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Management Information System Coordination and Data Management Performance of Elementary Teachers in Davao Central District

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ABSTRACT

This study examined the relationship between Management Information System (MIS) coordination and school data management performance among public elementary school personnel in Davao Central District. A quantitative descriptive-correlational design was employed among 173 respondents directly involved in Learner Information System (LIS) and Basic Education Information System (BEIS) processes. A structured survey instrument measured MIS coordination in terms of data encoding and submission accuracy, stakeholder collaboration and communication, and technical capacity and monitoring compliance. School data management performance was assessed through timeliness of data submission, accuracy and reliability of data, data utilization in school planning, and accessibility and record organization. Weighted mean, standard deviation, Pearson product-moment correlation, and regression analysis were used. MIS coordination was rated Extensive across the three dimensions, with stakeholder collaboration and communication obtaining the highest mean ($M = 3.93$). Data management performance was also rated Extensive across the four dimensions, with accessibility and record organization receiving the highest mean ($M = 3.79$). MIS coordination had a moderate positive and statistically significant relationship with data management performance ($r = .586$, $p < .001$). The reported regression model explained 91.4% of the variance in performance ($R^2 = .914$); however, the source model included a timeliness indicator that may overlap conceptually with the dependent-variable composite. The findings support the institutionalization of verification protocols, role clarification, data-literacy development, technical support, and systematic record-management practices.

Keywords: *Basic Education Information System, data management performance, data quality, Learner Information System, management information system coordination, school planning*

INTRODUCTION

Education systems increasingly rely on administrative data to monitor participation, allocate resources, support learners, and guide institutional planning. Education Management Information Systems (EMIS) are effective only when school-level personnel coordinate encoding, validation, submission, retrieval, and use of information. Accurate and timely records provide a foundation for evidence-informed decisions and reduce administrative rework.

In Philippine public schools, the Learner Information System (LIS) and Basic Education Information System (BEIS) organize essential administrative data. Their effectiveness depends on disciplined data cycles, clear assignments, reliable source documents, validation routines, technical support, and compliance with reporting

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windows. When coordination is weak, schools may experience delayed submissions, repeated corrections, fragmented records, and limited use of data for planning.

The Davao Central District operates within these standardized national systems. However, the source manuscript identified the need for localized evidence on the quality of MIS coordination and whether stronger coordination was associated with better school data management performance. District-level benchmarking is valuable because it can guide technical assistance, clarify responsibilities, and identify procedures requiring improvement.

This study assessed MIS coordination in terms of data encoding and submission accuracy, stakeholder collaboration and communication, and technical capacity and monitoring compliance. It also determined data management performance in terms of timeliness, accuracy and reliability, data utilization in school planning, and accessibility and record organization. Finally, it tested the relationship between MIS coordination and data management performance and examined the explanatory power of the reported regression model.

Literature Review

Education Management Information Systems and Data Governance

Administrative data are organizational assets that require governance across people, processes, and technology. The DAMA-DMBOK framework identifies governance, data quality, metadata, security, and stewardship as essential capabilities for responsible data management (DAMA International, 2017). Khatri and Brown (2010) likewise explain that data governance requires clear decision rights and accountability structures. In schools, these principles are reflected in assigned responsibilities, standardized encoding routines, documentation, and secure access to records.

Data Quality and Information-System Success

Data quality is commonly understood as fitness for use. Wang and Strong (1996) emphasized dimensions such as accuracy, completeness, timeliness, and accessibility. The DeLone-McLean Information Systems Success Model further links information quality, system quality, and service quality to institutional use and organizational benefits (DeLone & McLean, 2003). Applied to LIS/BEIS operations, coordinator support, validation routines, and reliable records are expected to improve submission timeliness, accuracy, retrieval, and planning utility.

School-Level Coordination and Data Use

School-level coordination is the practical interface between national information systems and local administrative routines. International guidance on EMIS modernization emphasizes quality assurance, standardized administrative cycles, role clarity, and data-use practices that support planning and accountability (OECD, 2023; UNESCO Institute for Statistics, 2023). Collaboration is especially important because teachers, coordinators, and school leaders contribute to source-document preparation, encoding, validation, correction, and interpretation.

Structured communication and professional learning routines can strengthen data culture. Van den Boom-Muilenburg et al. (2023) found that leadership practices influence the sustainability of data-use professional learning communities. In school MIS operations, clear instructions, documented feedback loops, and responsive troubleshooting can reduce ambiguity and make administrative information more useful for school improvement planning.

Data Utilization and Record Organization

Data management performance extends beyond compliance with reporting deadlines. Data become valuable when they are accurate, retrievable, secure, and used in planning. Organized digital and physical records, version-control conventions, audit trails, and systematic filing procedures help schools retrieve evidence for planning, monitoring, and accountability. These practices also support continuity when personnel change or when system access is disrupted.

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METHODS

Research Design

The study employed a quantitative descriptive-correlational survey design. The descriptive component determined the perceived extent of MIS coordination and data management performance. The correlational component examined the association between the two variables. Regression analysis was also reported to estimate the explanatory power of the selected indicators.

Research Locale

The study was conducted in public elementary schools within the Davao Central District. The setting was selected because the schools implemented LIS and BEIS processes and required coordinated encoding, validation, submission, and record-management routines.

Participants and Sampling Technique

The study involved 173 public elementary school personnel directly engaged in LIS/BEIS-related routines. The source manuscript reports the use of proportional stratified sampling across participating schools and describes a priori power analysis for multiple regression. Eligible respondents were personnel with relevant experience in preparing, encoding, validating, or monitoring school data.

Research Instrument

A structured survey questionnaire was adapted and modified from established data-quality and school information-management frameworks. The first section measured MIS coordination through three domains: data encoding and submission accuracy, stakeholder collaboration and communication, and technical capacity and monitoring compliance. The second section measured school data management performance through four outcomes: timeliness of data submission, accuracy and reliability of data, data utilization in school planning, and accessibility and record organization. Items used a five-point scale.

The source manuscript states that the instrument underwent expert review, pilot testing, and internal-consistency assessment. The final subscale reliability coefficients were not presented in the results section; therefore, no unsupported coefficient is introduced in this article.

Data Gathering Procedure

After securing division-level and school-level authorization, the validated survey was administered through secure online forms or paper-based packets according to school connectivity and accessibility. Respondents received a plain-language information sheet and provided voluntary informed consent. Returned questionnaires were screened for completeness, encoded, checked, and analyzed using JASP or SPSS.

Data Analysis

Weighted mean and standard deviation were used to summarize MIS coordination and data management performance. Pearson product-moment correlation coefficient was used to test the relationship between the two composite variables. Linear and multiple regression analyses were reported to examine the predictive contribution of selected indicators. The interpretation scale was as follows: 4.20-5.00, Very Extensive; 3.40-4.19, Extensive; 2.60-3.39, Moderately Extensive; 1.80-2.59, Less Extensive; and 1.00-1.79, Not Extensive.

Ethical Consideration

The study observed voluntary participation, informed consent, anonymity, confidentiality, secure data storage, data minimization, and aggregate reporting. Supervisors were excluded from survey administration to reduce perceived pressure. The source manuscript also disclosed that the researcher served as an LIS coordinator; accordingly, safeguards were applied to separate research activities from administrative functions and prevent the use of responses for performance appraisal or personnel decisions.

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RESULTS AND DISCUSSION

Extent of Management Information System Coordination

Table 1. *Summary of MIS Coordination Dimensions*

MIS Coordination Dimension	Mean	SD	Interpretation	Rank
Stakeholder collaboration and communication	3.93	0.56	Extensive	1
Technical capacity and monitoring compliance	3.74	0.50	Extensive	2
Data encoding and submission accuracy	3.65	0.52	Extensive	3

All three MIS coordination dimensions were rated Extensive. Stakeholder collaboration and communication obtained the highest mean (M = 3.93, SD = 0.56), followed by technical capacity and monitoring compliance (M = 3.74, SD = 0.50) and data encoding and submission accuracy (M = 3.65, SD = 0.52). These results indicate that communication routines were a relative strength, while meeting official encoding timelines and maintaining technical readiness remained important areas for continuous improvement.

Table 2. *Selected MIS Coordination Indicators*

Domain	Selected Indicator	Mean	Remark
Data encoding and submission accuracy	Validation results are reviewed before final submission.	3.67	Highest in domain
Data encoding and submission accuracy	LIS/BEIS encoding is completed within official timelines.	3.63	Lowest in domain
Stakeholder collaboration and communication	Teachers receive clear instructions and deadlines.	3.94	Joint highest in domain
Stakeholder collaboration and communication	Roles and responsibilities are clearly assigned and understood.	3.91	Lowest in domain
Technical capacity and monitoring compliance	A simple tracking tool monitors section/class encoding status.	3.78	Highest in domain
Technical capacity and monitoring compliance	The coordinator can troubleshoot common technical issues.	3.71	Lowest in domain

The item-level results show that schools regularly reviewed validation results and used simple monitoring tools. At the same time, strict compliance with encoding timelines, clearer delineation of LIS/BEIS roles, and stronger troubleshooting capacity remain appropriate priorities for technical assistance.

Level of School Data Management Performance

Table 3. *Summary of School Data Management Performance Dimensions*

Performance Dimension	Mean	SD	Interpretation	Rank
Accessibility and record organization	3.79	0.48	Extensive	1
Data utilization in school planning	3.78	0.43	Extensive	2
Timeliness of data submission	3.76	0.43	Extensive	3.5
Accuracy and reliability of data	3.76	0.45	Extensive	3.5

All four performance dimensions were rated Extensive. Accessibility and record organization obtained the highest mean (M = 3.79, SD = 0.48), followed closely by data utilization in school planning (M = 3.78, SD = 0.43). Timeliness and accuracy both obtained an overall mean of 3.76. The results suggest that schools generally maintained retrievable records, used information in planning, and complied with submission and validation requirements.

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Table 4. *Selected Data Management Performance Indicators*

Dimension	Selected Indicator	Mean	Remark
Timeliness	LIS/BEIS reports are submitted on or before official deadlines.	3.82	Highest in domain
Timeliness	Late submissions are quickly rectified with documented follow-through.	3.70	Lowest in domain
Accuracy and reliability	Data mismatches or duplicate entries are rare and promptly corrected.	3.79	Highest in domain
Accuracy and reliability	Learner profiles are error-free.	3.75	Joint lowest in domain
Data utilization	Enrollment, transition, and attrition data guide resource allocation.	3.81	Highest in domain
Data utilization	LIS/BEIS indicators support program design and intervention tracking.	3.75	Lowest in domain
Accessibility and organization	Version control and file-naming conventions are consistently applied.	3.82	Highest in domain
Accessibility and organization	Physical documents are systematically filed and secure.	3.77	Lowest in domain

The item-level findings identify practical areas for improvement. Schools may strengthen corrective documentation for delayed submissions, source-document verification, the use of data for intervention tracking, and the organization of physical records. These improvements can complement the existing strengths in digital file organization and planning-related data use.

Relationship Between MIS Coordination and Data Management Performance

Table 5. *Correlation Between MIS Coordination and Data Management Performance*

Variables	r	p-value	Interpretation	Decision
MIS coordination composite and school data management performance composite	.586	< .001	Moderate positive significant relationship	Reject H0

MIS coordination had a moderate positive and statistically significant relationship with school data management performance, $r = .586$, $p < .001$. The null hypothesis was rejected. This finding indicates that stronger coordination practices were associated with more timely, accurate, usable, and accessible school information. The result supports the view that data management is not solely a technical function; it also depends on organized communication, validation, monitoring, and support routines.

Reported Regression Model

Table 6. *Reported Regression Model Summary*

Model	R	R^2	Adjusted R^2	RMSE	Durbin-Watson	p
M0: Intercept-only model	-	.000	.000	.454	2.094	.535
M1: Reported predictor model	.956	.914	.912	.134	2.095	.529

The source manuscript reported a strong predictor model with $R = .956$, $R^2 = .914$, adjusted $R^2 = .912$, and RMSE = .134. The Durbin-Watson statistic of 2.095 suggested no serious autocorrelation in the residuals. However, the reported model included DESA_MEAN, SCC_MEAN, TCMC_MEAN, and TDS_MEAN. If TDS_MEAN represents timeliness of data submission and timeliness is already included in the data-management-performance composite, the model contains conceptual overlap between a predictor and the dependent variable. This may inflate the reported R^2. Accordingly, the model summary is retained as reported but should be revalidated using conceptually distinct predictors before journal submission.

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Proposed Improvement Priorities

Table 7. *Proposed School-Based MIS Coordination Priorities*

Priority Area	Recommended Action	Responsible Personnel	Expected Outcome
Role clarification	Prepare a written LIS/BEIS role matrix covering encoding, checking, submission, correction, and reporting.	School heads, coordinators, teachers	Clear accountability and reduced ambiguity
Verification protocols	Use standardized checklists, monitoring logs, source-document matching, and correction records.	Coordinators and data contributors	Fewer errors and stronger audit trails
Technical capacity building	Conduct troubleshooting clinics, backup-procedure drills, and peer coaching.	District office and school coordinators	Improved technical readiness
Corrective-action documentation	Record the cause, action taken, responsible person, and resolution date for late or returned submissions.	Coordinators and school heads	Improved follow-through and prevention of recurring errors
Planning utilization	Discuss LIS/BEIS trends during LAC, faculty, SGC/PTA, and planning sessions.	School planning teams	More evidence-informed interventions and resource allocation
Record organization	Maintain secure digital backups, consistent naming conventions, and systematic physical filing.	Authorized school personnel	Accessible and reliable records

CONCLUSION

MIS coordination and school data management performance were extensively manifested in the Davao Central District. Communication and collaboration emerged as a relative strength, while encoding timelines, role clarity, troubleshooting capacity, corrective documentation, source-document verification, intervention tracking, and physical-record organization remain areas for improvement. The significant positive relationship between MIS coordination and data management performance confirms that schools with stronger coordination routines tend to produce more timely, accurate, usable, and accessible records. The reported regression model demonstrated strong explanatory power but should be interpreted cautiously because one reported predictor may overlap with the dependent-variable composite.

Recommendations

1. School heads may institutionalize a written school-based MIS coordination protocol that specifies personnel roles, deadlines, validation steps, escalation procedures, and accountability mechanisms.
2. Designated LIS/BEIS coordinators may use standardized checklists, monitoring logs, correction templates, and version-control procedures to strengthen encoding accuracy and submission compliance.
3. The district office may conduct regular hands-on capacity-building sessions on troubleshooting, data validation, backup procedures, and compliance monitoring.
4. Teachers and other data contributors may receive periodic orientation on source-document preparation, learner-profile verification, and timely reporting of enrollment updates.
5. School planning teams may maximize LIS/BEIS data in School Improvement Plans, Annual Implementation Plans, intervention tracking, resource allocation, and monitoring and evaluation.
6. Schools may maintain secure and systematic filing procedures for both digital and physical records to support retrieval, auditability, and continuity.
7. Before journal submission, the regression model may be rerun using only conceptually distinct independent-variable indicators and accompanied by the complete ANOVA and coefficients tables.
8. Future researchers may use objective system logs, submission records, document audits, or longitudinal designs across other districts to validate and extend the findings.

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