

Impact of ERP Systems on the Roles of Management Controllers in Moroccan Public Institutions: A Quantitative Study

HILMI Yassine^{#1}, AMER Mounia^{*2}, Fatima Ezzahra ESSAHLI^{#3}

*# # Laboratory of Studies and Research in Economic Sciences and Management, National School of Business and Management of El Jadida, Chouaib Doukkali University
El Jadida, Morocco*

[1hilmi.y@ucd.ac.ma](mailto:hilmi.y@ucd.ac.ma)

[2amer.m@ucd.ac.ma](mailto:amer.m@ucd.ac.ma)

[3essahlifatimaezzahracam@gmail.com](mailto:essahlifatimaezzahracam@gmail.com)

Abstract— This study investigates the influence of Enterprise Resource Planning (ERP) systems on the roles of management controllers within Moroccan public institutions, focusing on the quantitative dimension of a broader mixed-methods research design. As public organizations increasingly undergo digital transformation, ERP systems have become key tools for information integration, process automation, and managerial support. However, empirical evidence regarding their impact on management control in developing-country public institutions remains limited. To address this gap, the study analyzes a conceptual model comprising seven hypotheses related to operational responsibilities, competencies, decision-making, collaboration, strategic capabilities, and financial transparency.

A structured questionnaire was administered to 140 professionals working in management control, finance, and administrative functions across Moroccan public institutions. Data were analyzed using SPSS and non-parametric statistical procedures to test the proposed hypotheses.

Findings indicate that ERP systems significantly influence several dimensions of management controller roles. ERP usage reduces manual tasks while strengthening analytical activities, competency development, decision-making quality, collaboration, and financial transparency. However, no statistically significant effect was found regarding strategic anticipation capacity. These results suggest that ERP systems primarily enhance operational and analytical dimensions of management control, while their strategic contribution remains limited.

Overall, this study highlights the transformative potential of ERP systems within Moroccan public institutions and contributes to ongoing discussions on digital transformation in management control, while offering practical implications for improving ERP-supported managerial practices.

Keywords— ERP systems; Management controllers; Public institutions; Digital transformation; Management control practices.

I. INTRODUCTION

Public-sector organizations are undergoing major transformations driven by digitalization and increasing demands for transparency, accountability, and performance. In this context, Enterprise Resource Planning (ERP) systems have emerged as strategic infrastructures supporting information integration, data centralization, and decision-making processes. Their implementation has significantly reshaped managerial practices through process automation and real-time access to structured information.

Beyond their technical role, ERP systems increasingly influence management control functions. Traditionally focused on budgeting, reporting, and variance analysis, management controllers are now expected to contribute to decision-making, cross-functional coordination, and organizational performance. Consequently, their role is evolving from information producers toward analytical advisors and business partners.

Although previous studies suggest that ERP systems improve information availability and analytical capabilities (Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Chapman & Kihn, 2009), empirical findings remain mixed and context-dependent. These inconsistencies underline the importance of examining ERP-related transformations in developing-country public institutions, where governance structures and institutional environments differ from private-sector contexts.

In Morocco, ERP implementation forms part of broader modernization initiatives aimed at improving transparency and organizational performance. However, empirical evidence regarding its impact on management controller roles remains limited. Therefore, this study examines how ERP usage affects responsibilities, competencies, decision-making, collaboration, strategic capabilities, and financial transparency among management controllers in Moroccan public institutions. Based on a quantitative study involving 140 respondents, this research contributes to ongoing discussions on digital transformation in management control and provides practical implications for public-sector governance.

II. LITERATURE REVIEW

A. ERP Systems and Digital Transformation in Public Organizations

Enterprise Resource Planning (ERP) systems have progressively evolved from operational integration tools into strategic infrastructures supporting organizational coordination, performance monitoring, and managerial decision-making. Initially designed to integrate accounting, logistics, and human resource processes, ERP systems now facilitate real-time access to information and support data-driven organizational practices (Monk & Wagner, 2012; Vial, 2019).

In public organizations, ERP implementation is strongly associated with modernization reforms inspired by New Public Management principles emphasizing efficiency, transparency, and accountability (Pollitt & Bouckaert, 2017). Through centralized platforms, ERP systems improve reporting reliability, facilitate coordination, and support evidence-based decision-making processes (Chapman & Kihn, 2009).

However, ERP implementation in public institutions differs from private-sector contexts due to institutional constraints, regulatory complexity, and organizational resistance to change. Therefore, ERP systems should be viewed not merely as technological tools but as organizational transformation mechanisms capable of reshaping managerial practices and information flows (Knudsen, 2020).

B. Evolution of Management Controller Roles in Digital Environments

The role of management controllers has undergone substantial transformation, evolving from a technical function centered on budgeting and reporting toward more strategic and advisory responsibilities. Traditional perspectives viewed controllers mainly as providers of performance information and financial supervision tools (Anthony, 1965).

Recent literature highlights the emergence of hybrid professional profiles combining technical, analytical, and communication competencies. In digitally integrated environments, management controllers increasingly support strategic planning, managerial decision-making, and cross-functional coordination (Burns & Baldvinsdottir, 2005).

This evolution reflects a transition from the traditional “scorekeeper” role toward a “business partner” role. Controllers are increasingly expected to interpret organizational data, support evidence-based decisions, and contribute to broader governance processes in digitally transformed organizations.

C. ERP Systems and the Transformation of Management Control Practices

ERP systems facilitate information integration and automate routine accounting activities, improving access to standardized information and strengthening analytical capabilities (Scapens & Jazayeri, 2003). Such systems reduce manual reporting tasks and enable management controllers to focus on higher-value activities.

Previous studies suggest that ERP implementation enhances managerial decision-making and improves collaboration across organizational departments through integrated information sharing mechanisms (Dechow & Mouritsen, 2005; Chapman & Kihn, 2009). These developments contribute to redefining the controller’s role within organizational processes.

Nevertheless, empirical findings remain mixed. While some studies emphasize substantial professional transformation following ERP implementation, others argue that technological integration alone is insufficient

without complementary organizational changes (Granlund & Malmi, 2002). These inconsistencies justify further investigation into ERP-related transformations within Moroccan public institutions.

III. CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

The growing integration of Enterprise Resource Planning (ERP) systems within public organizations has progressively transformed management control practices by reshaping information processing, organizational coordination, and performance monitoring mechanisms. Through centralized platforms integrating financial and operational information, ERP systems redefine managerial responsibilities and alter the professional positioning of management controllers.

ERP usage is expected to influence several dimensions of management controller roles, including responsibilities, competencies, decision-making, collaboration, strategic capabilities, and financial transparency. To capture these transformations, this study proposes a multidimensional conceptual model structured around seven hypotheses examining the impact of ERP systems within Moroccan public institutions.

A. ERP Systems and the Transformation of Professional Roles and Practices

ERP systems automate routine accounting and reporting activities, reducing manual processing and improving information accessibility. Consequently, management controllers increasingly shift from transactional tasks toward analytical and interpretative responsibilities. Previous studies suggest that ERP implementation enhances involvement in performance monitoring and decision-support activities (Scapens & Jazayeri, 2003; Dechow & Mouritsen, 2005).

ERP implementation also requires new competencies related to system use, analytical skills, and digital communication. Controllers are increasingly expected to combine traditional financial expertise with technological and cross-functional capabilities (Granlund, 2011; Burns & Baldvinsdottir, 2005). Furthermore, real-time access to reliable information strengthens decision-making processes and facilitates organizational adaptation through standardized procedures and integrated workflows.

H1: ERP system usage significantly modifies management controllers' responsibilities.

H2: ERP system usage significantly influences required competencies.

H3: ERP system usage improves management controllers' decision-making processes.

H4: ERP system usage enhances adaptation to organizational requirements.

B. ERP Systems, Organizational Integration and Governance Transformation

ERP systems facilitate information sharing and improve coordination among organizational actors involved in planning, budgeting, and performance management. Such integration strengthens cross-functional collaboration and supports more effective governance mechanisms (Chapman & Kihn, 2009).

ERP platforms also provide structured information that may support forecasting and strategic recommendations. However, previous studies report mixed findings regarding the relationship between ERP systems and strategic anticipation, particularly in highly regulated environments (Granlund & Malmi, 2002). In addition, ERP systems contribute to financial transparency by strengthening traceability and improving reporting reliability.

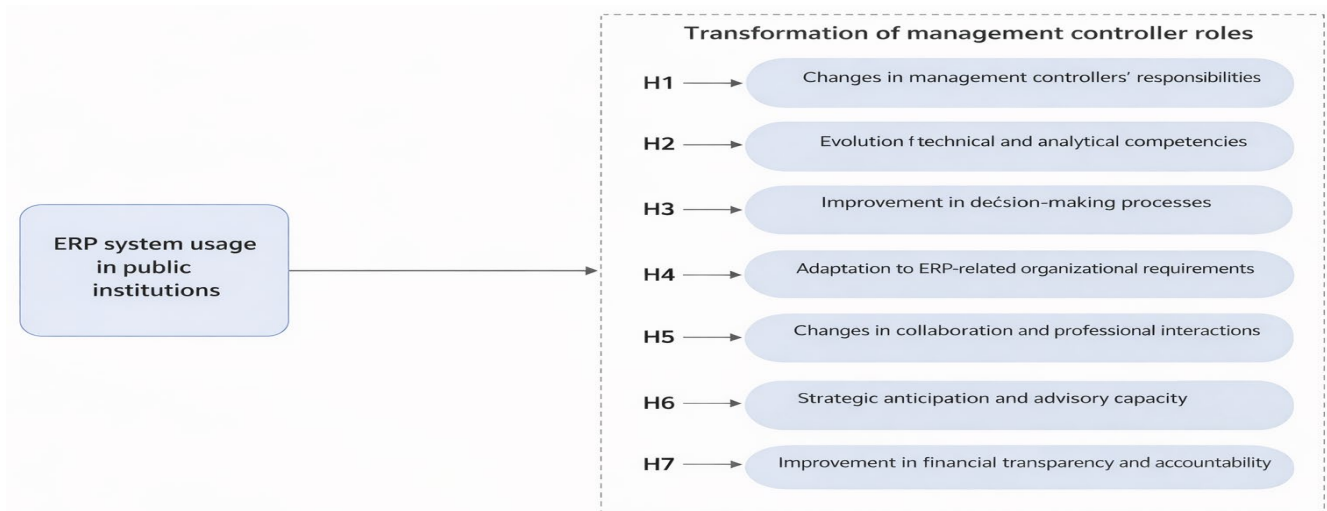
H5: ERP system usage strengthens collaboration among organizational actors.

H6: ERP system usage improves strategic anticipation capacity.

H7: ERP system usage enhances financial transparency and accountability.

C. Conceptual Model

Based on these theoretical arguments, this study proposes a conceptual model in which ERP system usage represents the explanatory variable affecting several dimensions of management controller role transformation. The model includes operational responsibilities, competencies, decision-making, organizational adaptation, collaboration, strategic anticipation, and financial transparency. Figure 1 presents the conceptual structure of the proposed research framework.

Figure 1. Conceptual model of the influence of ERP system usage in public institutions on the transformation of management controller roles.

Source: Authors

IV. RESEARCH METHODOLOGY

A. Research Design and Data Collection

This study adopts a quantitative research design to examine the influence of Enterprise Resource Planning (ERP) systems on the evolving roles of management controllers within Moroccan public institutions. A hypothetico-deductive approach consistent with a post-positivist perspective was adopted to test a conceptual model structured around seven hypotheses related to professional role transformation.

Data were collected through a structured questionnaire administered to professionals working in management control, finance, and administrative functions across Moroccan public organizations. The instrument was developed based on previous literature addressing ERP implementation and management control transformation.

The questionnaire measured seven dimensions associated with ERP usage, including operational responsibilities, competencies, decision-making, organizational adaptation, collaboration, strategic anticipation, and financial transparency. Responses were assessed using Likert scales. The survey covered diverse sectors such as energy, infrastructure, education, health services, and governmental institutions, strengthening the representativeness of the dataset.

B. Sample Characteristics

The empirical analysis is based on a sample of 140 respondents employed in management control, finance, and administrative functions within Moroccan public institutions. Participants represented different organizational structures, including public administrative institutions and state-supervised agencies.

Respondents exhibited diverse educational and professional profiles. Nearly half held Master's degrees or equivalent qualifications, while others had Bachelor or doctoral training. Professional experience ranged from early-career profiles to senior professionals.

The sample also reflected territorial diversity, including respondents from major Moroccan regions such as Rabat-Salé-Kénitra, Casablanca-Settat, Marrakech-Safi, Fès-Meknès, and Tanger-Tétouan-Al Hoceïma.

C. Measurement and Data Analysis Procedures

Data analysis was conducted using SPSS statistical software. Given the characteristics of the dataset, non-parametric procedures were selected to examine relationships between ERP usage and management controller role transformation.

Normality tests using Kolmogorov-Smirnov and Shapiro-Wilk statistics revealed significant deviations from normality, justifying the use of non-parametric methods. Consequently, the Mann-Whitney U test was employed to compare ERP users and non-users across the seven dimensions.

To complement significance testing, the Hodges–Lehmann estimator was also used to assess the magnitude and direction of median differences. This approach provided a more robust interpretation of ERP effects on management controller role transformation.

V. EMPIRICAL RESULTS

A. Normality Testing and Choice of Statistical Procedures

Prior to hypothesis testing, the distribution of dependent variables was examined to determine the most appropriate statistical procedures. Since the variables were measured using Likert scales, normality assumptions were assessed through Kolmogorov–Smirnov and Shapiro–Wilk tests.

Table 1. Results of Kolmogorov–Smirnov and Shapiro–Wilk normality tests for role transformation variables

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistiques	ddl	Sig.	Statistiques	ddl	Sig.
Changes in responsibilities	,172	140	<,001	,905	140	<,001
Evolution of competencies	,224	140	<,001	,918	140	<,001
Improvement in decision-making	,224	140	<,001	,918	140	<,001
Organizational adaptation	,184	140	<,001	,894	140	<,001
Collaboration and communication	,218	140	<,001	,876	140	<,001
Strategic anticipation capacity	,192	140	<,001	,911	140	<,001
Financial transparency	,186	140	<,001	,867	140	<,001

Source: SPSS

Results revealed significant deviations from normality across all variables, justifying the use of non-parametric procedures. Consequently, the Mann–Whitney U test was selected to compare ERP users and non-users across the seven dimensions. In addition, the Hodges–Lehmann estimator was used to evaluate the magnitude and direction of median differences, strengthening the interpretation of ERP effects on management control practices.

B. Significant Effects of ERP Systems on Management Controller Roles:

Empirical findings revealed statistically significant relationships between ERP usage and several dimensions of management controller role transformation.

Table 2. Mann–Whitney U test results for the impact of ERP system usage on management controller role transformation:

	Dimension	Test	Sig. ^{a,b}	Décision
2	Changes in responsibilities	Mann–Whitney U	<,001	Null hypothesis rejected
2	Evolution of competencies	Mann–Whitney U	<,001	Null hypothesis rejected
2	Improvement in decision-making	Mann–Whitney U	<,001	Null hypothesis rejected
2	Organizational adaptation	Mann–Whitney U	<,001	Null hypothesis rejected
2	Collaboration and communication	Mann–Whitney U	<,001	Null hypothesis rejected
2	Financial transparency	Mann–Whitney U	<,001	Null hypothesis rejected

a. The significance level is .05.

b. Asymptotic significance is reported.

Source: SPSS

Results indicate that ERP systems significantly reduce routine activities and strengthen analytical responsibilities. ERP implementation also contributes to competency development, improved decision-making, organizational adaptation, and stronger collaboration among organizational actors. In addition, ERP usage enhances transparency and accountability by improving reporting reliability and traceability mechanisms. Overall, hypotheses H1, H2, H3, H4, H5, and H7 were supported.

C. Absence of a Significant Effect of ERP Systems on Strategic Anticipation Capacity

Table 3. Mann-Whitney U test results for the impact of ERP system usage on management controller role transformation:

Dimension	Test	Sig. ^{a,b}	Décision
2 Strategic anticipation capacity	Mann-Whitney U	.063	Null hypothesis not rejected

a. The significance level is .05.

b. Asymptotic significance is reported.

c. Asymptotic significance corrected for continuity (Yates' correction).

Source: SPSS

Contrary to expectations, no statistically significant relationship was observed between ERP usage and strategic anticipation capacity ($p = .063$). Although ERP systems improve access to reliable information, this does not automatically translate into stronger participation in strategic decision-making processes.

This finding suggests that ERP systems improve informational and analytical capabilities but remain insufficient to generate strategic transformation without complementary organizational mechanisms. Factors such as governance structures, organizational culture, and participation in strategic planning processes may play a decisive role. Therefore, ERP implementation appears to be a necessary but insufficient condition for strengthening the strategic advisory role of management controllers.

VI. DISCUSSION

This study examined the influence of Enterprise Resource Planning (ERP) systems on the evolution of management controller roles within Moroccan public institutions. Findings indicate that ERP adoption significantly affects six dimensions of role transformation, namely operational responsibilities, competencies, decision-making, organizational adaptation, collaboration, and financial transparency. However, no statistically significant effect was observed regarding strategic anticipation capacity. These results highlight the differentiated nature of ERP-enabled transformations and support previous research emphasizing the role of digital infrastructures in reshaping managerial practices (Vial, 2019).

A. ERP Systems as Drivers of Operational and Analytical Role Transformation

The findings reveal that ERP systems significantly transform operational responsibilities by reducing routine reporting activities and strengthening analytical tasks. This supports previous studies suggesting that ERP implementation facilitates the transition from transactional work toward value-added management control activities (Scapens & Jazayeri, 2003; Dechow & Mouritsen, 2005). ERP usage also contributes to competency development by encouraging hybrid profiles combining technical, analytical, and communication capabilities (Burns & Baldvinsdottir, 2005; Granlund, 2011).

Results further indicate that ERP systems improve decision-making through real-time access to integrated and reliable information. These findings confirm the role of ERP platforms as decision-support infrastructures that reduce information asymmetries and reinforce evidence-based managerial practices (Chapman & Kihn, 2009). Overall, ERP adoption primarily strengthens the analytical dimension of management control.

B. ERP Systems as Instruments of Organizational Integration and Governance Improvement

The study also demonstrates that ERP systems improve collaboration and adaptation to organizational requirements by facilitating information sharing and coordination across departments. Such findings support previous research emphasizing the integrative role of ERP environments in improving organizational responsiveness and reducing functional silos (Ruivo et al., 2020).

In addition, ERP systems significantly enhance transparency and accountability by strengthening traceability mechanisms and reporting reliability. These findings suggest that ERP platforms act not only as technological tools but also as governance-support infrastructures contributing to institutional modernization within Moroccan public organizations.

C. Limited Impact on Strategic Anticipation Capacity

Despite significant improvements across operational and analytical dimensions, ERP systems did not significantly enhance strategic anticipation capacity. This finding suggests that technological integration alone is insufficient to generate strategic transformation, which supports Granlund and Malmi (2002).

Strategic positioning depends not only on access to information but also on organizational culture, governance arrangements, and participation in strategic planning processes. Consequently, ERP systems appear to strengthen operational efficiency and analytical coordination more than strategic advisory functions within the current public-sector context.

VII. CONCLUSIONS

This study examined the influence of Enterprise Resource Planning (ERP) systems on the evolution of management controller roles within Moroccan public institutions through a quantitative research design based on data collected from 140 professionals working in management control, finance, and administrative functions. The empirical results confirm that ERP system usage significantly affects several dimensions of management controller role transformation, including operational responsibilities, competency development, decision-making processes, organizational adaptation, collaboration mechanisms, and financial transparency. However, the findings also reveal that ERP usage does not significantly enhance strategic anticipation capacity, suggesting that digital transformation processes in public organizations remain primarily operational and analytical rather than fully strategic.

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