Ibrahim and Masaud, (2025). Administrative Development and Decision-Making Effectiveness: The Mediating Role of Managerial Skills in the Libyan Industrial Sector. International Journal of Business Society, 9 (3), 1056-1065

Journal Homepage: www.ijo-bs.com

International Journal of Business Society

Contents lists available at: https://www.ijo-bs.com/issue.html

Administrative Development and Decision-Making Effectiveness: The Mediating Role of Managerial Skills in the Libyan Industrial Sector

Ahmed Ali F Ibrahim1; Khairi Ahmed R Masaud2

[1]Iqra Business School, Geomatika University, Kuala Lumpur, Malaysia. Email: (alfrtwriahmed@yahoo.com)
[2]Iqra Business School, Geomatika University, Kuala Lumpur, Malaysia. Email: (Khairi@geomatika.edu.my)

Information of Article

Article history:
Received: 10 Feb 2025
Revised: 11 Feb 2025
Accepted: 29 Mar 2025
Available online: 30 Mar 2025

Keywords:
Administrative Development
Decision-Making, Managerial Skills, Mediation, Libyan Industry

ABSTRACT

This study examines how administrative development impacts decision-making effectiveness in Libya's industrial sector, with managerial skills as a mediator. Drawing on organizational learning theory, it addresses under-researched administrative reforms in Arab economies through a cross-sectional analysis of 205 professionals in Libya's cement/construction industries. Structural equation modeling reveals administrative development—particularly incentive systems, training programs, and procedural simplification—enhances decision-making via direct and mediated effects (managerial competencies). Incentive systems showed the strongest influence, while managerial skills proved critical for translating administrative inputs into outcomes. The findings provide an empirical framework for post-conflict settings, advocating integrated administrative-leadership reforms to optimize industrial performance.

1. Introduction

Effective administrative development is foundational to innovation, competitiveness, and sustainable organizational growth, particularly in the industrial sector where rapid decision-making and efficiency are critical (Kharlamova et al., 2021). In Libya, especially within the cement and construction materials industries, administrative frameworks remain underdeveloped, characterized by outdated work procedures, limited investment in human resources, and an absence of structured decision-making models. These deficiencies have constrained productivity, innovation, and responsiveness to market changes, intensifying the need for systemic reform. Compounding the issue is the limited empirical research examining how administrative structures influence decision-making outcomes through the mediating role of managerial capabilities an area that has gained attention globally but remains underexplored in the Libyan context. Studies across diverse economic settings have demonstrated that managerial skills ranging from technical proficiency to strategic decision-making can significantly influence organizational performance (Hijuelos-Pupo et al., 2020; Żukowski, 2022). Yet, their role as an intermediary in the administrative decision-making nexus remains largely theoretical in Arab and North African industrial settings.

This study addresses this research gap by investigating the extent to which administrative development, via its key components training, procedural simplification, and incentive systems impacts decision-making effectiveness in the Libyan industrial sector, and whether managerial skills mediate this relationship. Prior research has emphasized the critical contribution of skilled managers in enhancing decision quality, regulatory compliance, and organizational responsiveness (Alex, 2020; Eigenstuhlher et al., 2023), suggesting that strengthening these competencies may offer a leverage point for broader institutional reforms. Consequently, the research is guided by four questions: How does administrative development influence decision-making effectiveness? How do its components affect managerial skill development? What is the direct impact of managerial skills on decision-making? And finally, do managerial skills mediate the relationship between administrative development and decision-making effectiveness? The study aims to contribute theoretically to public administration and management literature by integrating managerial mediation into models of administrative effectiveness, and practically by informing Libyan policymakers and industrial leaders about targeted reforms. The remainder of the paper is organized into literature review, methodology, results, discussion, and conclusion.

2. Literature Review

The conceptual foundation of administrative development has evolved significantly over the past few decades, reflecting a shift from mechanistic bureaucratic efficiency to dynamic systems capable of enabling strategic change and innovation. In industrial sectors, especially those situated within transitional economies such as Libya, administrative development plays a critical role in shaping organizational responsiveness, policy execution, and long-term competitiveness. Administrative development in this context refers not only to procedural enhancement and regulatory simplification but also to strategic investments in human capital and incentive structures (Kharlamova et al., 2021). However, while such developments have been theorized within global frameworks, empirical applications in post-conflict economies remain

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

limited, particularly in industrial sectors where state capacity is still under reconstruction (Haque et al., 2021). Existing studies tend to approach administrative development either as a static governance mechanism or a technocratic reform initiative, but rarely as an interactive system embedded within managerial decision-making structures. The theoretical underpinnings for analyzing administrative development are best understood through systems theory and contingency theory. Systems theory conceptualizes organizations as open systems that must adapt continuously to environmental inputs, emphasizing feedback loops and interdependence between subsystems (Kharlamova et al., 2021). Contingency theory complements this view by asserting that no single administrative model fits all organizations; instead, success depends on alignment between internal capabilities such as HR training or work simplification and external variables like industry dynamics or political instability. Both perspectives are crucial for interpreting Libya's industrial sector, where administrative systems are often decoupled from strategic decision-making due to institutional fragmentation or outdated procedural norms. Within this evolving landscape, decision-making effectiveness has become a critical dimension of performance. In the classical model, decision-making involves sequential stages: problem identification, analysis of alternatives, evaluation, and implementation. However, bounded rationality theory, originally developed by Herbert Simon, provides a more realistic model for administrative decision-making under constraints of limited information, political ambiguity, and time pressure. In the Libyan industrial context, where data systems remain underdeveloped, decision-making is often intuitive or influenced by informal networks, making formal decision models less predictive. More contemporary perspectives including organizational coaching (López et al., 2020) and behavioral decision theories stress the importance of integrating emotional intelligence and leadership support to ensure assertive and adaptive choices. Thus, decision-making effectiveness is not merely a rational-technical process but a socially embedded function contingent on managerial agency and contextual intelligence.

It is precisely at this intersection that managerial skills emerge as a mediating mechanism. While administrative development provides the structural inputs and decision-making represents the functional outcome, it is managerial capacity that enables or constrains the translation of one into the other. Classical frameworks such as Katz's typology (technical, human, and conceptual skills) and Mintzberg's managerial roles remain relevant in distinguishing the layers of expertise required at different organizational levels. However, contemporary empirical studies provide nuanced insights that go beyond these typologies. For example, Hijuelos-Pupo et al. (2020) emphasize the need for systemic training frameworks tailored to institutional contexts, while Alex (2020) and Arwan (2022) provide evidence linking managerial competency to both cultural transformation and performance outcomes in Latin American and Southeast Asian settings, respectively.

A critical gap in the literature pertains to the dynamic nature of managerial skill development and its contextual embeddedness. Żukowski (2022) highlights the uneven professionalization of management across industries, arguing for a new public management ethos that emphasizes autonomy, accountability, and citizen orientation. Similarly, Kurniawati (2020) presents evidence that managerial skills, though statistically insignificant in isolation, are functionally significant when aligned with other institutional mechanisms such as audit controls and diversification policies. This reinforces the importance of examining skills not as standalone attributes, but as embedded capabilities shaped by administrative context, governance structures, and strategic intent. Moreover, recent international studies confirm that managerial ability correlates positively with compliance, efficiency, and innovation especially when these abilities are cultivated through continuous education and experiential learning (Eigenstuhler et al., 2023; Unurhoro & Doris, 2022). Despite this robust body of global literature, there remains a stark absence of localized frameworks that incorporate Libya's industrial context. The majority of studies from the MENA region remain descriptive, focusing on generalized administrative constraints without isolating the mediating variables that drive or inhibit decision-making effectiveness. While Amhalhal et al. (2022) highlight the use of financial and non-financial performance measures in Libyan enterprises, their work does not address how managerial competencies interact with administrative systems to influence outcomes. Similarly, Elayeb and Tarofder (2022) discuss the behavioral environment's effect on productivity in the oil sector but overlook the interplay between administrative reform and leadership development. Consequently, there is a lack of empirically validated models that capture the causal chain from administrative inputs to decision-making outcomes through the lens of managerial mediation.

To address this gap, the current study adopts an integrated theoretical framework combining Organizational Learning Theory (Schwandt & Marquardt) and Decision-Making Theory (Simon; Chankong & Haimes). Organizational Learning Theory provides a lens for understanding how institutions internalize knowledge and adapt behaviorally over time, particularly through feedback-rich mechanisms such as training, mentoring, and performance evaluation (Hijuelos-Pupo et al., 2020; Ibene, 2020). Decision-Making Theory, on the other hand, introduces a normative-analytical component that allows for the assessment of process effectiveness under conditions of uncertainty. These frameworks, when synthesized, suggest a testable conceptual model in which administrative development influences decision-making directly and indirectly, with managerial skills functioning as the primary mediating variable.

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

3. Methodology

The methodological design of this study demonstrates a solid foundational approach; however, to elevate it to doctoral standards, several enhancements are necessary in terms of conceptual clarity, methodological rigor, and justification of choices. Initially, the decision to employ a descriptive-analytical, cross-sectional quantitative design is appropriate given the study's objective to examine relationships between variables at a specific point in time. Nevertheless, the justification for this choice must be explicitly grounded in relevant scholarly traditions, highlighting that cross-sectional methods are well-suited for exploratory relationships and hypothesis testing in social science research (Kharlamova et al., 2021). The population of 598 employees across Libya's industrial sector is significant, and the application of Sekaran's sampling table to arrive at a sample size of 234 respondents reflects an informed methodological decision. However, the description would benefit from more detail regarding how the random sampling procedure was executed to ensure representativeness and reduce sampling bias. For instance, specifying whether simple, stratified, or cluster sampling techniques were employed would enhance transparency and reproducibility (Hijuelos-Pupo et al., 2020).

The instrument design section appropriately notes the use of a structured questionnaire with Likert-scale items measuring three constructs: administrative development, managerial skills, and decision-making effectiveness. However, it is essential to clarify whether the items were adapted from established scales or developed de novo. If the latter, additional detail is needed on how the constructs were operationalized and validated theoretically. Moreover, mentioning the number of items per construct, their sources (e.g., from prior validated studies such as Alex, 2020 or Arwan, 2022), and the scale structure (e.g., 5-point vs. 7-point Likert) would enhance methodological precision and comparability. The validity and reliability procedures outlined expert review for content validity and pilot testing with 30 participants are commendable. However, doctoral-level work requires further elaboration. Specifically, the criteria used for expert evaluation, the demographic profile of pilot respondents, and a more nuanced interpretation of Cronbach's Alpha scores (>0.80) should be discussed. While values above 0.70 are generally acceptable, values nearing or exceeding 0.90 might indicate redundancy among items, which should be noted and evaluated (Unurhoro & Doris, 2022).

The study's data analysis tools SPSS for descriptive statistics and SmartPLS 4 for Structural Equation Modeling (SEM) are appropriate for the proposed analytical framework. Nevertheless, the rationale for using Partial Least Squares SEM over Covariance-Based SEM (CB-SEM) requires justification. PLS-SEM is more suited for exploratory models, smaller sample sizes, and non-normal data (Haque et al., 2021), but these conditions must be established. Additionally, the planned use of mediation analysis should include a brief explanation of the specific approach (e.g., bootstrapping) to test indirect effects, following procedures recommended in the literature.

4. Findings

4.1 Multiple Linear Correlation Test

Table 4 presents the results of the multicollinearity assessment among the independent variables using Variance Inflation Factor (VIF) and Tolerance values. The VIF values range from 1.285 to 3.201, all of which fall within the commonly accepted threshold of 5.0, indicating that multicollinearity is not a significant concern in the dataset. The highest VIF is associated with Human Resource Training (3.201), suggesting a moderate correlation with other predictors, but not to an extent that threatens the stability or interpretability of the regression coefficients. The corresponding Tolerance values further support this conclusion. While Work Procedure Simplification has the lowest tolerance at 0.295, which approaches the lower boundary of concern (generally 0.2), it remains within acceptable limits. All other variables demonstrate satisfactory tolerance levels, reinforcing the reliability of including these predictors in the structural model. Overall, the multicollinearity test confirms that each variable contributes uniquely to the model and supports the robustness of the forthcoming path analysis.

Table: 1 Internal Correlation Among Independent Study Variables

Independent Study Variables	VIF	Tolerance
Human Resource Training	3.201	0.762
Work Procedure Simplification	1.381	0.295
Effective Incentive System	1.285	0.381
Managerial Skill Development	2.157	0.522

4.2 Measurement Model Evaluation

The measurement model evaluation serves to verify the adequacy and integrity of the constructs prior to structural path analysis. This section begins by presenting the descriptive statistics of the study variables and visually mapping the measurement scales to confirm the factor structure. It then assesses the internal consistency of each construct using Cronbach's Alpha and tests convergent validity through AVE scores. Finally, factor loadings and discriminant validity are

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

examined to ensure that each latent variable is both conceptually distinct and empirically robust, thereby validating the model's suitability for further analysis.

4.2.1 Descriptive Statistics

Table 5 provides an overview of the central tendencies and dispersion for each study variable. The mean values indicate generally favorable perceptions across all constructs, with Managerial Skill Development (M = 4.074) and Decision-Making Effectiveness (M = 3.913) receiving the highest ratings. This suggests respondents perceive a strong presence of these capabilities within their organizations. In contrast, Human Resource Training shows the lowest mean (M = 3.493) and the highest standard deviation (SD = 0.826), implying greater variability and potential inconsistency in its implementation across the sample. While the data presentation is clear, the interpretation could benefit from stronger integration with the study's objectives. For example, the higher consistency in responses for Managerial Skill Development may suggest more standardized or universally accepted practices, while the variability in training could signal institutional disparities. These patterns offer early indications of which dimensions might exert stronger influence in the structural model and should be more critically contextualized within the broader analytical framework.

Table: 2 Descriptive Statistics of the Study Variables

Study Variables	Number of Participants	Mean	Standard Deviation
Human Resource Training	205	3.493	0.826
Work Procedure Simplification	205	3.610	0.405
Effective Incentive System	205	3.583	0.623
Managerial Skill Development	205	4.074	0.217
Decision-Making Effectiveness	205	3.913	0.374

4.2.2 Measurement Scales of the Study Model

Figure 1 illustrates the measurement model, highlighting the standardized factor loadings and the relationships among the study's core constructs: Human Resource Training (HRT), Work Procedure Simplification (SWP), Effective Incentive System (EIS), Development of Managerial Skills (DMS), and Effectiveness of Decision-Making (EDM). Each latent variable is measured by multiple indicators, all of which demonstrate acceptable loadings, generally exceeding the recommended 0.60 threshold. This reflects strong construct validity. Notably, the constructs HRT, SWP, and EIS load effectively onto DMS, indicating their foundational contribution to managerial skill development. Similarly, DMS is a strong predictor of EDM, aligning well with the theoretical assumptions of the model.

The R^2 values embedded in the latent variable circles indicate the explanatory power of the exogenous constructs. For instance, 79.1% of the variance in Managerial Skill Development is explained by HRT, SWP, and EIS collectively, while 77.3% of the variance in Decision-Making Effectiveness is accounted for by both administrative development dimensions and managerial skills. These values suggest a robust model with significant predictive strength. Furthermore, the directional arrows and standardized regression weights between constructs provide clear evidence of the hypothesized relationships being tested, with visually distinct pathways confirming both direct and mediating effects as part of the structural equation modeling process.

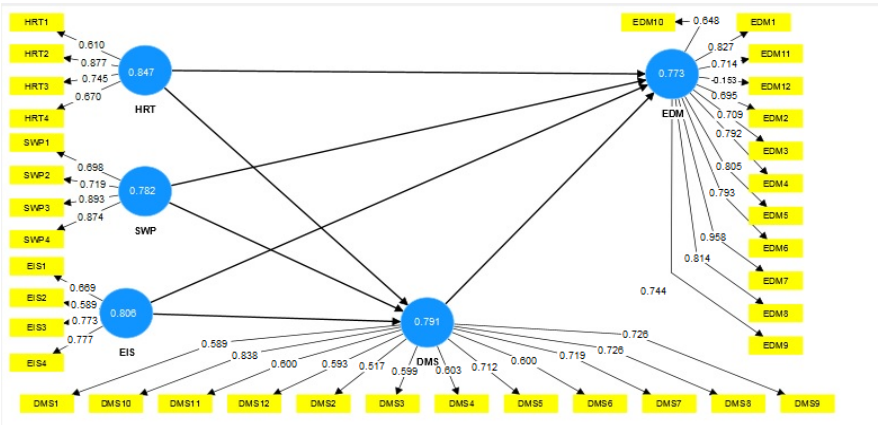

Figure: 1 Model Measurement Scales

4.2.3 Reliability Testing

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

The results presented in Table 6 demonstrate an overall satisfactory level of internal consistency across the study's constructs. Each variable shows a Cronbach's Alpha above the conventional threshold of 0.70, indicating that the measurement items used are statistically reliable. Notably, Human Resource Training exhibits the highest reliability (α = 0.847), confirming the coherence of the items within that construct. Similarly, the Effective Incentive System (α = 0.806) and Work Procedure Simplification (α = 0.782) also reflect strong internal consistency, affirming the robustness of their operationalization within the instrument. While Managerial Skills Development and Decision-Making Effectiveness have slightly lower alpha values (0.791 and 0.773, respectively), these remain well within acceptable limits, especially considering the larger number of items in each scale. However, future studies may consider conducting exploratory or confirmatory factor analysis to further validate the dimensionality of these longer constructs. Overall, the reliability findings provide a solid foundation for subsequent analyses, supporting the internal consistency of the instrument and justifying the use of these variables in testing the study's conceptual model.

Table: 3 Reliability Testing

No.	Variables	Number of Items	Cronbach's Alpha
1	Human Resource Training	4	0.847
2	Work Procedure Simplification	4	0.782
3	Effective Incentive System	4	0.806
4	Managerial Skills Development	12	0.791
5	Decision-Making Effectiveness	12	0.773

4.2.4 Convergent Validity Test

The results presented in Table 7 indicate that all constructs in the study exhibit acceptable levels of convergent validity, as each Average Variance Extracted (AVE) exceeds the commonly accepted threshold of 0.50. The Effective Incentive System dimension recorded the highest AVE at 0.704, signifying strong internal consistency and indicator convergence. Work Procedure Simplification and Human Resource Training also demonstrated satisfactory AVE values of 0.632 and 0.593 respectively, confirming that the observed variables reliably represent their latent constructs. With regard to the mediating and dependent variables, the AVE for Managerial Skills Development was 0.612, while Decision-Making Effectiveness showed a slightly lower but still acceptable value of 0.576. Though the AVE for the dependent variable is the lowest among the constructs, it remains within the accepted range, indicating a valid measurement structure. Overall, the convergent validity test confirms that the measurement model is statistically sound and supports further analysis within the structural model framework.

Table: 4 Convergent Validity Test

Variable	Dimensions	Number of Items	AVE
Independent Variable	Human Resource Training	4	0.593
	Work Procedure Simplification	4	0.632
	Effective Incentive System	4	0.704
Mediating Variable	Managerial Skills Development	12	0.612
Dependent Variable	Decision-Making Effectiveness	12	0.576

4.2.5 Factor Analysis Results

The results of the factor analysis, as illustrated in Table 8, confirm the successful loading of each item onto its corresponding latent construct, supporting the structural coherence of the measurement model. All items related to Human Resource Training (HRT1–HRT4) exhibited acceptable factor loadings, ranging from 0.61 to 0.877, with HRT2 demonstrating the strongest association. Similarly, the four indicators for Work Procedure Simplification (SWP1–SWP4) loaded well on their intended factor, particularly SWP3 and SWP4, which exceeded 0.87, indicating high internal consistency. The Effective Incentive System construct also revealed robust item loadings (0.589 to 0.777), confirming the construct's dimensional stability.

For the mediating variable, Managerial Skill Development, all 12 items (DMS1–DMS12) showed satisfactory loadings, the majority falling above 0.60, which supports their inclusion in the model. The dependent variable, Decision-Making Effectiveness, demonstrated particularly strong factor loadings, with several items (e.g., EDM7 at 0.958 and EDM12 at 0.856) indicating excellent internal alignment with the latent construct. Overall, the factor structure reflects a high level of discriminant and convergent validity across all variables, reinforcing the reliability of the model and the appropriateness of the instrument used for the Libyan industrial context.

Table: 5 Factor Analysis Results

Item Code	Human Resource Training	Work Procedure Simplification	Effective Incentive System	Managerial Skill Development	Decision-Making Effectiveness

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

HRT1	0.61				
HRT2	0.877				
HRT3	0.745				
HRT4	0.67				
SWP1		0.698			
SWP2		0.719			
SWP3		0.893			
SWP4		0.874			
EIS1			0.669		
EIS2			0.589		
EIS3			0.773		
EIS4			0.777		
DMS1				0.589	
DMS2				0.517	
DMS3				0.599	
DMS4				0.603	
DMS5				0.712	
DMS6				0.6	
DMS7				0.719	
DMS8				0.726	
DMS9				0.726	
DMS10				0.838	
DMS11				0.6	
DMS12				0.593	
EDM1					0.827
EDM2					0.695
EDM3					0.709
EDM4					0.792
EDM5					0.805
EDM6					0.793
EDM7					0.958
EDM8					0.814
EDM9					0.744
EDM10					0.648
EDM11					0.714
EDM12					0.856

4.2.6 Discriminant Validity Test

Table 9 presents the results of the discriminant validity test using the Fornell-Larcker criterion, AVE for each construct is compared against its correlations with other constructs. The diagonal values represent the square roots of AVEs, all of which exceed 0.70, confirming that each construct shares more variance with its own indicators than with any other construct. For example, the square root of AVE for Decision-Making Effectiveness is 0.873, which is greater than its correlations with other constructs, such as Human Resource Training (0.348) and Managerial Skill Development (0.173). This supports the discriminant validity of the dependent variable.

Nonetheless, while discriminant validity is generally acceptable, there are moderate correlations between some constructs, particularly between Simplification of Work Procedures and Development of Managerial Skills (0.598), suggesting potential conceptual overlap. Although not problematic, it might benefit the discussion to further elaborate on how these constructs were operationally defined and measured to reassure that their theoretical distinctions are maintained. Overall, the discriminant validity results validate the independence of the study's latent variables, thereby supporting the reliability of subsequent structural model testing.

Table : 6 Discriminant Validity Test

Construct	Human Resource Training	Simplification of Work Procedures	Effective Incentive System	Development of Managerial Skills	Effectiveness of Decision-Making
HRT	0.799				

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

SWP	0.487	0.826			
EIS	0.231	0.416	0.808		
DMS	0.328	0.598	0.463	0.742	
EDM	0.348	0.355	0.414	0.173	0.873

4.3 Structural Model and Hypotheses Testing

The structural model and hypothesis testing examine the causal relationships among administrative development, managerial skill development, and decision-making effectiveness within the Libyan industrial sector. Results from the model confirm the significance of both direct and indirect pathways, supporting the study's conceptual assumptions. Through the integration of effect size (f^2), predictive power (R^2), and mediation analysis, the findings highlight the critical role of managerial skills as a conduit through which administrative practices enhance decision outcomes. These results provide empirical support for the strategic importance of structured administrative reforms in fostering organizational effectiveness.

4.3.1 Direct Effect Testing

The results presented in Table 10 provide robust support for the proposed structural model, as evidenced by statistically significant direct effects across all hypothesized relationships. The path from Administrative Development to Decision-Making Effectiveness shows a strong and significant effect ($\beta = 0.936$, $p = 0.005$), confirming the foundational assumption that administrative development directly enhances organizational decision-making outcomes. Furthermore, Administrative Development also significantly influences Managerial Skill Development ($\beta = 0.518$, $p = 0.001$), reinforcing the mediating framework of the study. This dual pathway underlines the theoretical premise that effective administrative systems not only impact outcomes directly but also operate indirectly through human capital development.

Among the sub-dimensions of administrative development, Effective Incentive System demonstrates the highest impact on Decision-Making Effectiveness ($\beta = 0.597$, $p < 0.001$), followed by Work Procedure Simplification ($\beta = 0.447$) and Human Resource Training ($\beta = 0.208$). Similarly, these variables also significantly influence Managerial Skill Development, with the Effective Incentive System again showing the strongest path ($\beta = 0.558$). The influence of Managerial Skill Development on Decision-Making Effectiveness is also statistically significant ($\beta = 0.413$, $p = 0.003$), indicating a mediating role. These findings validate the conceptual model and suggest that strategic administrative reforms especially incentive systems are key levers for enhancing both management capacity and decision-making in the Libyan industrial context.

Table: 7 Testing the Direct Effect Hypotheses

Path	Effect Size (β)	Standard Deviation	T-Value	P-Value
Administrative Development → Decision-Making Effectiveness	0.936	0.160	5.867	0.005
Administrative Development → Managerial Skill Development	0.518	0.080	6.491	0.001
Human Resource Training → Decision-Making Effectiveness	0.208	0.076	2.744	0.004
Work Procedure Simplification → Decision-Making Effectiveness	0.447	0.048	9.356	0.000
Effective Incentive System → Decision-Making Effectiveness	0.597	0.047	12.823	0.000
Managerial Skill Development → Decision-Making Effectiveness	0.413	0.086	4.804	0.003
Human Resource Training → Managerial Skill Development	0.159	0.020	7.990	0.007
Work Procedure Simplification → Managerial Skill Development	0.253	0.069	3.641	0.000
Effective Incentive System → Managerial Skill Development	0.558	0.190	2.942	0.000

Figure 2 presents the structural model for direct effect testing, clearly illustrating the hypothesized paths among the key constructs of administrative development, DMS, and decision-EDM. The standardized path coefficients, accompanied by their respective significance values (p-values), reveal that all direct paths in the model are statistically significant. HRT, SWP, EIS each show direct effects on both DMS and EDM, with the strongest direct effect on EDM coming from EIS (β

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

= 0.597, p = 0.000), followed by SWP (β = 0.447, p = 0.000), and HRT (β = 0.208, p = 0.004). These results confirm that administrative development dimensions significantly enhance decision-making outcomes.

Additionally, the model confirms that HRT (β = 0.159, p = 0.007), SWP (β = 0.253, p = 0.000), and EIS (β = 0.558, p = 0.000) all contribute significantly to the development of managerial skills, which in turn have a strong positive impact on decision-making effectiveness (β = 0.413, p = 0.003). The R^2 values indicate that 82% of the variance in EDM is explained by the predictors, while 52.1% of the variance in DMS is accounted for by the three administrative development components. Overall, the structural model effectively supports the theoretical proposition that managerial skills serve as a partial mediator between administrative development and enhanced decision-making capabilities in the Libyan industrial context.

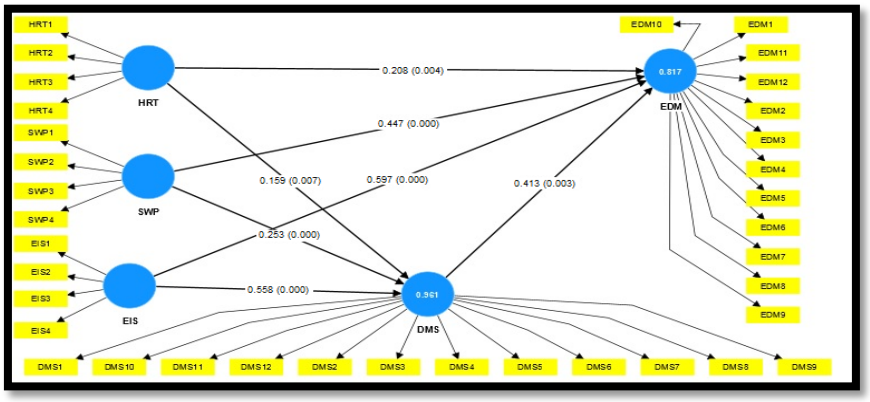

Figure: 2 Testing the Direct Effect Hypotheses

As illustrated in Table 11, the structural model demonstrates substantial predictive power for the key dependent variables. The coefficient of determination (R^2) for Decision-Making Effectiveness is 0.641, indicating that approximately 64.1% of the variance in decision-making effectiveness is explained by the exogenous variables included in the model. This suggests a strong model fit and affirms that administrative development, along with the mediating role of managerial skills, provides a solid explanatory foundation for understanding the effectiveness of decision-making within the Libyan industrial sector. Similarly, the R^2 value for Managerial Skills Development is 0.522, signifying that just over half of the variance in this construct is accounted for by the predictors in the model. This level of explained variance reflects moderate predictive strength, supporting the model's theoretical assumption that administrative development particularly through structured training, incentive systems, and streamlined work procedures substantially contributes to the development of managerial competencies. Together, these values confirm the internal coherence of the model and its relevance to practical administrative outcomes in the industrial context studied.

Table : 8 Power Testing of the Model

No.	Variables	R^2 (Coefficient of Determination)
1	Decision-Making Effectiveness	0.641
2	Managerial Skills Development	0.522

The results presented in Table 12 provide valuable insight into the magnitude of the effects among the studied variables using the f^2 effect size metric. The pathway from Administrative Development to Decision-Making Effectiveness shows a very large effect size ($f^2 = 2.440$), suggesting a dominant influence of administrative mechanisms on decision outcomes. Similarly, the Effective Incentive System also displays a very large impact on decision-making ($f^2 = 0.993$), emphasizing the motivational force incentives exert on managerial decision efficiency. Other strong contributors include Work Procedure Simplification ($f^2 = 0.557$) and Managerial Skill Development ($f^2 = 0.475$), both of which demonstrate large effect sizes and further underscore the importance of streamlined processes and leadership capabilities in enhancing organizational decision quality.

On the other hand, several relationships yielded smaller effect sizes, such as Human Resource Training to Managerial Skill Development ($f^2 = 0.053$) and to Decision-Making Effectiveness ($f^2 = 0.121$), indicating these elements, while still relevant, contribute less significantly compared to other administrative inputs. Notably, the pathway from Effective Incentive System to Managerial Skill Development yielded a large effect ($f^2 = 0.651$), reinforcing the view that well-designed reward structures play a central role in fostering managerial capacity. These findings together highlight a nuanced landscape where incentives and procedural clarity serve as the strongest levers for improving both decision-making and the development of managerial talent within the Libyan industrial sector.

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

Table: 9 f² Effect Size Test

Pathway	f² Value	Effect Size
Administrative Development → Decision-Making Effectiveness	2.440	Very Large
Administrative Development → Managerial Skill Development	0.561	Large
Human Resource Training → Decision-Making Effectiveness	0.121	Small
Work Procedure Simplification → Decision-Making Effectiveness	0.557	Large
Effective Incentive System → Decision-Making Effectiveness	0.993	Very Large
Managerial Skill Development → Decision-Making Effectiveness	0.475	Large
Human Resource Training → Managerial Skill Development	0.053	Small
Work Procedure Simplification → Managerial Skill Development	0.134	Small
Effective Incentive System → Managerial Skill Development	0.651	Large

4.3.2 Mediating Variable Effect

The mediation analysis results shown in Table 13 demonstrate that Managerial Skill Development significantly mediates the relationship between key administrative development components and Decision-Making Effectiveness. The indirect effect of Human Resource Training through Managerial Skills is strong (0.309), with a high t-value of 12.301, indicating a statistically significant mediation. The confidence interval does not cross zero, reinforcing the robustness of the mediating role. This suggests that when training initiatives are channeled through the enhancement of managerial competencies, they contribute meaningfully to improved decision outcomes in the industrial sector context.

Similarly, Work Procedure Simplification also shows a statistically significant indirect effect through Managerial Skill Development (0.159), with acceptable precision as shown by its confidence interval bounds. The most substantial mediating effect is observed in the pathway from Effective Incentive System to Decision-Making Effectiveness via Managerial Skills, with an indirect effect size of 0.461. Although this path has a slightly wider confidence interval, it remains significant and suggests that incentive mechanisms are particularly effective when they enhance managerial capacity first. Collectively, the findings confirm that Managerial Skill Development plays a crucial mediating role in transforming administrative inputs into effective decision-making within the Libyan industrial sector.

Table: 10 Mediation Analysis (Indirect Effect Test)

Relationship	Path a	Path b	Indirect Effect	Standard Error	T-Value	Lower Bound 95%	Upper Bound 95%	Decision
Human Resource Training → Managerial Skill Development → Decision-Making Effectiveness	0.387	0.714	0.309	0.051	12.301	0.802	0.991	Mediation
Work Procedure Simplification → Managerial Skill Development → Decision-Making Effectiveness	0.763	0.317	0.159	0.074	7.365	0.267	1.671	Mediation
Effective Incentive System → Managerial Skill Development → Decision-Making Effectiveness	0.642	0.552	0.461	0.098	4.193	0.172	0.956	Mediation

5. Conclusion

The conclusion effectively summarizes the key findings and highlights both theoretical and practical contributions; however, it would benefit from stronger alignment between the results and broader academic discourse. While the section correctly emphasizes the mediating role of managerial skills and the prominence of incentive systems in shaping decision-making effectiveness, it should better articulate how these insights advance existing theories of administrative development and organizational behavior. Specifically, clarifying how the empirical model contributes novel insights into the Libyan industrial context would bolster the theoretical value. Moreover, although the limitations are acknowledged, they are described too briefly. It would be helpful to explain how the single-sector focus may have constrained external validity and to specify whether any control measures were implemented to mitigate potential organizational biases. Additionally, while the study mentions temporal limitations, it lacks a reflection on how socio-political factors in Libya during 2022–2023 may have influenced responses, thus affecting the generalizability of the findings.

https://dx.doi.org/10.30566/ijo-bs/2025.03.142

The revised conclusion should integrate a stronger narrative linking findings to actionable strategies for both policy and managerial practice. It should reinforce how the validated framework can guide human capital investment, structural reform, and incentive alignment in transitional economies. The section would be strengthened by emphasizing the dynamic nature of decision-making and suggesting that managerial competencies are not static assets but develop through continuous institutional support. Regarding future research, the current suggestions are directionally appropriate but could be expanded by proposing specific methodological approaches (e.g., mixed-methods, panel data) to deepen understanding. More robust consideration of emerging digital technologies, as well as cognitive and behavioral dimensions of decision-making, would reflect a more forward-looking research agenda. By integrating these refinements, the conclusion would meet the expectations of a doctoral-level dissertation in both scope and academic rigor, demonstrating a clear and well-reasoned path for theoretical progression and applied impact.

References

Alam, M. A. (2021). The perceived impact of managerial education programs on professionals' development: A review article. Journal of Business and Management Sciences, 9(1), 58-62.

Al-bdareen, R. (2020). The impact of the administrative empowerment on the employees performance management process. International Journal of Asian Social Science, 10(4), 193-206.

Alex, T. C. (2020). Habilidades gerenciales y desarrollo organizacional en el personal de la UNHEVAL, Huánuco–2019. Gaceta Científica, 6(3), 162-173.

Alghemi, S. (2023). Digitalna Transformacija: Činjenice Iz Uzorka Libijskih Kompanija. Zbornik radova Fakulteta tehničkih nauka u Novom Sadu, 38(05), 639-642.

Amhalhal, A., Anchor, J., Papalexi, M., & Dastgir, S. (2022). Organisational performance and the use of multiple performance measures in an emerging market. International Journal of Quality & Reliability Management, 39(1), 236-257.

Amr, T. A. A., & Zomailan, M. A. A. (2020). The Impact of Administrative Empowerment on the Employees' Creativity: A Case Study of Kamaran Factory in Hodeidah City. Journal of Social Studies, 26(2), 1-25.

Armashova-Telnik, G., Zubkova, A., Melnichenko, A., Semenova, V., Sokolova, P., & Terentyeva, Y. (2021). Industrial sector engineering staff development systems. In E3S Web of Conferences (Vol. 258, p. 10025). EDP Sciences.

Arwan, A. (2022). Pengaruh kemampuan manajerial terhadap kinerja pejabat dinas pendidikan se Sumatera Selatan. El-Idare: Journal of Islamic Education Management, 8(1), 1-11.

Bakoš, L., & Strnádelová, B. (2022). Comparison of group and individual soft skills development programs-Managerial tools and managerial training simulator. Management: Journal of Contemporary Management Issues, 27(2), 153-176.

Bartolomé, E. J. N., Carreño, O. F. M., López, E. G. M., & Heredia, C. E. M. (2022). Administrative management and its impact on the company's productivity, training plan. Journal of business and entrepreneurial studie, 6(3).

Cammeraat, E., Samek, L., & Squicciarini, M. (2021). Management, skills and productivity (No. 101). OECD Publishing.

Cosman, A. (2020). The Impact of Managerial Activities on the Effectiveness and Efficiency of the Public Institution. Ovidius University Annals, Series Economic Sciences, 20(1).

Döring, M., & Jilke, S. (2023). Cream-Skimming at the frontline: The role of administrative literacy. Public Administration, 101(4), 1569-1586.

EIGENSTUHLER[1], D. P., DAL MAGRO, C. B., & Mazzioni, S. (2023). Managerial Ability and Accounting-Tax Compliance: Cross-Country Study. Revista Catarinense da Ciência Contábil, 22, 1-18.

Elayeb, J. M. M., & Tarofder, A. K. (2022). The effect of behavioral work environment on employees' productivity in the oil and gas sector in Libya. Journal of International Business and Management, 5(4), 01-11.

Emmanuel, I. E., Rikwentishe, R., & Attayi, I. F. (2023). Managerial competencies and small business venture performance: An emerging economies perspective. Journal of Enterprise and Development (JED), 5(1), 1-14.

Fourqoniah, F., Sanjaya, A., Wediawati, T., Murni, M., Amelia, I. T., Dari, T. P. W., ... & Rahmayana, R. (2022). Mencapai Kemandirian Perekonomian Desa Melalui Peningkatan Kemampuan Manajerial Pengurus BUMDesa. JMM (Jurnal Masyarakat Mandiri), 6(4), 2537-2547.

Haque, M. S., Ramesh, M., Puppim de Oliveira, J. A., & Gomide, A. D. A. (2021). Building administrative capacity for development: limits and prospects. International Review of Administrative Sciences, 87(2), 211-219.

Hijuelos-Pupo, N. J., Noda-Hernández, M. E., & Ávila-Álvarez, J. C. (2020). Sistema de acciones para mejorar la calidad de la formación de directivos. Ciencias Holguín, 26(3), 38-51.

Ibene, N. P. (2020). Evolving piloting role of administrator: From administrative leadership to boosting entrepreneurship development. Sapientia Global Journal of Arts, Humanities and Development Studies, 3(3), 349-361.

Kharlamova, T. L., Kharlamov, A. V., & Antokhina, Y. A. (2021). Effective management as a condition for innovative development of the national economy. European Proceedings of Social and Behavioural Sciences.

Kurniawati, S. (2020). Analysis of influence of managerial skills, company diversification policy, audit committee, and external audit and their impact on the financial reporting aggressiveness (study in public listed manufacturing companies). East African Scholars Journal of Economics, Business and Management, 3(11), 855-872.

Lassoued, K., Awad, A., & Guirat, R. (2020). The impact of managerial empowerment on problem solving and decision making skills: The case of Abu Dhabi University. Management Science Letters, 10(4), 769-780.

López, A. F. J., Varela, M. P. V., & Henao, D. R. (2020). Aporte del coaching en la toma de decisiones gerenciales. RHS: Revista Humanismo y Sociedad, 8(1), 66-80.

Ramadhinta, E. M., Cahyadi, E. R., & Sukmawati, A. (2022). Managerial competencies development of oil palm plantation managers for industry 4.0 era. Jurnal Manajemen & Agribisnis, 19(1), 24-24.

Reis, L. D., de Santana, W. K. F., Dutra, B. K., Carvalho, A. C., de Paula, H. C., de Oliveira, R. L., ... & de Menezes, A. (2021). The management and effectiveness of professionalization: an educational-based epistemical study. International Journal for Innovation Education and Research. Vol:-09 No, 9.

Tovmasyan, G. (2022). The impact of skills, personality and psychology on management and decision making: empirical study among managers and employees.

Unurhoro, E. J., & Doris, G. O. (2022). Process of Managerial Training and Its Impact of Manager Effectiveness. International Journal of Research and Review, 9(10), 222-229.

Zeng, R., Zheng, D., & Li, Y. (2023). The evaluation model of the sustainable development of managers' competence. Academic Journal of Business & Management, 5(3), 63-66.

Żukowski, M. (2022). Administracja menedżerów. Rocznik Administracji Publicznej, (8), 484-503.

https://dx.doi.org/10.30566/ijo-bs/2025.03.142