

Managerial innovation, information systems, and organizational transformation: effects on the managerial performance of Moroccan SMEs.

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Abstract

This study examines the effect of managerial innovation on the managerial performance of Moroccan small and medium-sized enterprises (SMEs), with particular attention to the mediating roles of information systems and organizational transformation. Managerial innovation is conceptualized as the introduction and implementation of new managerial practices, structures, processes, and techniques designed to improve organizational effectiveness. In the SME context, such innovation may enhance internal coordination, decision-making quality, and adaptability to environmental changes. The study is based on a survey of 103 SMEs located in the Souss-Massa region of Morocco and employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed relationships. The findings indicate that managerial innovation exerts a significant positive direct effect on managerial performance. They also show that this relationship is reinforced indirectly through the modernization of information systems and the adjustment of internal organizational structures. By highlighting the internal mechanisms through which managerial innovation contributes to performance, this study enriches the literature on non-technological innovation and provides empirical evidence from the Moroccan SME context.

Keywords: managerial innovation; information systems; organizational transformation; managerial performance; SMEs; PLS-SEM; Morocco.

Introduction

Small and medium-sized enterprises (SMEs) play a central role in both developed and emerging economies. They contribute significantly to employment creation, entrepreneurial dynamism, and regional development. In developing countries, SMEs represent a dominant share of the private sector and account for more than half of total employment. In Morocco, small firms also occupy a prominent place within the productive fabric. According to the Moroccan Observatory of Micro, Small and Medium Enterprises, firms with fewer than 10 employees accounted for 86.1% of enterprises declaring to the CNSS in 2024.

Despite their importance, these firms continue to face substantial constraints, including limited financial and human resources, organizational fragility, intensified competition, and growing environmental uncertainty. In such a context, performance depends not only on access to capital or technology. It also depends on managerial quality, organizational adaptability, and the effective mobilization of information (World Bank, 2017; OMTPE, 2025).

Within this context, managerial innovation has attracted increasing scholarly attention as a strategic lever for strengthening organizational effectiveness. In contrast to technological innovation, which primarily concerns products, production processes, or technical systems, managerial innovation refers to the introduction of new managerial practices, administrative processes, organizational arrangements, or decision-making methods intended to improve the functioning of the firm. It encompasses changes in how activities are coordinated, supervised, and structured in order to enhance efficiency and responsiveness. Prior research has established managerial innovation as a distinct form of innovation. It is capable of reshaping organizational conduct and supporting renewal in contexts characterized by resource constraints and environmental change (Birkinshaw, Hamel, & Mol, 2008; Damanpour & Aravind, 2012; Mol & Birkinshaw, 2009).

For SMEs, managerial innovation may be especially relevant because their structures are generally more flexible, decision chains are shorter, and ownership is often closely intertwined with management. These characteristics may facilitate the rapid adoption of new managerial approaches and accelerate their effects on day-to-day operations. By improving internal coordination, clarifying responsibilities, and supporting more effective planning and control, managerial innovation can strengthen managerial performance. It can also help firms respond

more effectively to environmental change. From this perspective, managerial innovation may be viewed not simply as an administrative adjustment. It can also be seen as a source of competitive advantage and adaptive capacity (Mol & Birkinshaw, 2009; Vaccaro, Jansen, Van den Bosch, & Volberda, 2012; Teece, 2007).

However, the effects of managerial innovation are not necessarily direct or automatic. Their realization may depend on internal organizational conditions that enable or constrain the implementation of new management practices. Two dimensions appear particularly important in this regard: the information system and organizational transformation.

First, the information system plays a central role in collecting, processing, and disseminating relevant information for managerial decision-making. An efficient information system improves communication flows, facilitates monitoring, and enhances the reliability and timeliness of decisions. Research on IT capability and IT business value suggests that information systems contribute to performance when they are embedded in complementary organizational and managerial capabilities.

Second, organizational transformation reflects changes in internal structures, responsibilities, routines, and coordination mechanisms that may accompany the adoption of new managerial practices. The organizational change literature indicates that structural and procedural adjustments are essential to performance improvement. This is especially the case in uncertain environments that require continuous adaptation (Bharadwaj, 2000; Melville, Kraemer, & Gurbaxani, 2004; Lu & Ramamurthy, 2011; Armenakis & Bedeian, 1999; Judge, Naoumova, & Douglas, 2009).

This perspective is consistent with the dynamic capabilities view. It emphasizes the firm's ability to integrate, reconfigure, and renew its internal resources in response to environmental change. From this standpoint, managerial innovation can be understood as a capability that enables firms to redefine how they manage knowledge, organize work, and coordinate action. However, this capability becomes effective only when supported by appropriate informational and organizational arrangements. Information systems and organizational transformation may therefore operate as key mechanisms through which managerial innovation influences managerial performance (Teece, Pisano, & Shuen, 1997; Teece, 2007).

In this study, managerial performance is understood as the ability of managers to effectively plan, coordinate, supervise, and guide organizational activities. It also involves ensuring sound communication, efficient decision-making, and the effective mobilization of human resources. This definition goes beyond purely financial outcomes and focuses on the internal quality of management. This focus is particularly relevant in the SME context, where managerial action has an immediate effect on organizational cohesion and operational efficiency.

Against this background, the present study examines the effect of managerial innovation on the managerial performance of Moroccan SMEs. It pays particular attention to the mediating roles of the information system and organizational transformation. To address this objective, an empirical investigation was conducted among 103 SMEs operating in the Souss-Massa region. The study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to test both the direct and indirect relationships between the proposed variables. By doing so, it seeks to provide a clearer understanding of the internal mechanisms through which managerial innovation contributes to performance in the Moroccan SME context.

1. Theoretical Framework and Research Hypotheses

This section develops the theoretical foundations of the study and formulates the research hypotheses. It first examines managerial innovation as a specific form of organizational change, then discusses its links with managerial performance, information systems, and organizational transformation. On this basis, the section proposes a conceptual framework designed to explain the direct and indirect relationships among the study variables.

1.1. Managerial Innovation as a Distinct Object of Analysis

Managerial innovation has become a distinct field of inquiry in management studies because it directly affects the core functioning of organizations. Unlike product or technological improvement, it concerns the way a firm is managed, coordinated, and governed. Birkinshaw, Hamel, and Mol (2008) define managerial innovation as the introduction of management practices, processes, or structures that are new to the organization and that substantially alter existing routines. This definition highlights two essential dimensions: novelty and organizational impact. In other words, a practice can be considered truly innovative only when it changes the firm's managerial logic.

In SMEs, this dimension is even more critical because their structures are often more flexible, personalized, and highly dependent on the owner-manager. Management in such firms frequently relies on informal mechanisms, centralized decisions, and direct interactions among organizational members. In this context, managerial innovation may generate rapid and visible effects on coordination, motivation, and operational control. Mol and Birkinshaw (2009) show that managerial innovations often emerge in response to internal or external pressures and then diffuse gradually throughout the organization. They therefore represent both a response to the need for change and a means of building new managerial capabilities.

One of the major contributions of this literature is to demonstrate that innovation is not limited to technological domains. Damanpour and Aravind (2012) emphasize that organizational and managerial innovations play a decisive role in performance, even though they are less visible than product or process innovations. They affect organizational structure, culture, power relations, information flows, and coordination systems. In this sense, they can be regarded as deep levers of internal transformation, particularly relevant for organizations seeking to improve efficiency without necessarily making heavy investments in costly technologies.

1.2. Managerial Innovation and Managerial Performance

Managerial performance is understood in this study as the quality with which managers carry out planning, coordination, supervision, and decision-making activities within the organization. It reflects the firm's ability to achieve its objectives through effective managerial steering, coherent action, and adaptive organizational conduct. Such a conception goes beyond a purely financial understanding of performance and places emphasis on the internal quality of management, which is especially relevant in the SME context.

The literature suggests that managerial innovation can improve managerial performance through several complementary mechanisms. First, it may clarify roles and responsibilities, thereby reducing ambiguity in organizational functioning. Second, it can improve responsiveness by introducing more flexible and participatory forms of coordination. Third, it can strengthen the firm's adaptive capacity by allowing managers to reorganize routines and decision processes in line with environmental change. From the perspective of dynamic capabilities, firms achieve sustained performance when they are able to reconfigure resources and managerial routines in response to evolving conditions (Teece, Pisano, & Shuen, 1997;

Teece, 2007). In this sense, managerial innovation may be viewed as a managerial capability that enhances the quality of steering and thus contributes directly to managerial performance.

This relationship is particularly significant in Moroccan SMEs, many of which operate in environments marked by uncertainty, competitive pressure, and organizational constraints. Under such conditions, the adoption of new management practices may improve the use of existing resources, strengthen internal coordination, and enhance managerial effectiveness. Vaccaro, Jansen, Van den Bosch, and Volberda (2012) also show that managerial innovation can influence organizational outcomes by changing the way management is enacted within the firm. It is therefore reasonable to assume that managerial innovation exerts a positive effect on managerial performance.

1.3.The Role of the Information System

The information system occupies a central position in the relationship between managerial innovation and performance. It includes the mechanisms through which information is collected, processed, stored, and disseminated for managerial purposes. In SMEs, an effective information system does not merely consist of technological tools; it also encompasses the organizational arrangements that make information accessible, reliable, and usable for decision-making.

Managerial innovation is likely to foster the development or modernization of the information system because the introduction of new management practices often requires more formalized, timely, and better-structured information. The implementation of dashboards, reporting tools, monitoring systems, or new communication procedures may improve visibility over activities and reduce uncertainty in managerial action. Research on information technology capability suggests that information-related resources contribute to performance when they are embedded in broader organizational capabilities (Bharadwaj, 2000). Similarly, Melville, Kraemer, and Gurbaxani (2004) argue that the value of information systems depends on the organizational processes through which they support coordination, control, and decision-making. Lu and Ramamurthy (2011) further demonstrate that information capability can enhance organizational agility by enabling firms to respond more effectively to environmental changes.

In this perspective, the information system may be seen as an intermediate mechanism through which managerial innovation affects managerial performance. New management practices are

unlikely to produce their full effects unless they are supported by effective information flows. A more reliable and better-organized information system can improve communication, facilitate monitoring, and strengthen the capacity of managers to make relevant decisions. It is therefore theoretically plausible to expect both a positive relationship between managerial innovation and the information system, and a positive relationship between the information system and managerial performance.

1.4.Organizational Transformation

Organizational transformation refers to the changes affecting the firm's structures, processes, responsibilities, and internal modes of coordination. It may take the form of departmental reorganization, the redistribution of tasks, the formalization of procedures, the modification of communication channels, or the decentralization of certain decisions. In SMEs, such transformation may be gradual, but it can nonetheless have profound effects on organizational effectiveness and managerial quality.

Managerial innovation and organizational transformation are closely interconnected. The introduction of new management practices frequently requires corresponding adjustments in organizational structure in order to become fully operational. A management innovation that remains disconnected from the actual organization of work is unlikely to produce lasting effects. Armenakis and Bedeian (1999) underline that organizational change is a multidimensional process involving both structural and behavioral adaptation. Judge, Naoumova, and Douglas (2009) similarly show that the organizational capacity for change is linked to performance, especially in contexts characterized by environmental transition and uncertainty.

From this standpoint, organizational transformation may be considered a consolidating mechanism through which managerial innovation becomes institutionalized within the firm. By clarifying roles, redefining routines, and improving coordination mechanisms, organizational transformation creates the structural conditions necessary for translating innovation into effective managerial outcomes. It is therefore reasonable to expect that managerial innovation positively influences organizational transformation and that organizational transformation, in turn, improves managerial performance.

1.5. Conceptual Model and Research Hypotheses.

The conceptual model adopted in this study is structured around four fundamental variables and seeks to clarify the mechanisms through which managerial innovation influences the managerial performance of SMEs. Within this framework, managerial innovation is considered the central explanatory variable, managerial performance the outcome variable, while the information system and organizational transformation occupy a mediating position in the proposed causal dynamic. Such a theoretical architecture is grounded in the assumption that the effect of managerial innovation cannot be understood as a purely immediate or linear phenomenon, insofar as the introduction of new management practices produces its full effects only when accompanied by the evolution of informational arrangements and the adjustment of organizational structures. This perspective is particularly relevant in the SME context, where performance cannot be reduced to financial indicators alone, but also encompasses the quality of managerial steering, the effectiveness of coordination, the fluidity of information flows, the speed of decision-making, and the overall coherence of internal functioning. The model thus highlights an explanatory sequence according to which managerial innovation transforms the firm's practices, tools, routines, and modes of organization, thereby contributing to the improvement of managerial performance. On this basis, six hypotheses are formulated: managerial innovation is expected to exert a direct positive effect on the managerial performance of SMEs (H1), to foster the development or modernization of the information system (H2), and to induce positive organizational transformation (H3); in turn, the information system is expected to improve managerial performance (H4), as is organizational transformation (H5); finally, both variables are assumed to play a mediating role in the relationship between managerial innovation and managerial performance (H6).

2. Methodology

This section describes the methodological framework employed to investigate the proposed relationships between managerial innovation, information systems, organizational transformation, and managerial performance in Moroccan SMEs. It explains the research design, the procedures used for data collection, the operationalization of the main variables, and the analytical technique applied to test the study hypotheses.

2.1. Research Design

This study adopts a quantitative research design to examine the relationships among managerial innovation, information systems, organizational transformation, and managerial performance in Moroccan SMEs. This choice is consistent with the explanatory nature of the research, as the objective is not merely to describe managerial practices, but to test a set of theoretically grounded hypotheses and assess the structural relationships among several latent constructs. Such an approach is particularly appropriate when the research seeks to identify both direct and indirect effects within a conceptual model involving multiple interrelated variables. In this respect, Partial Least Squares Structural Equation Modeling (PLS-SEM) provides a suitable analytical framework because it is designed for prediction-oriented research, accommodates complex models with mediation paths, and is well adapted to studies based on latent variables and relatively moderate sample sizes (Hair et al., 2022; Sarstedt et al., 2014).

The unit of analysis in this study is the SME. This choice is justified by the central role of such firms in the Moroccan economy and by their particular sensitivity to managerial change. In SMEs, strategic and operational decisions are often concentrated in the hands of the owner-manager, which makes managerial performance closely dependent on the quality of managerial steering. The study therefore focuses on how managerial innovation influences the internal functioning of these organizations and, consequently, their managerial effectiveness.

The empirical investigation is based on a sample of 103 SMEs located in the Souss-Massa region. This regional context offers a relevant setting for observing managerial and organizational dynamics across firms operating in diverse competitive environments. Given the moderate sample size and the complexity of the proposed model, the use of PLS-SEM is methodologically justified, especially since the literature recognizes this approach as suitable for estimating structural paths among latent variables while maintaining a strong predictive orientation (Hair et al., 2022; Sarstedt et al., 2014).

2.2. Data Collection

Data were collected using a structured questionnaire administered to SME managers and executives. The questionnaire was designed to measure the different dimensions of the theoretical model using Likert-type items. This type of scale makes it possible to capture respondents' degree of agreement with a set of statements relating to management practices,

information systems, organizational changes, and perceived performance. The use of a standardized questionnaire ensures a degree of homogeneity in responses and facilitates statistical analysis.

The questionnaire was organized into four blocks corresponding to the main variables of the study. The first block addressed managerial innovation and examined the new practices introduced by the firm, such as modernization of coordination modes, employee participation, or the adoption of new monitoring methods. The second block focused on the information system and assessed the quality of data circulation, the availability of information, and its usefulness for decision-making. The third block measured organizational transformation through changes in structure, procedures, and responsibilities. The final block evaluated perceived managerial performance in terms of steering effectiveness, responsiveness, and internal coordination.

The questionnaire was administered through close interaction with firms in order to improve the response rate and the quality of the collected information. Target respondents were mainly owners, executives, or managers with an overall view of organizational functioning. This choice is important because managerial performance requires an assessment based on cross-functional knowledge of the firm. The main objective was not to triangulate internal perceptions, but rather to obtain a consolidated view of practices and their effects.

2.3.Measurement of Variables

Managerial innovation was measured as a latent variable reflecting the firm's ability to introduce new management practices. The items associated with this dimension captured the modernization of procedures, the adoption of new forms of coordination, encouragement of participation, and the renewal of supervision methods. This variable was considered the central explanatory factor because it represents the starting point of the transformation process under investigation.

The information system was measured through the quality, availability, and relevance of the information used within the firm. The indicators assessed the speed of data diffusion, reliability, accessibility, and usefulness for decision-making. In SMEs, this variable is essential because information directly supports managerial steering. A high-performing information system facilitates better anticipation of problems and improved team coordination.

Organizational transformation was assessed through items related to changes in internal structure, formalization of procedures, redistribution of responsibilities, and improvement in coordination mechanisms. This dimension reflects the firm's ability to adapt its organization to new managerial requirements. It represents a consolidation mechanism through which managerial innovations are transformed from isolated changes into more stable modes of operation.

Managerial performance constitutes the dependent variable. It was captured through indicators related to management effectiveness, quality of control, decision speed, consistency of action, and the ability to achieve predefined objectives. This broad conception of performance is particularly relevant in SMEs, where management quality strongly conditions the firm's overall performance. The assessment relies on respondents' perceptions, which is common in management research when the subject concerns internal organizational dimensions (Hair et al., 2022).

2.4.Data Analysis Method

The data were analyzed using PLS-SEM. This method is especially suitable when the research objective combines theory development, explanation of relationships among constructs, and prediction of endogenous variables. It is also particularly appropriate for models that include several latent constructs, mediation relationships, and samples of moderate size (Hair et al., 2022; Hair et al., 2019).

The analysis was conducted in two main stages. The first stage involved the assessment of the measurement model in order to verify the reliability and validity of the constructs. Internal consistency reliability was examined to ensure that the items associated with each construct measured the same underlying dimension. Convergent validity was assessed to confirm that the indicators of a given construct shared sufficient common variance. Discriminant validity was then evaluated in order to verify that the constructs were empirically distinct from one another. In contemporary PLS-SEM research, the heterotrait-monotrait ratio of correlations (HTMT) is widely recommended as a rigorous criterion for assessing discriminant validity because it detects lack of discriminant validity more reliably than traditional approaches such as the Fornell-Larcker criterion or cross-loadings alone (Henseler et al., 2015).

The second stage consisted of assessing the structural model. This involved estimating the path coefficients in order to determine the direction, magnitude, and significance of the hypothesized relationships among constructs. Particular attention was devoted to the direct effect of managerial innovation on managerial performance, as well as to the indirect effects operating through the information system and organizational transformation. In this way, the analysis makes it possible to test the mediating mechanisms specified in the conceptual model.

In addition to explanatory assessment, recent methodological research recommends evaluating the predictive relevance of PLS-SEM models through out-of-sample prediction procedures. Accordingly, predictive assessment may rely on techniques such as PLSpredict and the cross-validated predictive ability test (CVPAT), which help determine whether the proposed model performs better than benchmark alternatives in predicting observations not used for parameter estimation. These procedures are explicitly presented in the methodological literature as useful complements to traditional structural evaluation in prediction-oriented PLS-SEM studies (Shmueli et al., 2019; Sharma et al., 2023).

2.5. Justification of the Methodological Choice

The methodological choice made in this study is justified by both the nature of the research problem and the characteristics of the data. First, the proposed theoretical model is relatively complex, since it includes multiple latent variables and mediation relationships. Second, the research adopts an explanatory and predictive perspective, which is particularly well aligned with the logic of PLS-SEM. Third, the sample size remains moderate, making a variance-based structural modeling approach more appropriate than covariance-based alternatives in this context. Recent methodological references present PLS-SEM as especially useful when researchers aim to analyze complex path models, focus on prediction, and work with constructs measured indirectly through multiple indicators (Hair et al., 2022; Hair et al., 2019).

This methodological framework therefore provides a rigorous basis for identifying not only whether managerial innovation influences managerial performance, but also through which internal mechanisms this influence is transmitted. It is this ability to combine measurement assessment, structural estimation, mediation analysis, and predictive evaluation that makes the chosen approach particularly suitable for the objectives of the present study (Henseler et al., 2015; Shmueli et al., 2019; Sharma et al., 2023).

3. Results

This section presents the empirical findings in accordance with the order of the research hypotheses. Direct relationships, mediation effects, and complementary analyses are reported on the basis of the SmartPLS outputs. The following abbreviations are used in the tables: MI = managerial innovation; MP = managerial performance; IS = information system; ORG = organization.

3.1. Test of H1: Direct Effect of Managerial Innovation on Managerial Performance

Hypothesis H1 posits that managerial innovation directly improves the managerial performance of SMEs. The overall model confirms this relationship. The direct effect of managerial innovation on managerial performance is positive and statistically significant ($\beta = 0.409$; $t = 3.448$; $p = 0.001$), with a 95% confidence interval ranging from 0.168 to 0.617. These results indicate that a higher level of managerial innovation is associated with improved managerial performance. H1 is therefore supported.

3.2. Test of H2: Effect of Managerial Innovation on the Information System

Hypothesis H2 assumes that managerial innovation promotes the development of the information system. The results show a positive and significant effect of managerial innovation on the information system ($\beta = 0.438$; $t = 4.371$; $p < 0.001$; 95% CI [0.258, 0.635]). The adoption of new steering practices thus appears to be associated with better information structuring and more efficient data circulation. H2 is supported.

3.3. Test of H3: Effect of Managerial Innovation on Organizational Transformation

Hypothesis H3 predicts that managerial innovation leads to positive organizational transformation. This relationship is confirmed by a positive and significant effect of managerial innovation on organization ($\beta = 0.561$; $t = 7.157$; $p < 0.001$; 95% CI [0.401, 0.705]). The findings suggest that managerial innovation contributes to changes in internal structures, responsibilities, and work processes. H3 is supported.

3.4. Test of H4: Effect of the Information System on Managerial Performance

According to H4, the information system exerts a positive effect on managerial performance. The estimates confirm this relationship: the IS → MP path is positive and significant ($\beta = 0.430$; $t = 5.082$; $p < 0.001$; 95% CI [0.301, 0.611]). A more reliable and better-shared information system therefore enhances the quality of managerial steering. H4 is supported.

3.5. Test of H5: Effect of Organizational Transformation on Managerial Performance

Hypothesis H5 states that positive organizational transformation improves managerial performance. The results confirm this proposition: organization positively and significantly influences managerial performance ($\beta = 0.583$; $t = 10.273$; $p < 0.001$; 95% CI [0.483, 0.701]). Improvements in internal structures and processes therefore appear to be a major driver of managerial performance. H5 is supported.

3.6. Test of H6: Mediating Role of the Information System and Organization

Hypothesis H6 proposes that the information system and organizational transformation mediate the relationship between managerial innovation and managerial performance. Both mediation effects are confirmed. On the one hand, the indirect effect of managerial innovation on performance through the information system is positive and significant ($\beta = 0.188$; $t = 2.938$; $p = 0.003$; 95% CI [0.098, 0.337]). On the other hand, the indirect effect through organization is also positive and significant, with greater intensity ($\beta = 0.327$; $t = 5.819$; $p < 0.001$; 95% CI [0.232, 0.449]). Organizational mediation therefore appears stronger than informational mediation. Since the overall direct effect remains significant, these findings support a partial mediation pattern. H6 is thus supported.

Table 1. Summary of Hypothesis Testing

Hypothesis	Relationship	β	t-value	p-value	95% CI	Decision
H1	MI → MP	0.409	3.448	0.001	[0.168, 0.617]	Supported
H2	MI → IS	0.438	4.371	< 0.001	[0.258, 0.635]	Supported
H3	MI → ORG	0.561	7.157	< 0.001	[0.401, 0.705]	Supported
H4	IS → MP	0.430	5.082	< 0.001	[0.301, 0.611]	Supported
H5	ORG → MP	0.583	10.273	< 0.001	[0.483, 0.701]	Supported
H6a	MI → IS → MP	0.188	2.938	0.003	[0.098, 0.337]	Supported
H6b	MI → ORG → MP	0.327	5.819	< 0.001	[0.232, 0.449]	Supported

Source: Authors' elaboration based on PLS-SEM results.

3.7. Assessment of the Measurement Model and Predictive Quality

The examination of discriminant validity reveals a mixed picture. HTMT values among the dimensions of managerial innovation remain acceptable (Practices–Processes = 0.683; Practices–Structure = 0.738; Processes–Structure = 0.720), which supports their conceptual distinctiveness. By contrast, HTMT values between the global managerial innovation construct and its dimensions are very high (Managerial innovation–Practices = 0.965; Managerial innovation–Processes = 0.948; Managerial innovation–Structure = 0.992). This result reflects the expected proximity in a hierarchical second-order modeling structure. Cross-loadings further confirm that the items load primarily on their theoretical dimension.

Regarding external collinearity, the observed VIF statistics range from 1.826 to 4.292, all below the critical threshold of 5, which rules out a major multicollinearity problem in the outer model.

Finally, predictive validity analyses indicate an overall satisfactory predictive capacity. For managerial performance, the latent-variable Q^2_{predict} is 0.103, and the CVPAT comparison shows that the PLS-SEM model significantly outperforms the benchmark linear model (mean loss difference = -0.096; $t = 4.331$; $p < 0.001$). For the dimensions of managerial innovation, Q^2_{predict} values are high (Practices = 0.743; Processes = 0.758; Structure = 0.738), confirming the model's strong predictive relevance.

Overall, the findings confirm all six research hypotheses formulated at the theoretical level. Managerial innovation directly improves managerial performance while also exerting indirect effects through two internal channels: the information system and organization. Organizational mediation proves stronger than mediation through the information system. The complementary analyses nevertheless show that the dimensions of managerial innovation, when taken separately, do not exert significant direct effects on performance. The observed effect therefore appears to stem from a global and articulated dynamic of managerial innovation rather than from the autonomous action of a single dimension.

4. Discussion

The results of this study confirm that managerial innovation is an important determinant of managerial performance in Moroccan SMEs. The positive direct effect observed between managerial innovation and managerial performance indicates that new management practices

improve the quality of steering, coordination, and decision-making within the firm. This finding is consistent with the foundational definition of managerial innovation proposed by Birkinshaw, Hamel, and Mol. They define it as the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and intended to improve organizational objectives (Birkinshaw, Hamel, & Mol, 2008). It is also in line with the work of Vaccaro, Jansen, Van den Bosch, and Volberda. Their research shows that managerial innovation changes what managers do and how they do it, with consequences for performance and competitive advantage.

The first theoretical implication of the study is that managerial innovation should not be viewed as a peripheral improvement. It operates at the core of managerial routines by influencing how objectives are set, decisions are made, and activities are coordinated. In SMEs, this effect is likely amplified by the proximity between owner-managers, teams, and operational processes. A managerial innovation can generate rapid effects because decision chains are shorter and adjustments are more visible. The confirmation of H1 therefore supports the idea that managerial performance depends not only on the resources available, but also on the ability to renew management modes.

The second important result concerns the role of the information system. Managerial innovation exerts a positive and significant effect on the information system, which in turn improves managerial performance. This means that innovation does not merely introduce new rules or practices. It also leads to better information structuring, smoother data circulation, and stronger monitoring and control capabilities. In the literature, this relationship is consistent with the idea that managerial innovations create favorable conditions for a more effective use of internal information. This, in turn, facilitates organizational adaptation and decision-making. Damanpour and Aravind argue that managerial and organizational innovations affect decision systems and management programs, which play a central role in firm performance (Damanpour & Aravind, 2012).

This result has particular relevance for Moroccan SMEs, where information is often informal, fragmented, or insufficiently consolidated. When a firm introduces new steering practices, it is often compelled to formalize its monitoring tools, clarify reporting procedures, and improve the reliability of available information. The information system thus becomes a mechanism through which innovation is translated into operational efficiency. This informational mediation

confirms that managerial innovation produces greater value when it is supported by systems capable of collecting, processing, and disseminating information useful for action. In other words, innovation creates not only novelty, but also the conditions for improved organizational intelligibility.

The third and particularly strong result concerns organizational transformation. Managerial innovation exerts a highly significant effect on organization, and organization strongly influences managerial performance. This relationship is theoretically central because it shows that managerial innovation is converted into performance when it is translated into structures, responsibilities, procedures, and coordination mechanisms. Put differently, new management practices become effective only if the firm reorganizes around them. This logic is fully consistent with the work of Birkinshaw and colleagues, who emphasize that managerial innovation corresponds to a change in the way the organization is governed and coordinated.

Recent literature further confirms that managerial innovation is often inseparable from the transformation of internal structures. Mol and Birkinshaw note that research on managerial innovation has gradually shifted toward the study of its creation and diffusion mechanisms. This shift necessarily implies changes in internal practices and work organization (Mol & Birkinshaw, 2009). In this study, organizational mediation appears stronger than informational mediation. This suggests that managerial performance depends first and foremost on the firm's ability to restructure itself. This result is particularly important in SMEs, where structural adjustments may have immediate effects on role clarity, responsiveness, and consistency of action.

Another major contribution of the study is the confirmation of partial mediation. Managerial innovation affects performance directly, but also indirectly through the information system and organization. This configuration is theoretically significant because it shows that performance results from a complex causal chain rather than from a single lever. In the methodological literature on mediation in PLS-SEM, this type of result is often interpreted as evidence that intermediary variables act as conversion mechanisms between innovation and the final outcome. They do so without fully eliminating the direct effect. Here, this means that managerial innovation already improves managerial steering, but that an important share of this improvement passes through internal mechanisms of structuring.

This pattern of partial mediation is especially plausible in the SME context. The owner-manager may rapidly implement new management practices, but their lasting effectiveness depends on their integration into collective routines. Without organizational transformation, innovation risks remaining temporary or producing only limited effects. Without an appropriate information system, it may also suffer from a lack of visibility and monitoring. The combination of the two mediators therefore explains why the total effect of managerial innovation on performance is greater than its direct effect alone. This interpretation is consistent with arguments advanced by scholars who view managerial innovation as a resource that is difficult to imitate, but whose value depends on its integration into the broader organizational system (Vaccaro et al., 2012; Teece, 2007).

The complementary analyses further reinforce this interpretation. The fact that the dimensions of managerial innovation, taken individually, are not all significant in relation to performance suggests that the observed overall effect is systemic rather than elementary. In other words, performance is not generated by an isolated practice, process, or structural change, but by their articulation. This is consistent with the definition of managerial innovation, which emphasizes a combination of changes in practices, processes, and structure (Birkinshaw et al., 2008). It also helps explain why hierarchical modeling provides more meaningful insights than the separate analysis of independent dimensions.

From the standpoint of predictive validity, the PLSpredict and CVPAT results indicate that the model has a good capacity to anticipate out-of-sample observations. This is important because it strengthens the credibility of the model beyond mere statistical explanation. In management research, a useful model should not only explain observed relationships, but also demonstrate predictive value. In this case, it means that the articulation between managerial innovation, the information system, and organizational transformation is not only theoretically coherent, but also empirically robust. The model therefore shows that a high-performing SME is one that knows how to convert innovation into organization, and organization into performance.

Finally, these results have clear managerial implications. They suggest that introducing new practices is not sufficient to improve performance. SME leaders must also strengthen the quality of the information system, clarify responsibilities, formalize processes, and adapt structures. Managerial performance thus appears to be the product of a coherent set of transformations rather than the effect of an isolated initiative. This conclusion is in line with recent reflections

on the need to study managerial innovation in emerging contexts, where it may constitute a decisive engine of adaptation and competitiveness (Mol & Birkinshaw, 2009; Damanpour & Aravind, 2012).

Conclusion

This study aimed to analyze the effect of managerial innovation on the managerial performance of Moroccan SMEs, with particular attention to the mediating roles of information systems and organizational transformation. The empirical findings clearly confirm that managerial innovation constitutes an important lever for performance, both through a direct effect and through indirect effects operating via internal structuring mechanisms. This result is consistent with the literature that considers managerial innovation to be an autonomous source of organizational transformation and competitiveness, distinct from technological innovation.

Above all, the study shows that managerial performance does not result solely from the introduction of new practices. Rather, it depends on the firm's ability to translate these practices into changes in the information system and in the organization itself. Organizational mediation appears stronger than informational mediation, suggesting that the transformation of structures, responsibilities, and processes plays a central role in converting innovation into performance. This interpretation is consistent with previous analyses emphasizing that managerial and organizational innovations profoundly influence coordination modes and managerial mechanisms within firms.

From a theoretical standpoint, this study contributes to the literature on managerial innovation in several ways. First, it confirms that managerial innovation should be regarded as a central construct rather than as a secondary or peripheral variable. Second, it highlights the differentiated role of two mediating mechanisms, namely the information system and organizational transformation. This distinction provides a more refined understanding of the processes through which innovation is translated into performance. The study also contributes to research on SMEs in emerging countries by showing that the effects of managerial innovation depend on the quality of internal structures and coordination mechanisms. By demonstrating that organizational mediation is stronger than informational mediation, this research clarifies the internal conditions under which innovation becomes truly effective.

The managerial implications are equally important. The findings suggest that introducing new management practices is not sufficient in itself; such practices must be accompanied by structural reorganization, clarification of responsibilities, and improvement of the information system. In other words, performance does not arise solely from the new managerial idea, but from its alignment with the organization as a whole. For SME leaders, this means that managerial innovation should be conceived as a comprehensive process. Before adopting a new practice, firms should assess whether their information system is capable of supporting it, whether teams clearly understand their new responsibilities, and whether internal procedures allow for its effective integration. This perspective is particularly relevant for Moroccan SMEs, which often operate under resource constraints and strong dependence on the owner-manager. A successful managerial innovation is therefore one that transforms the structure without destabilizing it.

At the same time, the study presents several limitations. The cross-sectional nature of the data does not allow for a strict causal interpretation of the observed relationships, even if the statistical links remain robust. In addition, the geographical focus on SMEs located in the Souss-Massa region limits the extent to which the findings can be generalized to the Moroccan entrepreneurial landscape as a whole. Another limitation concerns the use of self-reported data, which may introduce a degree of subjectivity into the assessment of managerial practices and performance. Finally, although the dimensions of managerial innovation were considered analytically, their isolated effects were not always significant, which suggests that innovation should be approached as an integrated whole rather than as a set of independent components.

These limitations open several avenues for future research. It would be useful to replicate the study in other Moroccan regions or in other African contexts in order to compare organizational and institutional environments. A longitudinal approach would also provide a better understanding of how managerial innovation diffuses over time and progressively affects performance. Future research could further enrich the model by including additional mediating or moderating variables such as organizational culture, leadership style, digitalization, or learning capability. Qualitative investigations could also complement the quantitative approach by offering a deeper understanding of how managerial innovation is perceived, implemented, and experienced in SME contexts.

Overall, this study confirms that managerial innovation can be a powerful source of managerial performance when it is embedded in coherent informational and organizational arrangements. For Moroccan SMEs operating in increasingly uncertain and competitive environments, improving performance is not simply a matter of introducing new managerial ideas, but of ensuring that these ideas are effectively integrated into the firm's internal functioning.

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