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Technology Utilization and Strategic Decision-Making Competence Among School Leaders in a State University

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Abstract: *This study presents an item-level diagnostic analysis of technology utilization and strategic decision-making competence among 81 school leaders in a multi-campus Philippine state university. The analysis uses the same 2025–2026 survey dataset as the parent dissertation but addresses a distinct descriptive question: which specific technology-supported leadership practices and strategic decision behaviors appear most and least developed at the indicator level? Eighteen technology-utilization items and 20 strategic decision-making competence items were examined using their reported means, standard deviations, and 95% confidence intervals. Technology-utilization item means ranged from 3.62 to 4.26. Digital records and documentation received the highest rating ($M = 4.26$), whereas use of forecasting tools or trend data for long-term decisions received the lowest ($M = 3.62$). Strategic competence item means ranged from 3.99 to 4.41. Clear problem definition was rated highest ($M = 4.41$), while consideration of multiple perspectives was lowest ($M = 3.99$). A descriptive alignment of conceptually related indicators suggested a recurring pattern: leaders reported favorable strategic competence, but the digital practices that support forecasting, alternatives appraisal, target setting, and post-decision monitoring were comparatively less intensive. The findings support focused leadership development around analytical and forward-looking technology use while preserving established strengths in records management, planning alignment, and feedback-oriented implementation. The analysis is descriptive and does not infer causal or item-to-item statistical relationships.*

Keywords: *technology utilization; strategic decision-making competence; item-level analysis; higher education leadership; state university.*

I. INTRODUCTION

University leaders increasingly work in information-rich environments in which digital systems support communication, records, reporting, planning, monitoring, and institutional decision processes. Digital transformation therefore concerns more than the availability of hardware or software; it also concerns how deeply digital practices are integrated into the tasks through which leaders diagnose problems, set priorities, anticipate future conditions, and implement decisions. Research on higher-education transformation similarly emphasizes organizational process, leadership coherence, and institutional capability rather than technology acquisition alone (Alenezi, 2021; Jameson et al., 2022; McCarthy et al., 2023).

Aggregate scale scores are useful for describing broad levels of technology use or strategic competence, but they can conceal meaningful variation among the concrete practices that constitute those scales. Two leaders may have similar overall scores while differing in whether they use digital systems primarily for records and communication, for performance dashboards and target setting, or for forecasting and alternatives appraisal. The same issue applies to strategic competence: favorable overall ratings do not reveal whether leaders are equally confident in problem framing, evidence use, foresight, accountability, and feedback-based adjustment.

This distinction is practically important in a multi-campus university. Routine administrative digitization may be well established because documentation, coordination, scheduling, and reporting occur frequently. Higher-order uses of technology—such as trend analysis, risk appraisal, forecasting, and monitoring decision impact—may require additional data quality, analytical skill, interoperability, and organizational support. Evidence-informed leadership research also cautions that data availability should not be treated as equivalent to effective use; the relevance, interpretation, and context of evidence remain important (Chigbu & Makapela, 2025; Lee et al., 2024).

The parent dissertation examined technology utilization and strategic decision-making competence among school leaders at Cebu Normal University and reported broad descriptive and correlational findings.

Three companion manuscripts derived from the same dataset address separate questions: a simultaneous regression of technology-use dimensions against overall competence, a within-leader comparison of technology-utilization domains, and a within-leader comparison of strategic-competence domains. The present manuscript deliberately does not repeat those analyses. Instead, it focuses on item-level patterns that were not the analytic focus of the companion manuscripts, with the aim of identifying specific leadership practices that may warrant reinforcement or deeper digital support. Accordingly, this study asks three questions: (1) Which specific technology-utilization practices are rated highest and lowest by the surveyed school leaders? (2) Which specific strategic decision-making behaviors are rated highest and lowest? and (3) When conceptually related indicators are viewed side by side, what descriptive practice alignments or gaps may inform leadership development? The third question is interpretive rather than inferential; no item-to-item association is claimed.

II. METHODOLOGY

A. Design

This study is a quantitative, nonexperimental, descriptive secondary analysis of the 2025–2026 dissertation survey. The dataset comprises 81 school leaders from Cebu Normal University: 43 from the Main Campus, 21 from Medellin Campus, and 17 from Balamban Campus. Respondents occupied academic or administrative leadership roles and were selected purposively because their work involved administrative, planning, or strategic responsibilities. No new data were collected for this article.

B. Measures

Technology utilization was measured with 18 self-report items organized in the source instrument into administrative, planning, and strategic decision-making functions. Responses were recorded on a five-point extent-of-use scale. Strategic decision-making competence was measured with 20 self-report items covering problem analysis, evidence-based planning, long-term visioning, and decision implementation, also using a five-point response format. The present article uses the item-level means, standard deviations, and confidence intervals reported in the dissertation rather than the aggregate domain comparisons emphasized in the companion papers.

C. Analytic approach

All 38 indicators were reviewed descriptively. Items were ranked by their reported mean within each scale, and the five highest and five lowest indicators were summarized to preserve a compact journal format. Conceptually related technology and competence indicators were then organized into a descriptive alignment matrix addressing four themes: evidence and target setting, alternatives and problem analysis, foresight, and implementation monitoring. This matrix is a qualitative organization of reported item means, not a correlation analysis, matched-pairs test, or causal model. No regression coefficients, aggregate domain difference tests, demographic subgroup tests, or overall technology–competence correlations are reanalyzed in this manuscript.

D. Ethics and publication transparency

The parent dissertation reports institutional permission, informed consent, ethical review, confidential handling of responses, and aggregate reporting. Because this manuscript is a publication-oriented secondary analysis of the same respondent pool, the author should confirm that the original approval and consent permit secondary dissemination and should disclose the relationship to the dissertation and companion manuscripts to the journal. The source materials also contain a data-provenance issue that should be reconciled before submission: the dissertation describes an intended minimum of one year in a leadership position, while 13 records are coded in a '1 year below' category. The present analysis retains the supplied 81-response dataset and does not alter eligibility retrospectively.

III. RESULTS

A. Technology-utilization indicators

Across the 18 technology-utilization indicators, item means ranged from 3.62 to 4.26, a descriptive spread of 0.64 points. The strongest reported practice was the use of digital systems for institutional records and documentation ($M = 4.26$, $SD = 0.818$). Other relatively high items involved online communication and coordination ($M = 4.19$), scheduling and workflow management ($M = 4.14$), and use of institutional data systems for planning ($M = 4.10$). In contrast, the least intensive practices were concentrated in analytically demanding strategic tasks. Use of forecasting tools or trend data for long-term decisions was lowest ($M = 3.62$, $SD = 0.995$), followed by leveraging institutional data systems for evidence-informed leadership ($M = 3.69$), comparing alternative courses of action ($M = 3.74$), consulting digital performance indicators when setting targets ($M = 3.77$), and integrating digital analytics into program development decisions ($M = 3.78$).

Table 1. Highest and lowest technology-utilization indicators

Group	Indicator	M	SD	95% CI
Higher-rated	Digital records and documentation	4.26	0.818	4.08–4.44
Higher-rated	Online communication/coordination with stakeholders	4.19	1.038	3.96–4.41
Higher-rated	Scheduling, resource allocation, and workflow management	4.14	0.997	3.92–4.36
Higher-rated	Institutional data systems to inform planning	4.10	0.889	3.90–4.30
Higher-rated	Data systems for compliance tracking	4.04	0.993	3.82–4.26
Lower-rated	Digital analytics in program development decisions	3.78	1.012	3.55–4.00
Lower-rated	Performance indicators when setting institutional targets	3.77	0.855	3.58–3.95
Lower-rated	Compare alternative courses of action	3.74	0.891	3.54–3.94
Lower-rated	Institutional data systems for evidence-informed leadership	3.69	0.957	3.48–3.90
Lower-rated	Forecasting tools/trend data for long-term decisions	3.62	0.995	3.40–3.84

B. Strategic decision-making competence indicators

Across the 20 strategic-competence indicators, means ranged from 3.99 to 4.41, a descriptive spread of 0.42 points. The highest item was clearly defining institutional problems before proposing solutions ($M = 4.41$, $SD = 0.685$). High ratings were also observed for aligning planning decisions with documented institutional goals ($M = 4.31$), considering long-term institutional impact ($M = 4.30$), anticipating future challenges and opportunities ($M = 4.30$), and using feedback systems to evaluate decision outcomes ($M = 4.26$). The lowest-rated item was considering multiple perspectives when analyzing organizational issues ($M = 3.99$, $SD = 1.006$). Other relatively lower items concerned identifying underlying causes ($M = 4.04$), integrating digital-transformation goals into institutional strategy ($M = 4.04$), establishing clear accountability mechanisms during implementation ($M = 4.06$), and evaluating the potential consequences of decision alternatives ($M = 4.07$). These ratings remained favorable in absolute terms; 'lower' therefore denotes relative position within the observed item profile rather than poor performance.

Table 2. Highest and lowest strategic decision-making competence indicators

Group	Indicator	M	SD	95% CI
Higher-rated	Clearly define institutional problems before solutions	4.41	0.685	4.26–4.56
Higher-rated	Align planning decisions with documented institutional goals	4.31	0.816	4.13–4.49
Higher-rated	Consider long-term institutional impact	4.30	0.828	4.11–4.48
Higher-rated	Anticipate future challenges and opportunities	4.30	0.749	4.13–4.46
Higher-rated	Use feedback systems to evaluate decision outcomes	4.26	0.863	4.07–4.45
Lower-rated	Evaluate consequences of decision alternatives	4.07	0.891	3.88–4.27
Lower-rated	Establish accountability mechanisms during implementation	4.06	0.885	3.87–4.26
Lower-rated	Integrate digital-transformation goals into institutional strategy	4.04	0.914	3.83–4.24
Lower-rated	Identify underlying causes rather than surface concerns	4.04	0.901	3.84–4.24
Lower-rated	Consider multiple perspectives when analyzing issues	3.99	1.006	3.77–4.21

C. Descriptive alignment of digital practices and strategic behaviors

Viewing conceptually related indicators together reveals several descriptive asymmetries. First, long-term orientation was rated favorably as a competence, but the digital practice most directly associated with forecasting was the lowest technology item. Second, planning alignment and evidence use were rated strongly, yet digital performance indicators and analytics for target setting and program development were among the less intensively used technologies. Third, leaders reported strong use of feedback in decision evaluation, while technology-supported monitoring of decision impact was comparatively lower. Finally, the ability to define problems was highly rated, but digital support for comparing alternatives and the consideration of multiple perspectives were relatively weaker. These contrasts do not demonstrate statistical mismatches; they identify practical areas where reported leadership capability may be more developed than the digital routines that could support it.

Table 3. Conceptual alignment matrix for leadership-development interpretation

Theme	Technology indicator(s)	Competence indicator(s)	Descriptive interpretation
Foresight	Forecasting tools/trend data for long-term decisions (3.62)	Long-term impact (4.30); anticipate challenges/opportunities (4.30); use trend data for forward-looking decisions (4.07)	Digital support for foresight appears less intensive than leaders' favorable self-ratings on future-oriented competence.
Evidence and target setting	Performance indicators for targets (3.77); digital analytics for program decisions (3.78)	Align plans with institutional goals (4.31); use reliable data in planning (4.25)	Planning competence is favorable, while some metric-driven digital practices remain comparatively less used.
Alternatives and diagnosis	Compare alternative courses of action using technology (3.74)	Define problems clearly (4.41); consider multiple perspectives (3.99); evaluate consequences (4.07)	Problem definition is a strength, but digital alternatives appraisal and multi-perspective analysis are weaker relative points.
Implementation monitoring	Digital monitoring systems for decision impact (3.81)	Feedback systems for decision outcomes (4.26); performance-indicator monitoring (4.25); accountability mechanisms (4.06)	Implementation competence is favorable; technology-supported monitoring and accountability can be strengthened.

Note. Values in parentheses are item means. The matrix is descriptive and does not imply item-level correlation, paired statistical difference, or causality.

IV. DISCUSSIONS

The item-level results refine the broad picture of a digitally engaged leadership group by showing where technology appears most embedded and where its use is comparatively thinner. The clearest technology strength was records and documentation, followed by communication and workflow-related functions. This pattern is consistent with higher-education digital transformation literature that treats operational information systems as an early and visible layer of institutional digitization (Alenezi, 2021; McCarthy et al., 2023). These activities recur frequently, are often standardized, and can be supported by platforms already required for routine university operations.

The comparatively lower technology ratings clustered around forecasting, alternative comparison, target setting, analytics, and monitoring of decision impact. These tasks are not simply more advanced versions of administrative work; they require valid data, analytic capability, appropriate tools, and confidence that the information being used is relevant to the decision. The result therefore suggests a practical distinction between digitized administration and digitally supported strategic reasoning. It does not indicate technology failure, because every reported technology item remained within a generally favorable extent-of-use range. Instead, it identifies where deeper integration may offer the greatest developmental value.

A similar nuance appears in the competence indicators. Respondents rated clear problem definition, alignment with institutional goals, future-oriented thinking, and feedback use highly. Yet the relative low points—multiple-perspective analysis, root-cause identification, accountability mechanisms, consequence appraisal, and integration of digital-transformation goals—are precisely the kinds of practices that help prevent strategic leadership from becoming overly linear or compliance-driven. Strategic leadership literature emphasizes that institutional direction must be accompanied by interpretation, participation, execution, and review (Carvalho et al., 2021; Tawse & Tabesh, 2021).

The descriptive alignment matrix adds a practical insight that is not visible in aggregate scale scores. For example, leaders strongly endorsed long-term impact and anticipation of future challenges, while use of forecasting tools or trend data was the least intensive technology practice. Likewise, leaders rated goal alignment and evidence-based planning favorably, whereas digital performance indicators for target setting and analytics for program development were among the lower technology items. This may indicate that strategic thinking is occurring through professional judgment, meetings, reports, or non-digital routines even when specialized analytical tools are used less often. It could also reflect limited access, task opportunity, system functionality, or training. The current dataset cannot distinguish among these explanations.

For leadership development, the findings support targeted rather than generic technology training. Capacity-building can begin with the institution's established strengths in records, documentation, communication, and workflow systems, then extend those information practices into dashboard interpretation, trend analysis, scenario planning, alternatives appraisal, risk review, and post-decision monitoring. This approach also fits the practical direction of the dissertation's proposed Technology-Enabled Strategic Decision-Making Leadership Framework, which links technology-supported administration with evidence-based planning, strategic analysis, long-term visioning, and implementation monitoring.

The study also reinforces the need to interpret self-report measures carefully. High agreement with a strategic behavior does not establish objectively demonstrated competence, and frequent use of a digital tool does not establish decision quality. Independent work samples, decision simulations, platform-use logs, and documented implementation outcomes would be needed to determine whether the reported practices translate into stronger institutional performance.

Limitations

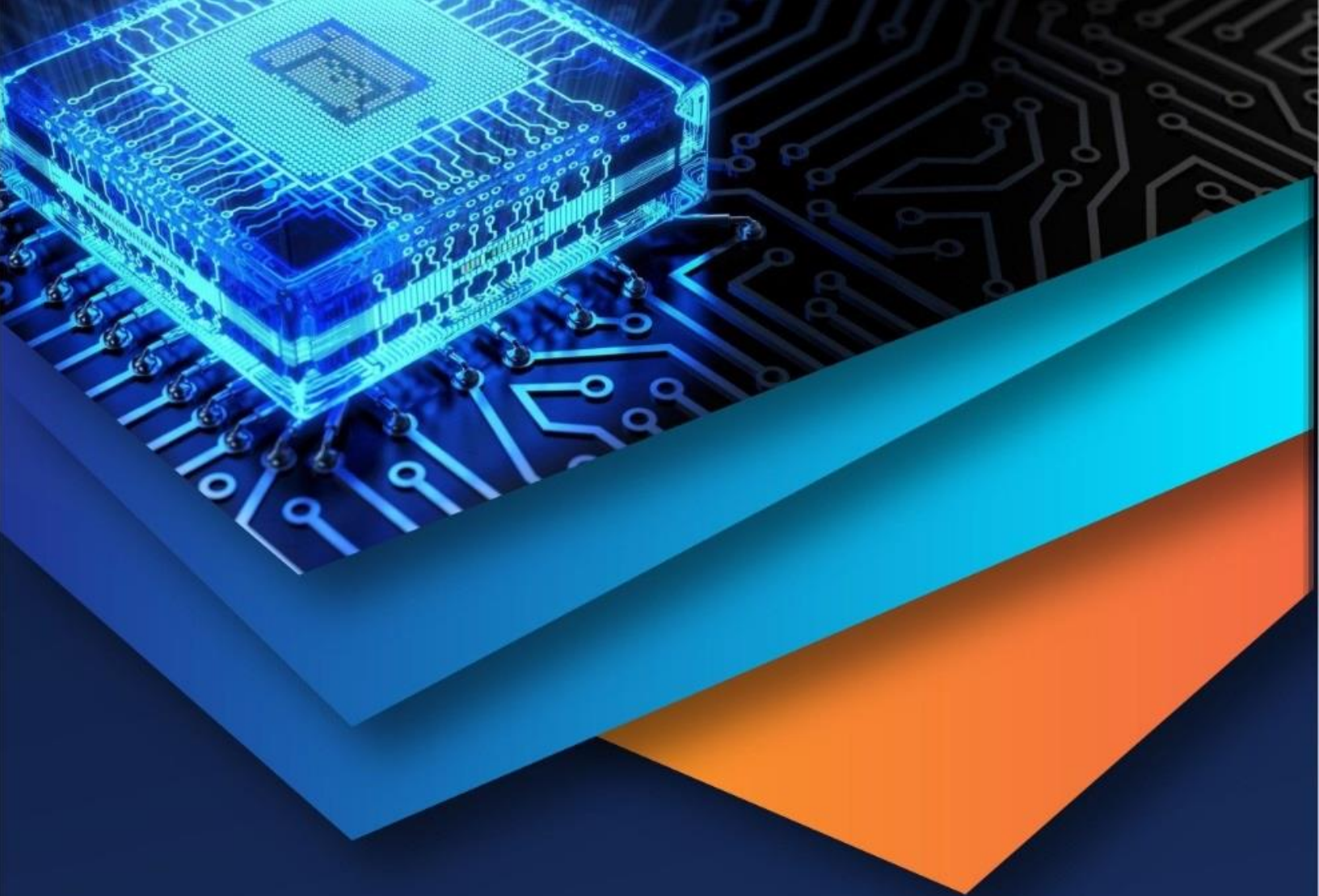
This analysis is based on a single-university, purposively selected sample and therefore should not be generalized to all higher-education leaders. The measures are self-reported and may be affected by social-desirability, acquiescence, common-method, and ceiling effects. Ranking items by means is descriptive and sensitive to small numerical differences; the analysis does not test whether any two individual item means differ significantly. The conceptual alignment matrix is interpretive and should not be read as evidence of item-level association. The study also reuses data from the parent dissertation and must be disclosed as a secondary analysis. Finally, the discrepancy between the stated one-year leadership eligibility threshold and the 13 records coded below one year should be resolved in the research documentation before external submission.

V. CONCLUSIONS

At the item level, the surveyed school leaders reported the strongest technology use in digital records, communication, and workflow support, while forecasting, alternatives appraisal, target-setting indicators, and evidence-oriented strategic systems were comparatively less intensive. Strategic decision-making behaviors were broadly favorable, with particular strengths in problem definition, institutional alignment, future orientation, and feedback use. The combined descriptive pattern suggests that the next stage of digital leadership development should focus less on basic administrative digitization and more on analytical, forward-looking, and monitoring-oriented uses of institutional technology. These findings are intended as a diagnostic basis for capacity-building, not as evidence that technology use causes strategic competence.

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