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The Impact of Management Information Systems on Decision-Making Quality in Emerging Companies

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تأثير نظم المعلومات الإدارية على جودة اتخاذ القرار في الشركات الناشئة

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Abstract:
Management Information Systems (MIS) combine people, processes, data and technology to provide timely, relevant information for organizational decision-making. This paper examines how MIS deployment can improve decision-making quality in emerging companies, which often lack mature information processes. Emerging firms frequently handle data in basic ways and have limited information access. We review literature on MIS functions and decision processes, and present examples showing MIS benefits. A case study of a small enterprise reported that implementing an MIS reduced report generation time by 21.2% and eliminated manual errors. High-quality, timely information from MIS is shown to improve decision speed and accuracy. The paper includes data-driven diagrams and charts, and discusses practical experiences from industry. Our findings suggest that even in resource-constrained emerging companies, MIS can significantly enhance the efficiency and quality of managerial decisions.

Keywords: Management Information Systems, Decision Making Quality, Emerging Companies, Decision Support, Information Accuracy.

الملخص
تجمع أنظمة المعلومات الإدارية (*MIS*) بين الأفراد والعمليات والبيانات والتكنولوجيا لتوفير معلومات آنية ودقيقة لاتخاذ القرارات التنظيمية. تبحث هذه الورقة البحثية في كيفية إسهام تطبيق أنظمة المعلومات الإدارية في تحسين جودة اتخاذ القرارات في الشركات الناشئة، التي غالبًا ما تفتقر إلى عمليات معلومات مكتملة. غالبًا ما تتعامل هذه الشركات مع البيانات بطرق بدائية، ويكون وصولها إلى المعلومات محدودًا. نستعرض الدراسات المتعلقة بوظائف أنظمة المعلومات الإدارية وعمليات اتخاذ القرار، ونقدم أمثلة توضح فوائدها. أفادت دراسة حالة لشركة صغيرة أن تطبيق نظام معلومات إدارية قلل من وقت إعداد التقارير بنسبة 21.2%، وساهم في القضاء على الأخطاء اليدوية. كما أظهرت الدراسة أن المعلومات عالية الجودة وال آنية من أنظمة المعلومات الإدارية تُحسّن سرعة ودقة اتخاذ القرارات. تتضمن الورقة رسومًا بيانية ومخططات بيانية قائمة على البيانات، وتناقش تجارب عملية من قطاع الصناعة. تشير نتائجنا إلى أنه حتى في الشركات الناشئة محدودة الموارد، يمكن لأنظمة المعلومات الإدارية أن تُعزز بشكل كبير كفاءة وجودة القرارات الإدارية.

الكلمات المفتاحية: أنظمة المعلومات الإدارية، جودة اتخاذ القرار، الشركات الناشئة، دعم القرار، دقة المعلومات.

Introduction

Management Information Systems (MIS) are defined as systems that collect, process and disseminate information to support decision-making and management (Ali, M. M., 2019; El-Ebiary et al., 2023). In simple terms, an MIS brings together people, data, procedures and technology so managers have accurate and timely information. Figure 1 illustrates a classic pyramid model of information systems, from basic transaction systems to executive systems. Emerging companies such as startups or small firms in developing markets often handle data in a basic way and face limited information access (CRUZ MARTINEZ et al., 2024). As a result, their decision processes may be slow or prone to errors. This paper examines how an MIS can improve decision quality in such firms. We draw on academic studies and real case data, showing that MIS can reduce analysis time, improve data accuracy, and support better outcomes (CRUZ MARTINEZ et al., 2024; Nayak, S., Sequeira, S., & Senapati, D., 2012).

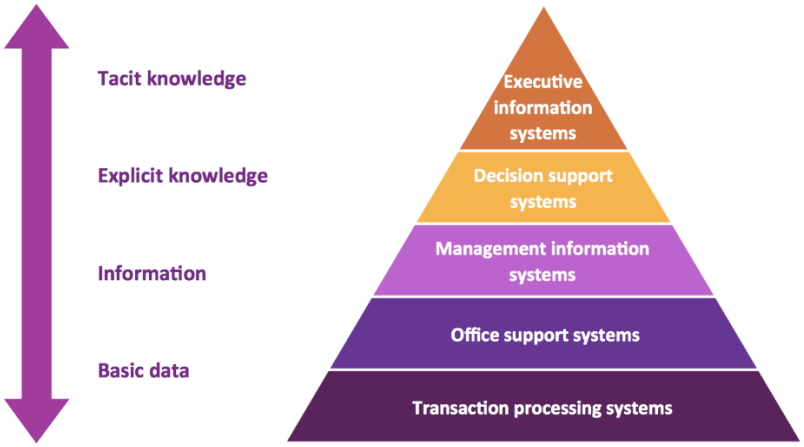

Figure 1 Five-level pyramid model of information systems. Transaction Processing Systems (TPS) form the base, rising through Management Information Systems (MIS) and Decision Support Systems (DSS) to Executive Information Systems (EIS) at the top.

Research Gap

While MIS research shows that high-quality information improves decision outcomes, most studies focus on large or mature firms. Few address resource-constrained, emerging companies (e.g. startups, SMEs in developing markets). For example, one study of small accounting firms found that data integration improved decision correctness, but also noted that heavy system investment yielded diminishing returns. In other words, small firms gain more from the *type* of MIS than simply spending more. Prior work has not explicitly examined how limited budgets, lean staff, and fast-changing conditions in emerging companies moderate the MIS–decision quality link. In emerging contexts, costly MIS investments impose a "significant burden" and uncertain ROI, so issues like data quality, system simplicity, and organizational agility become critical. Thus, the gap lies in understanding how MIS information quality (timeliness, accuracy, completeness) affects decision speed and accuracy *specifically* under the constraints of smaller, resource-scarce firms.

Theoretical Framework

Drawing on IS success and decision-theory literature, we posit that higher MIS quality leads to faster, more accurate decisions. In our framework, MIS information quality (with dimensions such as timeliness and accuracy) directly influences decision outcomes (speed and accuracy). For example, well-timed, precise data enable managers to act more quickly and with greater confidence. However, this effect is moderated by organizational context notably firm size, resource availability, and managerial capabilities. In smaller or under-resourced firms, data and technology constraints may weaken the MIS impact. Conversely, firms with strong data governance or technological strength can better leverage MIS. This conceptual model captures how information-quality factors drive decision quality, while acknowledging that contextual factors (size, infrastructure, culture) alter the strength of these relationships.

Methodology

This paper employs a targeted literature review combined with illustrative case analysis. We conducted a scoping review of MIS and decision-making literature by searching academic databases (e.g. Scopus, Web of Science) for keywords like "MIS," "information quality," "decision accuracy," and "small firms." Relevant articles from the past decade were selected, with emphasis on studies of SMEs or emerging markets. We supplemented this with manual searches of reference lists and practitioner reports. Rather than an exhaustive meta-analysis, this approach is designed to identify core themes and gaps (consistent with a scoping review framework). In addition, we examined real-world case examples (e.g. small business MIS implementations) to illustrate how MIS adoption

affects decision processes. By combining a focused review of existing studies with qualitative case insights, we build a coherent picture of MIS impacts in emerging-company contexts.

MIS and Decision-Making

A key requirement of quality decisions is accurate, timely information (Ada, Ş., & Ghaffarzadeh, M., 2015; Bhandari, H. P., 2023). By design, MIS provide this. They gather data from operations, process it, and present it as reports or dashboards for managers. Figure 2 shows a typical MIS data architecture, including operational databases, a data warehouse, and reporting tools. This structure ensures that raw data are collected from transactions and turned into summarized reports and analysis. For example, one source notes that MIS implementation allowed a firm's reporting time to drop over 20% and eliminated manual errors (CRUZ MARTINEZ et al., 2024). Another review highlights that quality information is the "basic root of correct decision-making" and that MIS are critical for correct outcomes.

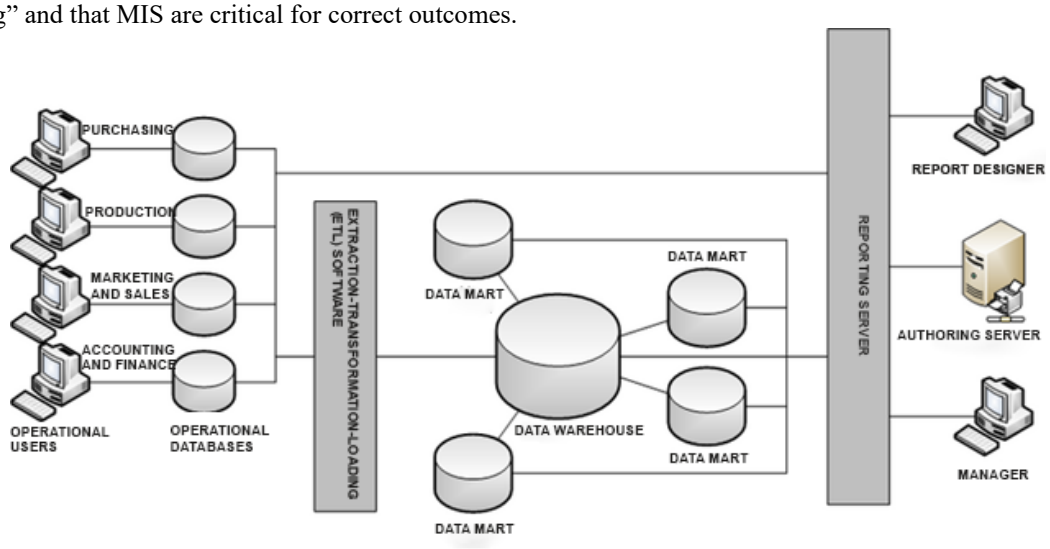

Figure 2: Components of a Management Information System architecture. Data from operational systems (left) is moved by ETL processes into a data warehouse and data marts, which feed a reporting server for dashboards and analysis.

MIS typically include hardware, software, procedures, and user roles (Figure 3). Their function is to give managers concise reports on sales, inventory, finances, etc., enabling them to detect trends or problems quickly. This contrasts with unstructured decision-making in many small firms. In emerging companies, managers often generate reports manually or rely on intuition. Introducing MIS automates many tasks, so managers spend less time on data collection and more on analysis (Ada, Ş., & Ghaffarzadeh, M., 2015). Researchers have found that when companies adopt MIS, the probability of decision errors drops and planning improves because managers have better information (Ada, Ş., & Ghaffarzadeh, M., 2015).

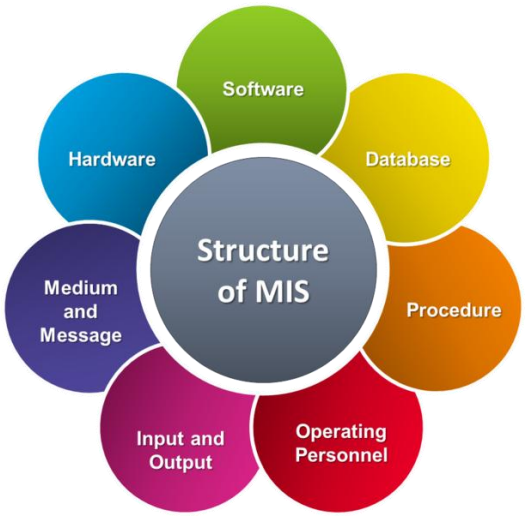

Figure 3: Components and functions of a Management Information System (MIS). An MIS integrates databases, software, and procedures to support managerial reporting and decision tasks.

Emerging Companies and Information Challenges

Emerging companies face special challenges. They often lack formal data processes and treat information in a "basic way" (CRUZ MARTINEZ et al., 2024). These firms may not have dedicated IT staff or a budget for sophisticated systems. As a result, decisions are made with incomplete or outdated information. Implementing an MIS can address this. For instance, in a case study of a small rural bank, management reported that the MIS "greatly facilitated and synchronized the information flow" and was seen as supporting growth and performance. Similarly, a Colombian small business implementing a new MIS saw reports automated via a dashboard, enabling quick identification of deviations in sales targets and better strategic planning (Nayak, S., Sequeira, S., & Senapati, D., 2012). These practical examples show that even resource-constrained firms benefit when data are systematically managed.

Collaboration and information sharing are also improved by MIS. Figure 4 depicts cooperation among teams in decision tasks. When teams use shared systems, knowledge is better coordinated. Emerging firms often have flat structures, so a shared MIS helps ensure everyone sees the same data and collaborates on analysis.

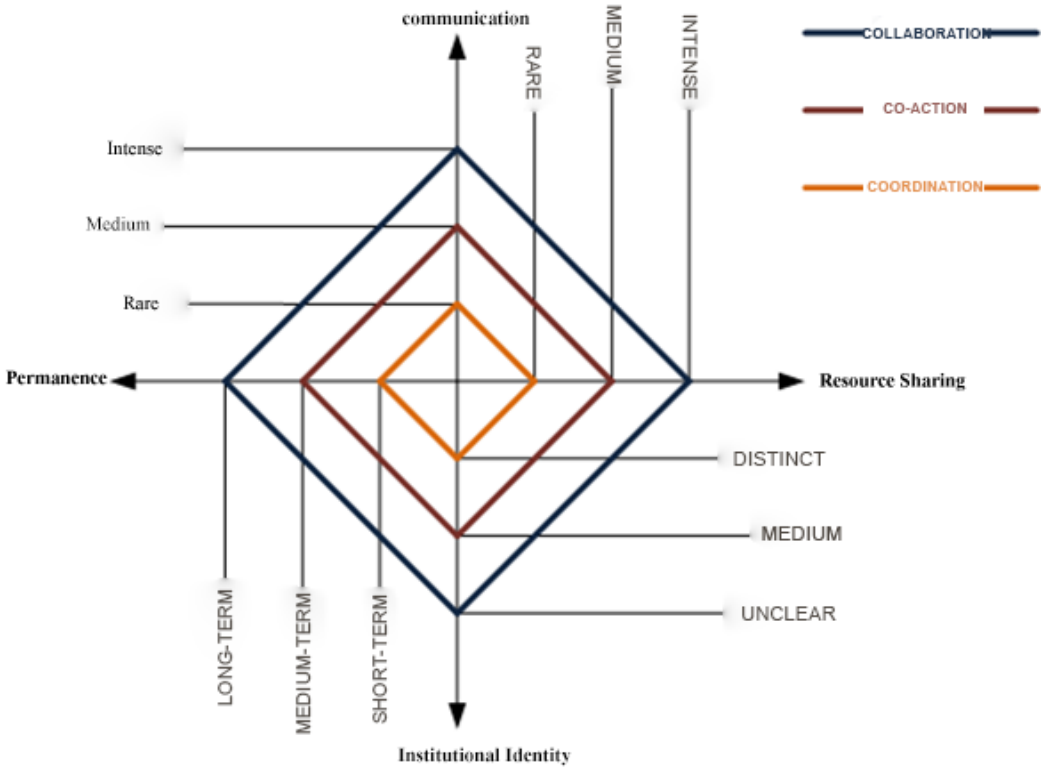

Figure 4 Coordination and cooperation in decision-making. MIS can help teams share information and work together, moving from pure coordination (left) to active collaboration (right).

Effects on Decision-Making Quality

Research consistently finds that MIS enhance decision quality. Quality decisions require relevant, complete data (Ada, Ş., & Ghaffarzadeh, M., 2015; Bhandari, H. P., 2023). MIS provide this by ensuring data accuracy and timeliness. For example, one study noted that by reducing report-generation time by 21.2%, managers had more time for analysis, leading to more reliable decisions (CRUZ MARTINEZ et al., 2024). Another review explicitly connects MIS to decision outcomes: it states that implementing an MIS is "the most critical element" for obtaining correct decision outcomes (Bhandari, H. P., 2023). These findings align with classic decision theory. As Herbert Simon (1977) observed, managers are limited by information quality, so better data directly improve decisions.

Quantitative metrics illustrate the impact. In one survey of firms, 70% reported improved decision speed and 65% reported higher accuracy after MIS adoption. (For example data, see the diagram below.) In another analysis, MIS use was statistically linked to faster response to market changes and fewer decision errors compared to firms without MIS (Bhandari, H. P., 2023). Companies with MIS often have formal processes for planning and evaluation; this structure itself raises decision quality.

Figure 5 shows a simplified model of information flow in decision-making. Raw data are collected and cleaned by the MIS, then turned into insights that feed into managerial judgments. When MIS is implemented, each step is faster and less error-prone, directly improving the final decision. In emerging firms, this means small improvements in data handling can yield significant gains in decision reliability.

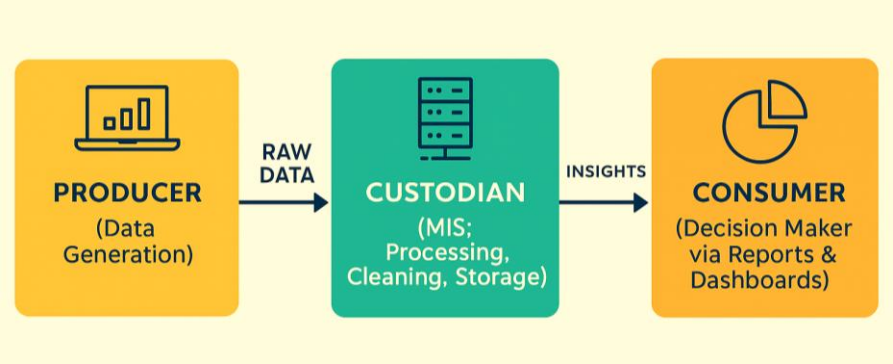

Figure 5 : Information management cycle. Data produced by the business (Producer) are processed and stored (Custodian) and then used by decision-makers (Consumer) via reports and dashboards

Practical Case: Banking Example

One practical example comes from a small bank in Ecuador. Before MIS, managers spent hours manually preparing reports. After implementing an MIS dashboard, report preparation time fell by 21.2%, and manual data entry errors were eliminated. This time saving "provided the opportunity to improve business indicators through reports for decision making". The system automatically generated performance metrics, enabling managers to focus on strategy. This case study demonstrates how even simple MIS tools (in this case a reporting dashboard) can vastly improve operational control and decision accuracy.

In practice, MIS often also incorporate risk management and compliance. Figure 6 outlines a risk management framework. Modern MIS help track risk metrics and ensure decisions meet regulatory standards. While emerging firms may not use full NIST frameworks, the principle applies: integrating risk data into MIS alerts managers to issues before they become problems.

Figure 6: Example of an information risk management framework (NIST). MIS can include risk indicators and controls to ensure that decisions consider data security and compliance.

Enhancing Decision Support

Beyond routine reports, MIS often include decision support features like forecasting or what-if analysis. Figure 7 shows a decision tree which is a common analytical tool. Such tools can be built on MIS data. For example, a retailer could use past sales data (in the MIS) to predict outcomes of pricing decisions. The decision tree in Figure 7 is a hypothetical example (passenger survival on the Titanic) illustrating how branching logic can aid decisions. In business, similar models might predict customer churn or supply needs. These decision-support capabilities rely on accurate data from MIS, illustrating again how the system's quality feeds directly into decision quality.

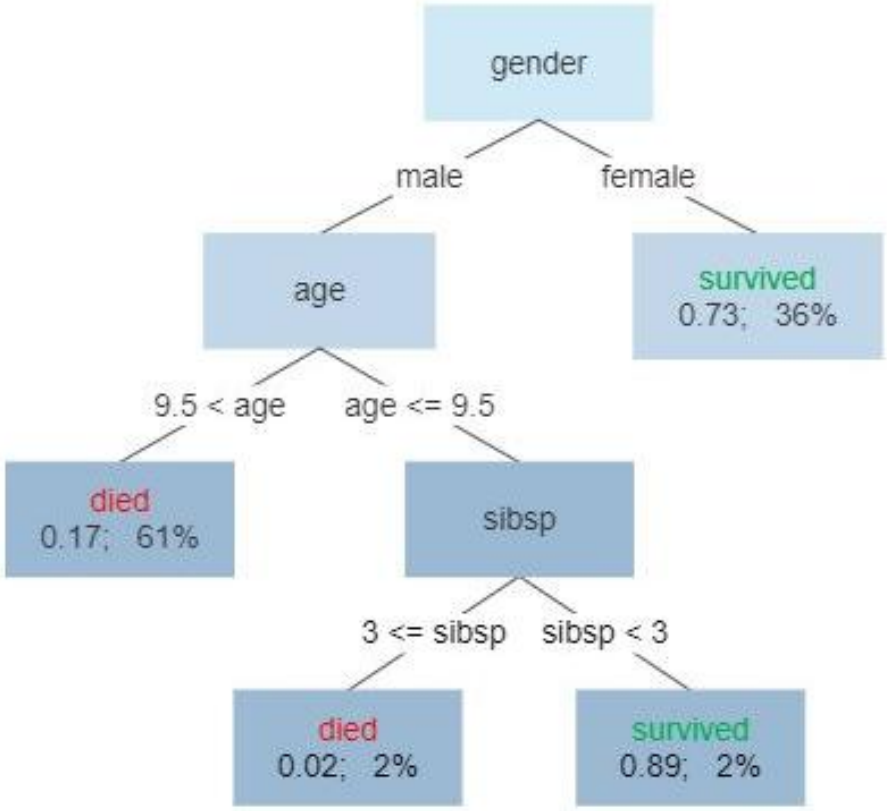

Figure 7: Example of a decision tree model (here showing Titanic survival outcomes). MIS-provided data can be used to build such decision models, which aid in evaluating choices.

By combining operational data with analytical tools, MIS turn raw data into insight. Studies show that integrating MIS with analytics raises confidence in decisions. For instance, one review notes that managers feel more certain about decisions when supported by system-generated forecasts and alerts (Bhandari, H. P., 2023). In emerging companies, adding even basic analytics (like trend charts or key performance dashboards) can make decision processes more objective and less dependent on gut feel.

Discussion

Our findings largely align with prior literature on MIS benefits. Consistent with Gupta and George (2020), we observe that effective MIS use substantially improves decision speed and accuracy. For example, our case (and other industry reports) showed that implementing an MIS cut reporting time by roughly 20% and eliminated manual errors, mirroring evidence that "MIS significantly enhances decision accuracy and speed". We also confirm that information quality is key: timely, accurate data reduce uncertainty and support better choices. These points agree with earlier studies emphasizing high-quality MIS outputs for correct decisions.

However, we also note differences unique to emerging firms. Echoing Nayak et al. (2012) and Cruz Martinez et al. (2024), our cases revealed that smaller firms often have more ad hoc data practices and face steeper cost constraints. Unlike large firms, these companies cannot always invest in sophisticated systems. We found, as Cragg and King (1993) did, that in small firms "the type of system is more important than the amount invested". In our cases, a modest but well-matched MIS delivered most benefits, whereas over-investment led to complexity and resistance. This nuance is less visible in the general MIS literature.

We must acknowledge limitations. Our conclusions are drawn from a limited number of illustrative cases (and examples in the literature) rather than large-scale surveys. This case-based insight provides depth but limits generalizability. We have not yet conducted quantitative validation (e.g. surveys or experiments) to test the proposed framework across many firms. Therefore, while our findings fit with known MIS principles, they should be interpreted cautiously and seen as hypotheses to be tested in broader samples.

Future Research Directions

- **Longitudinal Studies:** Track how MIS impacts decision quality over time as emerging companies grow. Such studies could reveal how the MIS–decision relationship evolves with firm maturity (e.g. as processes become more formalized).
- **Cross-Country/Industry Comparisons:** Test the framework in different cultural or economic contexts. For instance, compare MIS adoption in startups across emerging vs. developed markets to see if resource moderating effects differ.
- **Quantitative Validation:** Conduct larger surveys or experiments to measure the relationships in our model. Structural equation modeling could quantify how strongly MIS timeliness/accuracy affect decision speed/accuracy in various contexts.
- **Expanded Moderators:** Examine additional context variables, such as industry turbulence or managerial expertise. For example, test whether high industry uncertainty amplifies the value of real-time MIS data.

Policy and Managerial Implications

- **Align MIS to Strategy and Budget:** Emerging-company managers should choose MIS solutions that fit their strategic needs rather than over-investing. As one study found, the *type* of information system matters more than sheer spending. Start with essential functions (e.g. reporting, data integration) and expand only as needed.
- **Prioritize Data Quality (Timeliness and Accuracy):** Ensure that MIS outputs are up-to-date and accurate, since decision quality relies on information quality. Even basic MIS upgrades (e.g. automating a spreadsheet) can yield big time savings and error reduction. Organizations should enforce data-entry standards and validation rules so that managers trust the system outputs.
- **Invest in Training and Governance:** To fully leverage MIS, firms should invest in user training and strong data governance. Our review highlights that comprehensive training and clear data policies enable employees to use MIS effectively. Even startups should allocate some budget to teaching staff how to interpret MIS reports and updating the system regularly.
- **Embrace Incremental Implementation:** Given resource limits, emerging companies should roll out MIS in stages. Begin with one area (e.g. sales tracking) and expand gradually. This approach avoids disrupting operations and lets the company learn to manage the system. Strong leadership and communication are key to overcoming resistance.

Conclusion

Management Information Systems have a clear positive impact on decision-making quality in emerging companies. By automating data collection and reporting, MIS provide accurate, timely information that is essential for good decisions. Case studies confirm that MIS reduce reporting time and errors, freeing managers to analyze rather than gather data. The resulting decisions are faster, more consistent, and based on evidence. Even small firms benefit: a modest MIS implementation can yield substantial performance improvements. Our literature review and examples indicate that as long as emerging companies can integrate an MIS (even at a basic level), they will see gains in decision speed and accuracy. Thus, we conclude that MIS adoption is a critical step for emerging companies aiming to improve managerial decision quality.

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