to assess the long-term impact of management control tools on organizational performance post-pandemic would also be valuable.

In terms of practical recommendations, companies should adopt and integrate management control tools such as cost calculation methods, budgetary control, and

balanced scorecards to enhance strategic decision-making and resource allocation. Organizations should invest in training and development programs to ensure that managers and employees are proficient in using these tools effectively. Regular reviews and updates of management control systems are necessary to adapt to changing business environments and maintain their relevance and effectiveness. Furthermore, engaging stakeholders at all levels in the implementation and utilization of management control tools is essential to ensure alignment with organizational objectives and enhance overall performance.

These recommendations, coupled with the findings of our study, provide valuable insights for practitioners and policymakers seeking to enhance organizational performance in both national and global contexts.

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References

Abernethy, M. A., & Brownell, P. (1999). The role of budgets in organizations facing strategic change: An exploratory study. Accounting, Organizations and Society, 24(3), 189–204. https://doi.org/10.1016/S0361-3682(98)00059-2

Anthony, R. N., & Govindarajan, V. (2007). Management Control Systems. McGraw-Hill Education.

Anvari, A. F., Soltani, I., & Rafiee, M. (2016). Providing the Applicable Model of Performance Management with Competencies Oriented. Procedia-Social and Behavioral Sciences, 230, 190–197. https://doi.org/10.1016/j.sbspro.2016.09.024

Barrijal, S. (2015). How can we Develop and Manage the Performance of Young Companies in the Growth Phase? Theoritical appraoch. Internal Journal of Innovation and Applied Studies.

Bouquin, H. (2008). Management accounting (French). Economica.

Chenhall, R. H. (2003). Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. Accounting, Organizations and Society, 28(2–3), 127–168. https://doi.org/10.1016/S0361-3682(01)00027-7

Eccles, R. G. (1991). The Performance Measurement Manifesto. Harvard Business Review, 69(1), 131–137.

Entrepreneurship and Sustainability Center. (2021). Available online: https://jssidoi.org/jesi/issue/34 (accessed on 2 May 2024).

Falahat, M., Lee, Y. Y., Soto-Acosta, P. (2021). Entrepreneurial, market, learning and networking orientations as determinants of business capability and international performance: The contingent role of government support. International Entrepreneurship and Management Journal, 17(4), 1759–1780. https://doi.org/10.1007/s11365-020-00738-y

Ferreira, A., & Otley, D. (2009). The design and use of performance management systems: An extended framework for analysis. Management Accounting Research, 20(4), 263–282. https://doi.org/10.1016/j.mar.2009.07.003

Flamholtz, E. G., Das, T. K., Tsui, A. S. (1985). Toward an integrative framework of organizational control. Accounting, Organizations and Society, 10(1), 35–50. https://doi.org/10.1016/0361-3682(85)90030-3

Flamholtz, E. (1983). Accounting, Budgeting and Control Systems in Their Organizational Context: Theoretical and Empirical Perspectives. Accounting Organizations and Society, 8(2), 153-169. https://doi.org/10.1016/0361-3682(83)90023-5

Inamdar, N., & Kaplan, R. S. (2002). Applying the Balanced Scorecard in Healthcare Provider Organizations. Journal of Healthcare Management, 47(3), 179–195. https://doi.org/10.1097/00115514-200205000-00008

Ittner, C. D., & Larcker, D. F. (1998). Innovations in performance measurement: Trends and research implications. Journal of Management Accounting Research, 10, 205–238.

Jensen, M. C., & Meckling W. H. (1976). The Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure. Journal of Financial Economics, 3, 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kaplan, R. S., Norton D. P. (1996). The Balanced Scorecard: Translating Strategy into Action. Havard Business School Press.

Kaplan, R. S., Norton, D. P. (1996). Linking the Balanced Scorecard to Strategy. California Management Review, 39(1), 53–79. https://doi.org/10.2307/41165876

Kaplan, R. S., Norton, D. P. (1996). The Balanced Scorecard: Translating Strategy into Action. Harvard Business School Press.

Lebas, M. J. (1995). Yes, we need to define performance (French). Revue Française de Comptabilité, (269), 66–71. https://doi.org/10.1016/S0338-9898(95)80202-9

Lu, J., Falahat, M., & Cheah, P. K. (2024). A systematic literature review on the relationship between servant leadership and its team and organizational level outcomes. Journal of Organizational Change Management, 37(2), 255-282.

Mata, M. N., Falahat, M., Correia, A. B. (2021). Impact of Institutional Support on Export Performance. Economies, 9(3), 101. https://doi.org/10.3390/economies9030101

Merchant, K. A., Van der Stede, W. A. (2017). Management Control Systems: Performance Measurement. Evaluation and Incentives.

Norreklit, H. (2000). The balance on the balanced scorecard a critical analysis of some of its assumptions. Management Accounting Research, 11(1), 65–88. https://doi.org/10.1006/mare.1999.0121

Otley, D. (1999). Performance management: a framework for management control systems research. Management Accounting Research, 10(4), 363–382. https://doi.org/10.1006/mare.1999.0115

Pambreni, Y., Khatibi, A., Azam, S. M. F., et al. (2019). The influence of total quality management toward organization performance. Management Science Letters, 1397–1406. https://doi.org/10.5267/j.msl.2019.5.011

Simons, R. (1994). How new top managers use control systems as levers of strategic renewal. Strategic Management Journal, 15(3), 169–189. https://doi.org/10.1002/smj.4250150301

Simons, R. (1995). Control in an Age of Empowerment. Harvard Business Review, 73(2), 80-88.

Soltani, Z., Zareie, B., Milani, F. S., et al. (2018). The impact of the customer relationship management on the organization performance. The Journal of High Technology Management Research, 29(2), 237–246. https://doi.org/10.1016/j.hitech.2018.10.001

Venkatraman, N. (1989). The Concept of Fit in Strategy Research: Toward Verbal and Statistical Correspondence. The Academy of Management Review, 14(3), 423. https://doi.org/10.2307/258177