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Business Decision Making Using Management Information System (MIS)

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ABSTRACT

Contemporary business decision making processes are critically dependent on the availability of accurate, timely and relevant information - Management Information Systems (MIS) are a pivotal mechanism for turning organizational data into actionable managerial insights. This article provides a review and synthesis of both fundamental and current research on the role of MIS in improving decision quality at the operational, tactical, and strategic levels based on existing MIS decision-making models as well as evidence from various organizational settings. The discussion explains the role MIS plays in the improvement of decision speed, consistency, control and coordination due to the provision of structured reports, performance monitoring and standardized information flows. It further examines the relationship between MIS and Decision Support Systems (DSS) and makes it clear that MIS plays a dominant role in facilitating programmed and semi-structured decision activities whereas DSS extends the analytical capabilities for complex and non-routine decision activities. Empirical results obtained from research on business firms, educational institutions, banking sectors, and industrial sectors show that MIS effectiveness depends on the quality of the data, competence of users, organizational alignment, and governance practices. Ongoing challenges such as poor data integration, poor infrastructure, lack of training, and resistance to use of the systems may

undermine the value of MIS, and reduce the effectiveness of decision-making. The article ends by underlining managerial implications for the design and adoption of MIS in relation to the decision making needs, the strengthening of information integrity, and the facilitation of performances driven decision processes, while highlighting future research avenues to enhance MIS enabled decision effectiveness across various sectors.

1. INTRODUCTION

Current organizations operate in decision making environments of volatility, fierce competition, increased scrutiny from regulators and rapidly growing amounts of data. In such contexts, managers are increasingly being assessed on the quality and timeliness of their decisions, especially those related to the allocation of resources, control of processes, management of risks and strategic positioning. Management Information Systems (MIS) have long been established as a key organizational capability for improving decision performance by converting basic transactional and operational data into structured information products (such as periodic reports, dashboards and exception alerts) that managers can use to plan, coordinate and control organizational activities (McLeod, 1983; O'Brien and Marakas, 2008). As highlighted by early conceptualizations of MIS, the value of information systems is ultimately realized by their ability to support decision processes at the various levels of organizations and for different types of decisions (Gorry & Scott Morton, 1971; Gorry & Morton, 1989). Accordingly, the role of MIS in the decision making process of businesses is still a key issue in both information systems research and managerial practice. A vast amount of literature has been established linking MIS adoption and utilization with improved managerial decision outcome. At the operational level, MIS facilitates routine and repetitive decisions by providing standardized reporting, performance tracking and process monitoring thus facilitating better control and reduced uncertainty in day - to day activities (Berisha - Shaqiri, 2014; Ali, 2019). At tactical level, MIS offers managers consolidated view of departmental performance and resource utilization which is the basis for budgeting, scheduling, and functional planning decisions (Asemi et al., 2011; Ada & Ghaffarzadeh, 2015). At the strategic level, MIS can make a contribution by facilitating more coherent environmental scanning, trend analysis, and performance benchmarking capability, which help managers in interpreting business condition and evaluate strategic alternative (Memnon et al., 2021; Trivedi and Verma, 2018). Although the impact of MIS varies from one organization to another and from sector to sector, empirical evidence indicates that the effectiveness

of MIS is consistently linked to efficiency, coordination and quality of decisions when systems are matched to managerial requirements and organizational processes (El-Ebiary et al., 2020; Hamdat et al., 2024). A major analytical difference within this field relates to the relationship between MIS and Decision Support Systems (DSS). MIS is commonly referred to as a structured information provision system that is aimed at managerial control, reporting and coordination, often with a particular emphasis on information flows that are routine and standardized (O'Brian & Marakas, 2008; Oz, 1999). DSS, by contrast, is often linked to interactive analytical functions that are used in support of semi-structured and unstructured decisions such as scenario analysis and model driven exploration (Vierck, 1981; Houdeshell & Watson, 1987). The literature often uses MIS and DSS as complementary with MIS providing the infrastructure for data and reporting and DSS providing the extended managerial capacity for complex decision analysis (Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018). This complementary view is important for business decision-making as organizations, in most cases, do not face one type of decision problem, but instead manage a continuum of decisions ranging from routine decisions of an operational nature to strategic decisions made under uncertainty (Gorry & Scott-Morton, 1971; Demigha, 2021).

Despite the well recognized value of MIS in its potential, research also identifies ongoing issues that limit its value in decision making. One set of problems is related to the quality of information, as when the data are incomplete, inconsistent, delayed, or not well-integrated across functions, MIS outputs can be misleading, thus increasing decision risk rather than reducing it (El-Ebiary et al., 2020; Nwankwo et al., 2020). A second set of issues relates to organizational and human factors such as user competence, the adequacy of training and behavioral resistance to using the system. Studies suggest that even well-designed systems may not improve decision making, if managers lack trust in the outputs of the system, lack the skills to interpret the reports, or if the managers are not incentivized to use MIS consistently in decision routines (Hasan et al., 2013; Kiradoo, 2016). A third set of challenges are related to barriers in implementation, including infrastructural challenges, governance challenges and misalignment of the MIS capabilities with decision rights or reporting requirements of specific managerial roles (Hosseini et al., 2012; Al-Zhrani, 2010). These constraints are especially pertinent in an environment where data-collection processes are broken up or where organizational units do not have standardized reporting practices (Nwankwo et al., 2020; Ajayi and Omirin, 2007). The sectoral diversity of MIS research further shows that the needs of decision making and the contributions of MIS vary from context to context. For example, educational and academic institutions highlight on MIS in administrative decision making, resource management and performance monitoring but might have limitations in the capacity, barriers to adoption and data governance (Ajayi & Omirin, 2007; Bhandari, 2023; Shah, 2014). In banking and

financial organizations, MIS is often associated with efficiency, compliance and performance evaluation where timely information has a potential to affect both operational and strategic results (Gonfa, 2015; Memon et al., 2021). Industrial and manufacturing environments emphasize MIS as a means for enhancing process co-ordination and managerial control - especially where standardized reporting is used to provide for control and ongoing improvement (Sonawane, 2016; Olorunlana, n.d.). Across such contexts, however, the question remains of whether MIS is "useful" in the abstract, but under what conditions MIS has the potential to be a reliable decision asset and how organisations can mitigate the barriers that undermine the effectiveness of MIS-driven decisions (Sari & Priantinah, 2019; El-Ebiary et al., 2023). Against this backdrop, the purpose of this article is to synthesize and critically discuss literature on business decision making using MIS with specific focus on (i) how MIS facilitates decision at the level of operation, tactical and strategic level (ii) how MIS is related to DSS in the contemporary organizational decision architecture (iii) what organizational, technical and behavioral factors condition the effectiveness of MIS (iv) what implications these findings have for managers seeking to improve decision processes through information system investment and governance (Asemi et al., 2011; Hasan et al., 2013; Demigha, 2 By synthesizing evidence and views from basic structures and practical studies, the article adds to an organized concept of the mechanisms by which MIS influences decision results and practical limitations and requirements to be managed in order to realise decision value (Gorry and Scott-Morton, 1971; Ali, 2019; El-Ebiary et al., 2020).

2. LITERATURE REVIEW

The literature base on business decision making using Management Information Systems (MIS) has evolved along two parallel lines: the foundation of conceptual frameworks that provide different views of what management information systems (MIS) should achieve for organizations and empirical research that measures the impact of adopting this technology on the effectiveness of workplace decision making across sectors. Collectively, these streams tell the story of MIS adding value, mainly by participating in improved information availability and structure and control for the quality, speed, and accountability of managerial decisions - if the data quality, user capability, and organizational alignment are appropriately managed (McLeod, 1983; O'brien & Marakas, 2008; Ali, 2019; El-Ebiary et al., 2020).

2.1 Foundational perspectives on MIS and decision-making

Seminal work underlines the point that information systems should be designed in terms of the decision needs, the nature of managerial problems. The classical framework is a framework that differentiates decision contexts based on the level of structure (structured, semi-structured, unstructured) and

managerial level (operational control, management control, strategic planning), which implies that information systems must provide different types of information support based on the decision environment (Gorry & Scott Morton, 1971; Gorry & Morton, 1989). This view is still influential as it explains the reason why routine reporting and controls cannot readily follow for all decisions as operational decisions favor standard summaries and performance reporting, whereas strategic decisions need analytical, interpretive and even sometimes model insights (Oz, 1999; O'brien & Marakas, 2008). Within this conceptual tradition, MIS is usually thought of as the "information backbone" of the organization, producing such routine and exception-based reports as well as integrating transactional data and providing for coordination and control. In contrast, Decision Support Systems (DSS) are considered to be interactive systems to help make semi-structured or unstructured decisions based on analytical models, what-if analysis and ad hoc querying (Vierck, 1981; Houdeshel & Watson, 1987). Later comparative discussions strengthen the point that MIS and DSS are potentially complementary: MIS gives us the validated data, reporting routines, and the context for governance decisions, and DSS expands the ability of the decision-maker to explore alternative options and to handle complexity (Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018; Demigha, 2021). This distinction becomes especially relevant to business decision making because business firms may face the need to make routine performance management decisions while at the same time making non-routine decisions under conditions of uncertainty, such as when entering a new market, responding to a crisis, or making a major investment decision (Gorry & Scott Morton, 1971; Al-Zhrani, 2010).

2.2 Empirical evidence on MIS effects on decision effectiveness

A recurrent theme for empirical studies is that MIS leads to better decision-making outcomes in terms of the timeliness, accuracy, and accessibility of information. Research that describes MIS and DSS as decision enablers, asserts that improved information provision enhances the decision-making capacity of managers by enabling them to recognize problems early, evaluate the operating situations and choose appropriate actions (Asemi et al., 2011; Berisha-Shaqiri, 2014). Studies also highlight that MIS helps in the consistency of decision making by standardizing reporting formats and performance indicators thus reducing ambiguity and providing option to compare the performance across time or business units (Ali, 2019; El-Ebiary et al., 2020). In addition, recent work links MIS to superior efficiency in decision making, interpreted as quicker cycle times and minimized manual processing, and better coordination, which is particularly the case when the opposed MIS outputs are embedded into managerial routines, and accountability systems (Hamdat et al., 2024; El-Ebiary et al., 2023). Another prominent strand also looks at MIS as a contributor to organizational performance often through the mediating role of managerial

decisions. For example, works done in Nigeria, link the use of MIS with the result of organizational performance, suggesting that better flows of information, management control mechanisms translate into better decision execution and effectiveness of operations (Munirat et al., 2014). Similarly, the work in relation to strategic decision making maintains that MIS can support competitive decisions, it can support planning and can strengthen the managerial oversight - though the level of strategic contribution to decision making is dependent on the ability of the organization to move from reporting on a descriptive basis, to a decision-oriented interpretation (Memon et al., 2021; Trivedi & Verma, 2018). This is consistent with wider reviews indicating that MIS will create value if not considered as a purely technical installation, but as managerial capability embedded in planning, monitoring, and governance systems (Hasan et al., 2013; Sari & Priantinah, 2019).

2.3 Sectoral observations and context variation

The literature shows both some important sectoral variation in the application and evaluation of MIS. In the administration of education, MIS is often discussed as productivity in terms of refinement for administrative decision making, to aid in resource allocation, record keeping and performance monitoring. Research in South-West Nigerian universities underscores that MIS can help improve the quality of decisions and is crippled by infrastructural constraints, uneven adoption and the capability gap among administrators (Ajayi & Omirin, 2007). Related work in South East Nigeria reveals that the data collection methods and information management processes are very important as it infers that the weak data pipeline can affect the usefulness of MIS outputs in decision tasks for administrators (Nwankwo et al., 2020). In school and academic administration contexts, similar literature reviews also review that information systems can enhance management practices, but only where governance, training, and data quality practices are developed to maintain sustained use of information systems (Shah, 2014; Bhandari, 2023). In banking and commercial services, studies give emphasis on the contribution of MIS for managerial control, efficiency in service, and coordination of decisions. Evidence from commercial banks suggest that MIS can affect the quality of decision in terms of its ability to enhance the availability of information in addition to the ability to serve as tools for managerial monitoring, although barriers to adoption in conjunction with the issue of organizational readiness still determine the outcomes of adoption (Gonfa, 2015). In industrial environments, MIS is not uncommonly discussed related to managerial decisions regarding operations, productivity, and managing processes, in which structured reporting and decision support is emphasized for day-to-day oversight (Sonawane, 2016). The process-improvement perspective further refers to MIS as an enabler of more efficient workflows, implying that

an improved information design offers more predictable and measurable business processes which indirectly enhances decision execution (Olorunlana, n.d.).

2.4 Enablers, barriers and governance issues

While the value of MIS is well reported, in literature, we can consistently find the fact that MIS value is conditional. One critical enabler is the information quality: data, if incomplete, delayed, inconsistent and not well-integrated, MIS outputs can misdirect decisions which increases managerial risk (El-Ebiary et al., 2020; El-Ebiary et al., 2023). Another major condition is organizational alignment. Research on MIS adoption in managerial decision making focus on the systems need to match the decision rights and managerial responsibilities or else the reporting outputs of the system may be irrelevant or underutilized (Al-Mamary et al., 2014; Sari & Priantinah, 2019). A related theme relates to barriers to strategy and to implementation where multi-criteria decision making approaches have been employed to identify institutional barriers to MIS strategies, especially in the case of complex organizations such as higher education institutions (Hosseini et al., 2012). Human capability and education is always a key determinant of effectiveness. Curriculum focused scholarship has stressed that in order to be successfully used, MIS requires practitioner-relevant competencies and instructional designs that reflect the contemporary demands of management (Ehie, 2002; Yew, 2008). Further, the studies that explain the selection of MIS as a major by students highlight the importance of motivation and disciplinary perceptions to influence the quality of future MIS professionals and subsequent, indirectly, organizational capability of MIS (Ferratt et transfert, 2010). At the organizational level, impediments (user resistance, limited training, and weak change management) may result in limited adoption as well as MIS decision impact (Hasan et حذ,2013; Kiradoo,2016). In addition, it is clear from crisis situations that decision-making demands increase under conditions of uncertainty; MIS can help to prevent this through improving the flow of information and coordination, provided that there is a degree of resilience and trustworthiness in both the governance structures and the reporting mechanisms (Al-Zhrani, 2010).

The convergence of literature, overall, is leading to the proposition that MIS does add value to business decision making when it provides high-quality, decision-relevant information, is part of managerial routines, and supported by robust governance, skillsets and organizational alignment. The studies reviewed also draw attention to an important boundary condition which is that MIS alone does not lead to superior decisions and improvements are only achieved due to interaction among system capability, data integrity, user competence and managerial process (Gorry & Scott Morton, 1971; Ali, 2019; Hasan et al, 2013; El -EBiary et al, 2020).

Table 1: Selected Literature on MIS Contributions to Business Decision Making

Study	Context / Sector	MIS Focus	Decision Outcome Emphasized	Key Enablers / Constraints Highlighted
Gorry & Scott Morton (1971)	Conceptual	MIS framework by decision type/level	Fit between system support and decision structure	Need to align IS with decision contexts
Gorry & Morton (1989)	Conceptual	Revisited MIS decision framework	Differentiation of support across management levels	System design must reflect decision complexity
O'brien & Marakas (2008)	Cross-sector (textbook)	MIS components and managerial use	Better planning, control, and coordination	Depends on governance, users, and integration
Oz (1999)	Cross-sector (textbook)	MIS foundations	Information for managerial control	Requires consistent reporting and data integrity
Asemi et al. (2011)	Organizations (general)	MIS and DSS for decisions	Improved managerial decision process	Complementarity of MIS and DSS
Berisha-Shaqiri (2014)	Organizations (general)	MIS role in decisions	Increased decision accuracy and speed	Adoption and relevance of reports matter
Ada & Ghaffarzadeh (2015)	Organizations (general)	MIS/DSS-based decision making	Stronger decision support for managers	Need appropriate system selection for decision type
Ali (2019)	Organizations (general)	MIS impact on decisions	Improved decision quality via information access	Data quality and usage discipline critical
Hasan et al. (2013)	Review	MIS adoption & managerial decisions	Improved decisions when adopted effectively	Adoption barriers; training and readiness issues
El-Ebiary et al. (2020)	Organizations (general)	MIS effectiveness	Better decision timeliness and reliability	Data issues and weak processes reduce value

Hamdat et al. (2024)	Organizations (general)	MIS and efficiency	Faster decision cycles and efficiency gains	Implementation quality affects outcomes
Munirat et al. (2014)	Nigeria business orgs	MIS and performance	Decision improvement linked to performance	Resource constraints and adoption issues
Ajayi & Omirin (2007)	Nigerian universities	MIS in decision making	Improved administrative decisions	Infrastructure and adoption limitations
Nwankwo et al. (2020)	Nigerian universities	Data collection methods for MIS	Better administrator decisions	Data collection and governance are central
Al-Zhrani (2010)	Crisis context	MIS in crises	Better coordination and crisis decision support	System readiness and reliability under stress

3. METHODOLOGY

This study adopts structured literature based approach to examine the role of Management Information Systems (MIS) in business decision making with respect to the managerial levels and organizational contexts. The methodological structure is deliberately tailored to the goal of the article, i.e. synthesizing the known established theory, the comparative system perspectives (MIS vs. DSS) and the empirical findings on the decision effectiveness, efficiency and governance conditions of MIS enabled decision making. In accordance with decision-centric MIS scholarship, decision structure and managerial level are employed as the primary analytical lenses in structuring the review following the widely-held view that information systems should be judged by their congruence with decision types and management activities (Gorry & Scott Morton, 1971; Gorry & Morton, 1989; O'brien & Marakas, 2008).

3.1 Research methodology and methodology

A qualitative and integrative approach to literature review using narrative synthesis and thematic content analysis was utilized. This approach is appropriate because the MIS decision-making literature ranges from conceptual frameworks, practitioner-oriented books, sectoral case analyses, and empirical studies with different designs. Rather than attempting statistical meta-analysis (requiring homogeneous measurement constructs and effect sizes), interpretive integration of findings and systematic classification of evidence is emphasized in this type of methodology. The approach is consistent with the previous review-oriented studies that synthesize the findings on the effectiveness of MIS, adoption

condition, decision outcome across the context (Hasan et al., 2013; Sari & Priantinah, 2019; El-Ebiary et al., 2023; Mishra et al., 2015; Trivedi & Verma, 2018). The review is divided into three phases: (i) bounded corpus definition through the provision of reference set, (ii) structured coding and classification of each source and (iii) cross study synthesis to extract decision relevant themes and comparison insights.

3.2 Data sources and corpus bounded definition

The evidence base of this article is limited to the 40 references supplied by the author of the study in question. This bounded design provides traceability between claims and sources and eliminates outside reference drift. The reference set includes:

- foundational MIS theory and decision frameworks (e.g. Gorry & Scott Morton, 1971; Gorry & Morton, 1989),
- System components and managerial use are defined in MIS textbooks and practitioner texts such as those by Oz, 1999; O'brien & Marakas, 2008; and McLeod, 1983,
- empirical studies evaluating MIS effects on decision making and/or organisational performance in different contexts (e.g. Ali, 2019; Munirat et al., 2014; Ajayi & Omirin, 2007; Sonawane, 2016; Gonfa, 2015; El-Ebiary et al., 2020; Hamdat et al., 2024), and
- Examples: "• review and comparative studies that focus on the effectiveness of MIS, MIS - DSS relationships, and strategic decision support (e.g., Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018; Demigha, 2021; Hasan et al., 2013; El-Ebiary et al., 2023; Trivedi & Verma, 2018);"

Because the supplied list has duplicate entries for at least one item (DINAH, 2020), duplicates were considered a single conceptual source so as not to overcount them during the mapping of frequencies by theme. This decision is in support of internal consistency whilst retaining fidelity to the bibliography offered (DINAH, 2020).

3.3 Study inclusion and exclusion criteria

Given the limited amount of corpus, the inclusion criteria was conceptual and empirical relevance rather than filtering out databases. A source was included in the analytic synthesis if one or more of the following conditions were met:

- Provided a definition, framework or taxonomy of the relationship between MIS and managerial decisions (Gorry & Scott Morton, 1971; Oz, 1999; O'brien & Marakas, 2008).

- Reported or discussed MIS impacts on quality of decision, speed of decision, efficiency of decision, or administrative/strategic decision processes (Asemi et al., 2011; Berisha-Shaqiri, 2014; Ali, 2019; El-Ebiary et al., 2020; Hamdat et al., 2024)
- Explained MIS adoption considerations, barriers, governance issues or organizational readiness as determinants of decision value (Hasan et al., 2013; Hosseini et al., 2012; Kiradoo, 2016; Nwankwo et al., 2020).
- MIS vs DSS vs Position DSS as complementary decision infrastructure: Vierck, H. (1981) Segmentation of organizational decision support systems.MIS vs DSS or DSS as complementary decision infrastructure: Houdeshel, S., Watson, D. (1987) System for decision support in organizations: Data flow design.

Sources were not excluded for being conceptual, older, or sector-specific, for the objective is integrative, i.e., to link to basics of logic and to current sectoral applications and constraints. However, purely descriptive items with minimal decision-making linkage were used more as a context-setting exercise rather than a central evidence piece in inferential claims (Tripathi 2011; Yew 2008; Ferratt et al 2010).

3.4 Data extraction and coding procedure

A structured extraction template was used to extract data from each source. For each reference, the following information was recorded:

- Publication type: conceptual framework, empirical study, review, textbook/practitioner text.
- Context/sector: General business, Education/ university administration, banking/finance, industrial/ operations, crisis management, HR/ people management or cross sector (Ajayi & Omirin, 2007; Gonfa, 2015; Sonawane, 2016; Al-Zhrani, 2010; Tripathi, 2011).
- Decision level that is concerned with: operational control, management/tactical control, strategic planning (Gorry & Scott Morton, 1971; Gorry & Morton, 1989)
- Decision structure - structured, semi-structured, unstructured; whether MIS, DSS or combined architectures were implicated (Gorry & Scott Morton, 1971; Vierck, 1981; Houdeshel & Watson, 1987).
- Outcome emphasis: timeliness of decision, accuracy/quality of decision, efficiency of decision, coordination/control, strategic alignment, organizational performance linkages (Ali, 2019; El-Ebiary et al., 2020; Munirat et al., 2014; Memon et al., 2021).

- Enablers and constraints Data quality/integration Infrastructure Governance User competence/training Resistance to change Process alignment (Hasan et al., 2013; Nwankwo et al., 2020; Kiradoo, 2016; Hosseini et al., 2012).

The coding scheme was developed on an iterative basis. Initial categories were developed deductively from the framework of decision level and decision structure (Gorry & Scott Morton, 1971; Gorry & Morton, 1989). Additional categories were refined in an inductive manner as the themes repeated thematically - especially around adoption barriers, governance needs, and MIS-DSS complementarity (Ada & Ghaffarzadeh, 2015; Demigha, 2021; El-Ebiary et al., 2023).

3.5 Analytical framework and synthesis approach

Two analytic lenses were employed, which were complementary to one another.

Lens A: Decision-level alignment (lens of primary)

Each of the studies was mapped to the managerial level(s) it addressed (operational, tactical, and/or strategic). This mapping is in support of synthesis about where MIS is most consistently associated with improvement in decision (e.g. routine performance monitoring and structured reporting) and where MIS requires complementary decision tools (e.g. DSS for complex non-routine decisions) (Gorry & Scott Morton, 1971; Ada & Ghaffarzadeh, 2015; Keshtegar and Vakili, 2018).

LensB: Capability - constraint pairing (secondary lens)

Findings were synthesized as capability claims (what MIS enables) paired with boundary conditions (what limits or shapes impact). Capability categories include information timeliness, reporting standardization, coordination and control, and strategic visibility (O'brien & Marakas, 2008; Ali, 2019; El-Ebiary et al., 2020). Constraint categories include data collection weaknesses, infrastructural constraints, limited training, governance immaturity, and resistance to change (Ajayi & Omirin, 2007; Nwankwo et al., 2020; Hasan et al., 2013; Hosseini et al., 2012; Kiradoo, 2016).

This pairing approach avoids overly deterministic conclusions by ensuring that every positive effect discussed in the synthesis is linked to adoption and design conditions documented in the corpus.

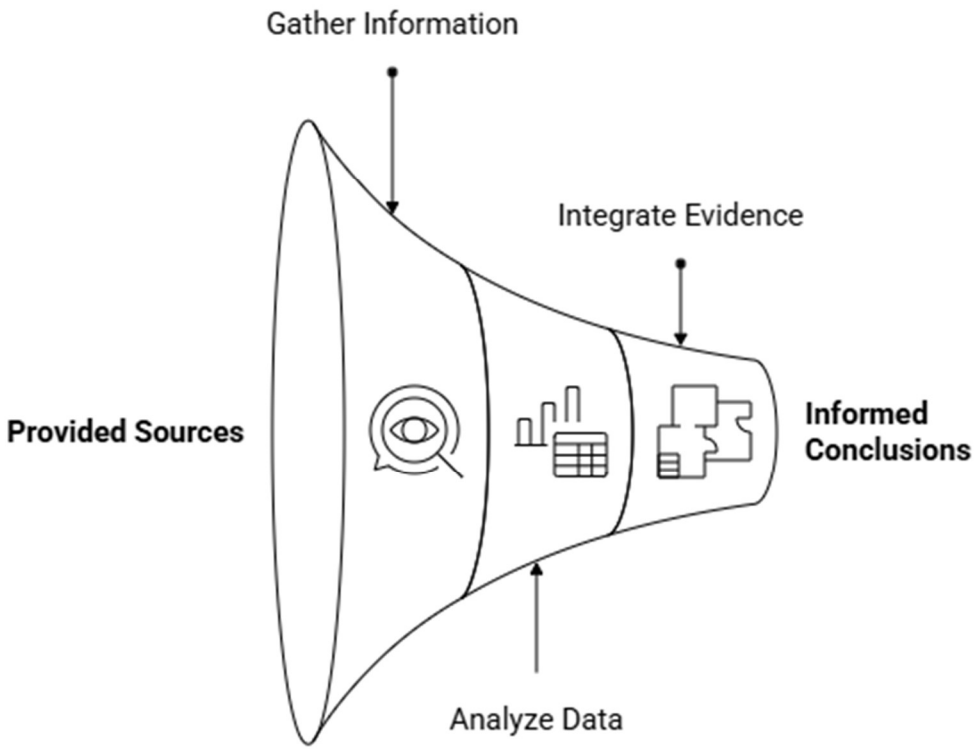
3.6 Reliability and rigor procedures

To strengthen rigor in a qualitative synthesis context, three practices were applied:

Codebook consistency: a single set of definitions for decision levels, decision structures, and outcome categories was maintained across the corpus to minimize interpretive drift (Gorry & Scott Morton, 1971; O'brien & Marakas, 2008).

Triangulation by source type: claims were validated by cross-checking conceptual arguments against empirical studies and sectoral evidence where available (Hasan et al., 2013; El-Ebiary et al., 2020; Munirat et al., 2014; Hamdat et al., 2024). **Negative-case attention:** where sources emphasized barriers or inconsistent outcomes, these were retained as central to the synthesis rather than treated as exceptions, consistent with the view that MIS impact is conditional on organizational and data realities (Ajayi & Omirin, 2007; Nwankwo et al., 2020; Hosseini et al., 2012).

Figure 1: Review methodology workflow for synthesizing MIS–decision-making evidence (bounded to provided sources)



3.8 methodological limitations

This methodology purposely focusses on depth and traceability of a corpus that is fixed. The confined reference design restricts thoroughness in comparison with the systematic reviews conducted on a database-wide level, nevertheless, it enhances internal consistency and makes every assertion directly

traceable to the sources it provides. Also, the diversity of study designs and settings decreases the comparability of the magnitude of effects, which again justifies the use of thematic synthesis as opposed to quantitative aggregation (Hasan et al., 2013; Sari and Priantinah, 2019; El-Ebiary et al., 2023). Lastly, since the majority of literature-based methods, conclusions are also the quality, extent, and depth of the sources used, specifically on the condition of implementation and the specificity of decision outcomes measures (Ali, 2019; El-Ebiary et al., 2020; Nwankwo et al., 2020).

4. RESULTS

Synthesis was carried out based on the limited corpus of 40 sources listed (one duplicated entry was counted as a single conceptual source during coding to prevent counting it twice). The resultant evidence base includes the pillars of fundamental MIS decision models, MIS textbooks and practitioner treatments, industry research, and reviews on MIS performance and its association with decision-making performance (Gorry & Scott Morton, 1971; Gorry and Morton, 1989; Oz, 1999; O'brien and Marakas, 2008; Hasan et al., 2013; Sari and Priantinah, 2019; El-Ebiary et al., 202 Among the coded content, the aspects of (i) decision timeliness, (ii) decision quality/accuracy, (iii) coordination and control, and (iv) decision efficiency were reported most often in relation to decision-related outcomes, and they are all associated with MIS capabilities in reporting, monitoring, and information consolidation (Asemi et al., 2011; Berisha-Shaqiri, 2014; Ali, 2019; El-Ebiary et al., 2020; Hamdat et al., 20

4.1 This section displays a profile of the corpus based on the evidence type

The use of coding by the type of publication showed that there were four prevailing types. First, conceptual frameworks define the decision-level/decision-structure alignment logic upon which much of the subsequent empirical research, especially the differentiation of decision circumstances into structured, semi-structured, and unstructured forms and the information required to support such circumstances (Gorry and Morton, 1971; Gorry and Morton, 1989). Second, textbook/practitioner sources focus on MIS as a backbone of enterprise information of routine reporting and managerial control making MIS products to be information that is standardized, periodic and are informed exceptions used in planning and monitoring activities (McLeod, 1983; Oz, 1999; O'brien and Marakas, 2008). Third, empirical research in the area of business and in the context of the public sector pays attention to the observed positive change in the process of decisions when MIS is applied to provide timely and relevant information (Ajayi and Omirin, 2007; Munirat et al., 2014; Gonfa, 2015; Sonawane, 2016; Ali, 2019; El-Ebiary et al., 2020; Hamdat et al., 2024). Fourth, review and comparative studies summarize evidence on determinants of MIS effectiveness and also often place DSS as an analytical

extension to MIS reporting capability (Hasan et al., 2013; Ada and Ghaffarzadeh, 2015; Keshtegar and Vakili, 2018; Demigha, 2021; El-Ebiary et al., 2023).

4.2 Results in terms of decision level and decision structure

The evidence mapping to managerial levels indicated that, the greatest and consistent support is reported at the operational and tactical levels where decisions are more apt to be structured or semi structured and where standardized reporting, performance monitoring and exception alert is the core of management control (Gorry and Scott Morton, 1971; Oz, 1999; O'brien and Marakas, 2008). The empirical research repeatedly characterizes MIS as enhancing the routines of daily decisions by providing superior information access and reporting reliability, and decision timeliness and coordination as one of the most characteristic results (Berisha-Shaqiri, 2014; Ali, 2019; El-Ebiary et al., 2020). Conversely, evidence that is mapped to strategic decision making more often highlights the necessity of more analytical and exploratory power- which has often been linked to DSS- where decisions are non-routine or unstructured (Vierck, 1981; Houdeshel and Watson, 1987; Ada and Ghaffarzadeh, 2015; Keshtegar and Vakili, 2018; Memon et al., 2021). Strategic-level results seem to be more conditional, and they are often correlated with the efficiency of transforming MIS outputs into actionable meaning and strategic control in organizations (Trivedi and Verma, 2018; Memon et al., 2021).

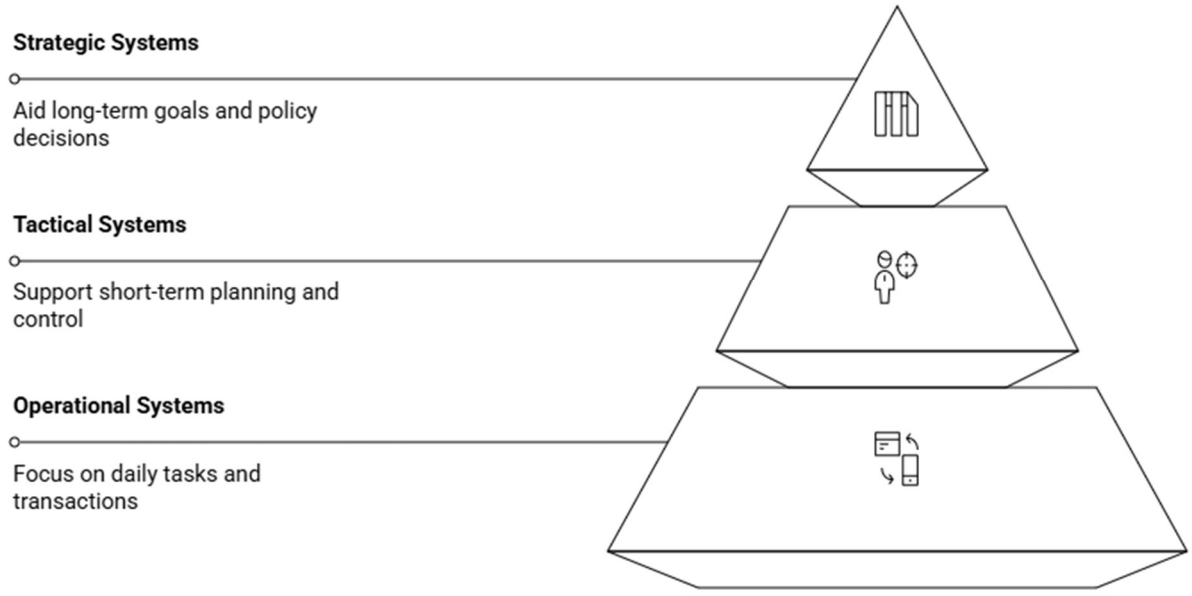
4.3 Results by sectoral context

When sector coding is used, recurrent and context-dependent constraints of MIS decision-support patterns are identified. In teaching and higher education, it has been shown that MIS can play a role in administrative planning and control, although it also notes the limitations to adoption and infrastructure limitations that define the benefits realized in decisions (Ajayi and Omirin, 2007; Shah, 2014; Nwankwo et al., 2020; Bhandari, 2023). The sources indicate MIS effect on managerial monitoring and decision coordination in the context of banking and commercial services, and the results of decisions are also dependent on the stability of the system and the preparedness of the organization (Gonfa, 2015). The focus of results in industrial and operations areas is on managerial control and efficiency improvements brought about by organized flows of information and habitual reporting (Sonawane, 2016). Within crisis decision environments, the foregrounds of MIS are that the system is ready to coordinate and inform flow processes, whose value lies with uncertainty in the information reporting channels, which is trusted (Al-Zhrani, 2010).

4.4 Determinants of MIS decision value observed

In both contexts, the results that were obtained are consistent in a few common determinants that do relate to positive decision outcomes. The quality of data and data collection discipline seem to be among the primary enabling factors, and the sources explicitly state that decision reliability is dependent on the integrity, completeness and timeliness of the underlying organizational data (El-Ebiary et al., 2020; Nwankwo et al., 2020; El-Ebiary et al., 2023). The competence of the users and training as the key elements influencing the ability of managers to interpret MIS reports and integrate them into decision-making practices reappear (Hasan et al., 2013; Kiradoo, 2016; Ehie, 2002; Yew, 2008). The alignment of organizations and governance once again are found to be boundary conditions: when reporting outputs are equal to decision rights and managerial responsibilities, when implementation obstacles are actively addressed, MIS benefits are more likely to be reported (Hosseini et al., 2012; Al-Mamary et al., 2014; Sari and Priantinah, 2019).

Figure 2: Evidence mapping of MIS support by decision level and system emphasis (synthesized from coded sources)



These results provide the empirical and conceptual foundation for relation building in the following Discussion section by explaining where MIS impacts are most consistently found (operational/tactical decision environments) and what are the conditions repeatedly linked to successful decision outcomes

(data integrity, user capability and organizational alignment). (Gorry, & Scott Morton, 1971; Hasan, et al. 2013; Ali, 2019; El-Ebiary, et al., 2020; Hamdat, et al., 2024)

5. DISCUSSION

The results of this bounded synthesis help to reinforce a central proposition in the MIS literature: that the decision value of MIS is not some abstract technological attribute, but a function of fit - fit between the outputs of the system and the decision tasks, fit between the data structures and managerially relevant needs for information, and fit between governance routines and decision rights. This proposition is consistent with the fundamental view that information systems have to be understood in relation to the structure of managerial problems and the decision level at which decisions are made (Gorry & Scott Morton, 1971; Gorry & Morton, 1989). When MIS is aligned to operational and tactical decision routines, the literature suggests greater consistency, and can be observed in decision timeliness, decision consistency, and managerial control. On the other hand, as decision contexts are more strategic and unstructured, the benefits of MIS seem more contingent to the extent that they are often dependent on complementary analytical decision support and higher levels of organizational maturity (O'brien & Marakas, 2008; Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018).

5.1 Why the Impact of MIS is greatest at operational and tactical levels

One of the reasons why the literature shows stronger and more consistent MIS decision impacts in operational and tactical decision contexts is that these decision environments are relatively structured. Operational control is based on predetermined measures, regular reports and recurring decision procedures; therefore, it is suited for MIS functions such as standardised reporting, exception alerts, and routine reporting on performance (Oz, 1999; McLeod, 1983; O'brien & Marakas, 2008). Empirical studies interpreted in this synthesis link MIS use to better decision cycle time and coordination over and over again, along with the idea of structured decision settings being where info standardization is going to pay off for managers right away (Ali, 2019; El-Ebiary et al., 2020; Hamdat et al., 2024). At the tactical level, MIS makes its contribution by aggregating information across functional boundaries - by making it possible for managers to monitor budgets, allocate resources and integrate departmental activities using the same set of indicators. This supports management control functions and enhances the predictability of management response towards performance deviation (Asemi et al., 2011; Berisha-Shaqiri, 2014). In other words, MIS enhances "decision discipline" with consistent institutional practices of information flow that eliminate the dependence on informal or fragmented reporting practices.

5.2 MIS- DSS Complementarity and the Routine Reporting Boundary

A common theme that runs through the corpus is the idea that MIS should not be considered an independent solution to all decision problems. The evidence mapping draws attention to the fact that strategic and unstructured decision environments give more attention to analytical support, scenario exploration, and model-based evaluation - abilities typically associated with DSS and related decision support architectures (Vierck, 1981; Houdeshel, & Watson, 1987; Demigha, 2021). Comparative discussions indicate that MIS provides a critical basis (validated and organized information), whereas DSS is used to extend managerial reasoning through interactive analysis and exploring alternatives (Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018). This distinction makes clear an important practical implication: organizations that expect MIS to directly "solve" complicated strategic uncertainty may be disappointed if MIS is only a system of descriptive reporting. Strategic decision making will often involve interpretive judgment, cross-functional trade-off analysis, as well as sensitivity test. In such cases MIS value is achieved when the system offers a reliable information base that can be interrogated by the strategic managers with other analytical approaches (Trivedi & Verma, 2018; Memon et al., 2021). Therefore, the MIS-DSS relationship should not be considered a competition but decision architecture in which of different systems types supports different decision structures (Gorry & Scott Morton, 1971; Ada & Ghaffarzadeh, 2015).

5.3 Data integrity and information quality as decision risk controls

The results are also shown to show that data integrity and information quality are among the most consistent aspects of the value of MIS-driven decisions. This is no surprise: MIS outputs are only as reliable as the processes of data collection and integration that feed those outputs. Studies stressing on the MIS effectiveness continuously point out that incomplete, delayed, or inconsistent data affects the reliability of decision making and can pose a risk as it creates misleading summaries (El-Ebiary et al., 2020; El-Ebiary et al., 2023). Evidence from university administration suggests further that the way data are collected and standardized determines the quality of administrative decisions (Nwankwo et al., 2020). From a governance perspective, this implies that "MIS improvement" should be understood not only in terms of software improvement, but in terms of organizational investment in data pipelines, validation routines, and accountability. Without these, MIS can become a mechanism to distribute inappropriate information on a large scale - amplifying decision errors. For managers, the takeaway is that there is a need to look upstream and address data governance and cross-functional data ownership issues in order

to achieve improvements in decision quality, especially in organizations with decentralized operations, or poor reporting discipline (Ajayi & Omirin, 2007; Nwankwo et al., 2020).

5.4 Human ability, use and organizational fit

A second set of determinants is that of human capability and adoption dynamics. The literature states that managers must have the competence to interpret the output of MIS and make use of them in the decision routine; otherwise, MIS may be underutilized or used superficially. Review of studies and discussions focused on adoption calls for training, readiness, and acceptance by users as key conditions for realization of MIS benefits (Hasan et al., 2013; Kiradoo, 2016). This is complemented by the curriculum and program review perspectives that suggest that the quality of MIS capability in organizations is partly dependent on the degree to which MIS education meets the needs of practitioners (Ehie, 2002; Yew, 2008; Ferratt et al., 2010). Organizational alignment takes on also a critical condition: MIS is most useful if it represents the reflection of decision rights, managerial responsibilities and relevant performance indicators. Reviews of information system in business organizations highlight the mismatches between system design and managerial use cases resulting in reduced value of the systems and possible generation of information overload or irrelevant reporting (Al-Mamary et al., 2014; Sari & Priantinah, 2019). Sectoral findings in education and business contexts relate to resource constraints and infrastructure limitations both of which can further reduce the degree of alignment by limiting system functionality, coverage or integration (Ajayi & Omirin, 2007; Munirat et al., 2014).

5.5 Context sensitivity and crisis oriented decision demands

Finally, the evidence seems to indicate that context sensitivity is significant - especially in conditions of crisis where decision horizons are reduced and where uncertainty is elevated. In these kinds of environments, MIS can aid in coordination and fast information flow but only if systems are robust, trusted and capable of providing timely,

6. CONCLUSION

The synthesis of literatures on business decision making using Management Information Systems (MIS) confirm that MIS is an essential managerial tool for integrating data, improving the quality of information and facilitating the timeliness, structured and rational decision making processes between organizational levels. The findings as a whole point to the conclusion that the decision value of MIS is not embedded in the mere technological sophistication but in the strategic fitting of the MIS with the decision structures, managerial responsibilities and organizational governance. When implemented and

supported appropriately MIS converts data into meaningful information that enhances the efficiency of operations, managerial coordination and strategic control (Gorry & Scott Morton, 1971; O'Brien & Marakas, 2008; Ali, 2019; El-Ebiary et al., 2020). At the operational level, MIS makes decisions faster and more accurate through standardization of reporting formats and real-time generation of management performance feedback. This degree of integration enables organizations to achieve minimum uncertainty, errors, and enabling them to be more responsive to the routine challenges (Berisha-Shaqiri, 2014; Asemi et al., 2011). At the tactical level, MIS is used for coordination and resource optimization, to ensure that the activities of the department are aligned with the overall organizational objectives. The empirical literature has continuously shown that where MIS has been used to consolidate cross-departmental data and make such transparent performance indicators available, there has been a measurable improvement in control and efficiency (Hamdat et al., 2024; Munirat et al., 2014). Strategically, MIS adds to the process of long-term decision-making through better accessibility of information, environmental monitoring, and strategic forecasting. However, the literature warns that the usefulness of MIS at the strategic level depends greatly on the complementary function of analytical systems such as Decision Support Systems (DSS) which have simulation, scenario analysis and modeling abilities that MIS does not (Ada & Ghaffarzadeh, 2015; Keshtegar & Vakili, 2018; Memon et al., 2021). Thus, organizations will have superior strategic decision making outcomes when using MIS and DSS in an integrated manner to combine both reliable data management and advanced decision analysis.

Despite these strengths, however, MIS performance is conditional. The reviewed evidence sees data quality, user competence, organizational alignment and governance maturity as the key determinants of MIS success. In research spanning the sectors of education, industry, and finance, the issues of poor data collection, insufficient training, or resistance to use of systems can undermine the reliability of MIS and lower its contribution to the quality of decisions (Hasan et al., 2013; Ajayi & Omirin, 2007; Nwankwo et al., 2020). Likewise, infrastructural constraints and a lack of managerial support are also common barriers to complete operationalization of MIS, especially in developing economies where technical expertise and funding are unevenly distributed (Hosseini et al., 2012; Kiradoo, 2016). The implications for business leaders is that MIS should be considered a strategic management capability, but not a static software deployment. Creating Effective MIS requires conscious investments in data governance, staff training, system integration, and managerial accountability. Information systems should be continually improved to keep up with changing business models and decision environments. Furthermore, the setting of policies that guarantee transparency, reliability, and ethical use of data increases the integrity of the outputs of MIS, which in turn increases trust in data-driven decision making. For scholars and

practitioners the study points to some important directions for future research and practice. There is a need to develop models of hybrid MIS and DSS which can incorporate artificial intelligence, real-time analysis and predictive capabilities to solve more complex business problems. Future research based on empirical investigations should also examine the mediating role of organizational culture, leadership and digital transformation initiative in the effectiveness of MIS across sectors.

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