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THE STRATEGIC VALUE OF DDDM IN BUSINESS FUNCTIONS: INSIGHTS FROM FINANCE, MARKETING, HR, AND OPERATIONS

Abstract: *Data-driven decision-making (DDDM) — grounding organizational choices in verifiable data rather than intuition alone — has become a baseline operating expectation across business functions. This article synthesizes recent academic and industry literature to compare DDDM's strategic value across finance, marketing, human resources, and operations. While the underlying DDDM cycle — define objectives, collect and clean data, analyze, decide, and evaluate — is common across functions, the study finds that data sources, decision types, and adoption barriers differ substantially by function. Finance and operations show the most mature adoption, reflecting longer traditions of quantitative measurement, while marketing and HR show growing but less uniform maturity, complicated by privacy and ethical concerns. The findings imply that a single enterprise-wide DDDM initiative is unlikely to deliver uniform value without function-specific adaptation.*

Keywords: *business analytics, business intelligence, data-driven decision-making, finance analytics, marketing analytics, people analytics, operations analytics*

1. Introduction and Literature Review

DDDM is defined as an approach that emphasizes data and analysis over intuition in business decisions (IBM, 2025), typically framed as a cyclical process of defining objectives, collecting and cleaning data, analyzing, and evaluating outcomes (Improvado, 2024). Firm-level evidence links DDDM adoption to improved international firm performance through sustainable value creation (Xu & Lu, 2026). Function-specific literature, however, shows uneven maturity: marketing research highlights gains in segmentation and personalization alongside privacy concerns (Tarabasz, 2024); HR's “people analytics” literature documents workforce-planning applications but notes limited evidence on organizational readiness (Fernandez & Gallardo-Gallardo, 2024); finance and operations are described as having the longest institutional history of quantitative decision support. Few studies compare DDDM across functions within a single framework — the gap this article addresses.

2. Methodology

This is a qualitative comparative literature review of peer-reviewed and industry sources (2023–2026) on DDDM. Findings are structured through function-based comparison of data sources, decision types, and reported barriers, and thematic coding of recurring cross-functional issues (data quality, culture, ethics/privacy, analytic maturity), favoring breadth of comparison over depth of any single case.

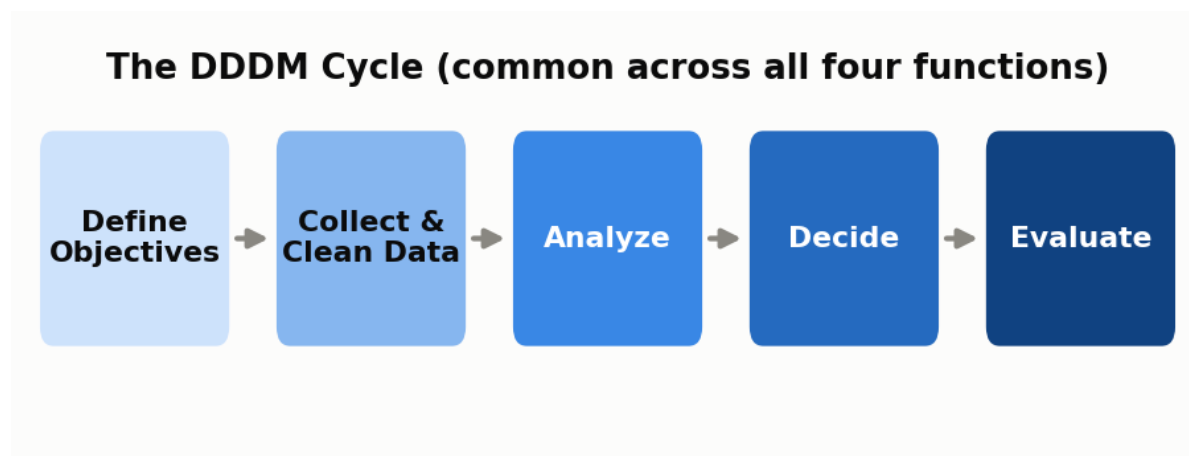


Figure 1. The DDDM cycle shared across all four business functions.

3. Results and Discussion

Table 1 summarizes the four functions' data sources, decision types, adoption maturity, and principal barriers, synthesized from the reviewed literature.

Table 1. Cross-functional comparison of DDDM application.

Function	Primary Data Sources	Key Decision Types	Maturity	Main Barrier
Finance	Transactional, credit, market risk data	Risk mgmt., fraud detection, scenario modelling	High (4.5/5)	Legacy systems, model governance
Marketing	Behavioral, transactional, campaign data	Segmentation, campaign optimization, CLV	Moderate (3.2/5)	Data privacy, ethical use of consumer data
HR	HRIS, engagement surveys, performance data	Hiring, retention, workforce planning	Emerging (2.7/5)	Low organizational readiness, sparse evidence base
Operations	Supply chain, inventory, maintenance data	Process optimization, predictive maintenance	High (4.2/5)	Cross-system data integration

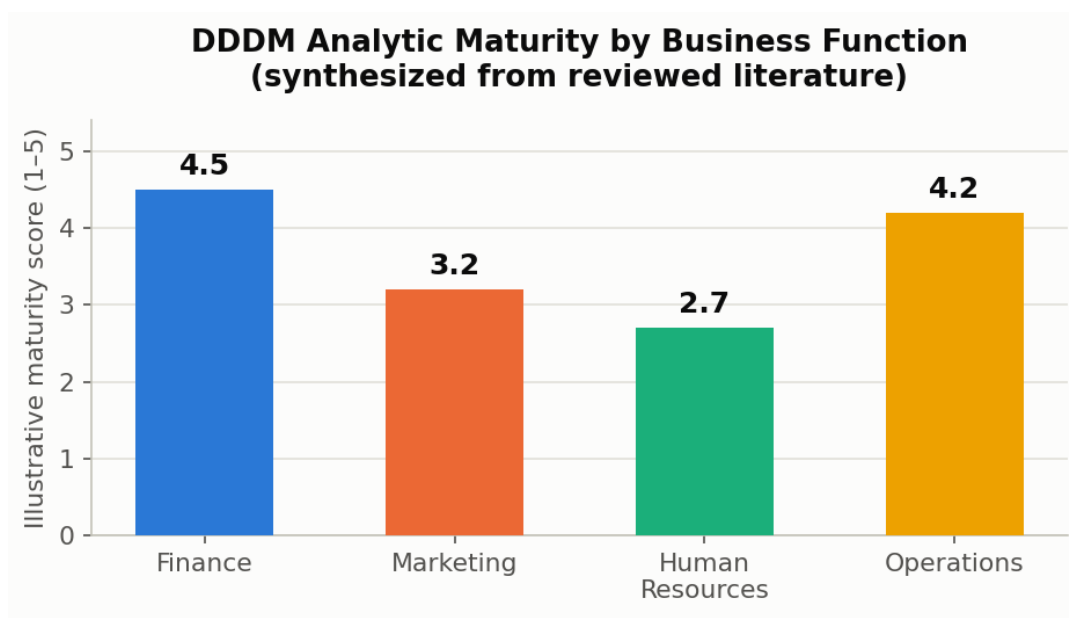


Figure 2. Illustrative DDDM analytic maturity by function, synthesized from reviewed literature.

Finance and operations — both with long traditions of quantitative measurement (actuarial science and portfolio theory; statistical process control and lean metrics) — report the most mature DDDM adoption, concentrated on risk

management, fraud detection, predictive maintenance, and supply-chain optimization (Oguanobi, 2024; TUW, 2025; Aziz et al., 2024). Marketing and HR, by contrast, rely on behavioral and personal data and report DDDM as a more recent, more contested transformation: marketing gains in personalization and campaign effectiveness are tempered by data-privacy and ethical concerns (Tarabasz, 2024), while HR's people-analytics practice — linked to a reported 1.8-times likelihood of better financial results where adopted effectively (Phenom, 2026) — remains constrained by uneven organizational readiness (Fernandez & Gallardo-Gallardo, 2024). This pattern indicates that “DDDM maturity” is function-specific rather than a single enterprise attribute.

4. Conclusion

DDDM's underlying logic is shared across finance, marketing, HR, and operations, but its practical value, data sources, and adoption barriers differ substantially by function. Finance and operations show more mature, risk- and efficiency-oriented adoption; marketing and HR show growing but less uniform adoption, complicated by privacy and ethical obligations. Enterprise-wide DDDM strategy should therefore be calibrated to each function's data maturity and constraints, while still building the shared data infrastructure and governance needed to prevent functional analytics from operating in isolation.

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