
Big Data Analytics Capabilities, Strategic Agility, and Firm Performance: A Systematic Literature Review

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Abstract:

Background: In the era of digital transformation, Big Data Analytics Capabilities (BDAC) have emerged as critical drivers of firm performance. However, the mechanisms through which BDAC translates into sustainable competitive advantage particularly the mediating roles of strategic agility, entrepreneurial innovation, and organizational learning remain underexplored.

Objective: This systematic literature review aims to synthesize and analyze the interrelationships among BDAC, strategic agility, entrepreneurial innovation, organizational learning, and firm performance within multinational corporations (MNCs), with a specific focus on emerging markets.

Methods: Drawing on the Dynamic Capabilities View (DCV), this review follows PRISMA guidelines and synthesizes findings from 42 peer-reviewed articles published between 2019 and 2025, sourced from Scopus, Web of Science, and Google Scholar. A thematic analysis was conducted to identify key patterns, mediating mechanisms, and contextual factors.

Results: The findings reveal that BDAC functions as a dynamic capability that enables *sensing*, *seizing*, and *transforming* processes. Strategic agility serves as both a direct and indirect driver of performance, mediated by entrepreneurial innovation and organizational learning. Contextual factors such as market dynamism, organizational culture, and digital infrastructure significantly moderate these relationships. The review identifies that BDAC-driven agility is particularly impactful in volatile emerging markets.

Conclusion and Implications: This review contributes to theory by positioning BDAC as a strategic enabler within the DCV framework and clarifying the *micro-foundations* linking analytics to performance. Practically, it offers guidance for managers in emerging-market MNCs to cultivate data-driven, agile cultures and align analytics initiatives with strategic goals. Future research should employ longitudinal and cross-industry designs to strengthen causal inference and explore underexamined moderators

Keywords: Big Data Analytics Capabilities; Strategic Agility; Entrepreneurial Innovation; Organizational Learning; Dynamic Capabilities.

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INTRODUCTION

Big Data Analytics Capabilities (BDAC) have emerged as pivotal drivers of enhanced firm performance across industries and regions. Empirical evidence indicates that BDAC significantly contributes to various performance outcomes, including strategic, economic, and operational performance (Aker et al., 2016; Alyahya et al., 2023). For example, a recent study in Malaysian manufacturing firms found that BDAC improves competitive advantages and, in turn, overall firm performance (Chong et al., 2022). In dynamic sectors like tourism and supply chain management, BDAC is closely linked with the development of dynamic capabilities, underscoring how technological prowess coupled with strategic adaptability can improve organizational outcomes (Gupta et al., 2023; Alyahya et al., 2023). This positive impact extends beyond any single sector; even in traditional manufacturing contexts (e.g., Jordanian exporters),

BDAC has been shown to amplify innovation and international performance (Al-Khatib, 2023). Firms leveraging advanced analytics often report higher customer satisfaction and outperform competitors, highlighting BDAC as a source of competitive advantage (Falahat et al., 2022).

Another critical insight from the literature is the mediating role of innovation in the BDAC–performance link. Organizations that effectively incorporate dual innovations (exploratory and exploitative) alongside BDAC tend to achieve superior performance outcomes (Ali et al., 2020; Su et al., 2021). For instance, one study found that BDAC’s effect on performance is significantly strengthened when firms simultaneously pursue product innovation and process improvements (Su et al., 2021). This multifaceted approach allows firms to leverage large-scale data while continuously adapting and innovating in response to market changes, thereby driving sustained competitive advantage (Ali et al., 2020). Indeed, the capacity to harness big data effectively can yield transformative outcomes – optimizing processes, enabling rapid innovation cycles, and informing strategic pivots (Riggs et al., 2023).

Despite these advantages, multinational corporations face notable challenges in implementing BDAC initiatives. Chief among these is the complex integration of advanced analytics into legacy systems, coupled with the cultural shifts required to support data-driven decision-making. Many MNCs struggle with data management complexity and the diverse skill sets needed to extract actionable insights, often leading to suboptimal returns on large analytics investments (Akter et al., 2016). Moreover, varying regulatory frameworks and data governance standards across regions complicate enterprise-wide data integration, which can hinder strategic agility (Behl, 2022; Bahrami & Shokouhyar, 2022). Misalignment between BDAC and corporate strategy is another hurdle: firms often fail to fully embed analytics capabilities into their strategic planning processes, undermining the potential benefits of big data (Olabode et al., 2022). These challenges extend into global supply chains, where firms must manage complex multi-country data flows and partner networks when implementing analytics solutions (Razaghi & Shokouhyar, 2021; Shokouhyar et al., 2020). In summary, while BDAC clearly has the potential to enhance firm performance on multiple dimensions, successful implementation is far from automatic. Technical integration issues, cultural and organizational inertia, regulatory compliance hurdles, and strategic misalignment all pose risks that can blunt the impact of BDAC on agility and performance. Addressing these challenges is crucial for firms – especially MNCs – to realize the full value of data analytics for building strategic agility and sustaining competitive advantage (O’Cass et al., 2014; Panda, 2021).

The intersection of BDAC, strategic agility, and firm performance has attracted growing scholarly attention, yet several gaps remain. Notably, there is a lack of comprehensive understanding of how BDAC translates into enhanced agility and through which organizational mechanisms (e.g. innovation, learning) this leads to better performance, particularly in volatile environments like emerging markets (Côte-Real et al., 2019; Dubey et al., 2020). Many studies imply BDAC fosters agility, but few have systematically examined the chain of influences from analytics capabilities to agility to innovation/learning and finally to performance outcomes. Additionally, prior research often overlooks contextual factors – such as cultural, economic, and institutional conditions – that may condition the effectiveness of BDAC. For instance, Southeast

Asian emerging-market contexts might shape the way firms develop agility from analytics (Côte-Real et al., 2019; Dubey et al., 2020), yet these nuances are underexplored.

To address these gaps, this review aims to examine the direct relationship between Big Data Analytics Capabilities (BDAC) and strategic agility to determine how analytics capabilities enhance an organization's ability to sense and respond swiftly to change; analyze the mediating roles of entrepreneurial innovation and organizational learning in transforming BDAC-enabled agility into firm performance by exploring how agility fosters exploratory innovation and exploitative learning; evaluate both the direct and indirect linkages between strategic agility and firm performance to understand how agility contributes to competitive advantage and under what conditions its benefits are maximized; and identify key contextual and moderating factors—such as environmental turbulence, organizational culture, leadership, and market orientation—that shape the BDAC–agility–performance relationship, including distinctions between emerging and developed market contexts.

By achieving these objectives, the study seeks to contribute a more integrative framework explaining *when and why* BDAC leads to higher firm performance. In doing so, it highlights the novel insight that analytics capabilities alone are not a panacea; rather, their value is realized through complementary organizational capabilities (agility, innovation, learning) and is contingent on context. The novelty of this review lies in synthesizing multiple previously siloed streams of literature – big data analytics, strategic agility, dynamic capabilities, innovation management, and organizational learning – into a cohesive model applicable to the digital transformation of firms in emerging economies. This comprehensive perspective offers both theoretical and practical contributions, bridging the resource-based and dynamic capability views with empirical evidence from the past five years of research.

Article Structure: The remainder of this article is structured as follows. First, we outline the Methods used for the systematic literature review, including search strategy, inclusion criteria, and analytical approach. Next, a Theoretical Background section discusses foundational concepts and theories (Resource-Based View and Dynamic Capabilities View) underlying BDAC and agility, and presents a conceptual framework (Figure 1) linking BDAC, strategic agility, innovation, learning, and performance. We then present a Review of Findings in four thematic sub-sections: (1) BDAC and Strategic Agility, (2) Strategic Agility with Entrepreneurial Innovation and Organizational Learning, (3) Agility and Firm Performance, and (4) Contextual and Mediating Mechanisms. Each theme includes a narrative synthesis of prior studies and a summary table of representative studies. In the **Discussion**, we integrate and compare findings across themes, highlight theoretical and practical implications, identify divergences and research gaps, and propose directions for future research. Finally, the **Conclusion** provides a concise recap of the main insights, acknowledges limitations, and offers concluding thoughts on the path forward for research and practice.

METHOD

Search Strategy and Screening

This review followed PRISMA guidelines to ensure a transparent and reproducible search and screening process. We conducted a comprehensive literature search in major scholarly databases (primarily Scopus, with supplementary searches in Web of Science and

Google Scholar for broader coverage) focusing on publications from 2010 to 2025. This time frame was chosen to capture the rise of big data analytics in management research over roughly the past decade and a half, with an emphasis on the most recent five years (2019–2025) for up-to-date insights. The search keywords combined terms related to firm performance (e.g., “firm performance”, “organizational performance”, “business performance”) with terms indicative of sustainable competitive advantage (“sustainable competitive advantage”, “long-term competitiveness”) and the theoretical lenses of interest (“resource-based view”, “dynamic capabilities”, “innovation”, “digital transformation”, etc.). An example search string in Scopus was:

TITLE-ABS-KEY ("firm performance" OR "organizational performance" OR "business performance")

AND ("sustainable competitive advantage" OR "long-term competitiveness")

AND ("resource-based view" OR "dynamic capability*" OR innovation OR "digital transformation")

This broad query initially yielded 291 records in Scopus (2010–2026). We then applied inclusion and exclusion criteria to focus the review. We limited results to peer-reviewed journal articles in English in the business, management, and related fields. Non-English publications, dissertations, and non-scholarly reports were excluded. After removing duplicates and clearly off-topic hits, we screened titles and abstracts for relevance. To be included, studies had to explicitly address one or more of the core constructs (BDAC, agility, innovation, organizational learning, firm performance) and examine relationships between these constructs. We excluded papers that only tangentially mentioned these terms without substantive analysis (e.g., generic discussions of big data with no performance outcomes, or agility studies with no link to analytics).

RESULT AND DISCUSSION

Advancing the Theoretical Understanding of BDAC and Dynamic Capabilities

BDAC (Big Data Analytics Capabilities) represents more than technological infrastructure; it functions as an embedded dynamic capability that enables sensing, seizing, and transforming processes central to the Dynamic Capabilities View (DCV). Consistent with Mikalef et al. (2019), BDAC strengthens strategic agility, innovation, and organizational learning, making it a strategic enabler for digital-era competitiveness. Empirical evidence shows that BDAC enhances firms’ ability to sense opportunities and reconfigure resources, operationalizing DCV through data-driven insights and rapid execution. Furthermore, the mediating roles of agility, learning, and innovation clarify *how* BDAC creates value through faster decision-making, better knowledge management, and creativity rather than through direct financial outcomes. This advances DCV by unpacking the “black box” of technology and identifying micro-foundations that link analytics to performance outcomes. Context also plays a crucial role: Teece (2007) and Vrontis et al. (2022) highlight that dynamic capability effectiveness depends on environmental turbulence. Our findings confirm that BDAC-driven agility is more impactful in volatile emerging markets, while in stable developed markets its role is supportive. As Ciacchi and Penco (2023) note, this implies BDAC must be context-sensitive; its success depends on institutional, cultural, and market fit. Ultimately, BDAC and

strategic agility should be seen as complementary dynamic capabilities: analytics provides intelligence, while agility ensures rapid execution. This integration explains why firms with high BDAC but low agility or vice versa often fail to achieve sustained performance gains.

Table 1. Theoretical Contribution of BDAC within Dynamic Capabilities View (DCV)

	Key Insights	Supporting References
BDAC as a strategic, not technical, capability	Enables sensing–seizing–transforming cycle through data-driven insights	Mikalef et al. (2019)
Mediating mechanisms identified	Agility, learning, and innovation link BDAC to firm performance	Dubey et al. (2021)
Contextual emphasis	BDAC more critical in dynamic emerging markets	Vrontis et al. (2022); Ciacci & Penco (2023)
Theoretical integration	BDAC + Agility = Complementary dynamic capabilities driving competitiveness	Present Review

Practical Implications for Managers in Emerging-Market MNCs

Managers should cultivate a culture that promotes agility, learning, and innovation rather than relying solely on technology adoption. As Dubey et al. (2021) suggest, resilience and adaptability are built through learning from failures and cross-functional collaboration. Investing simultaneously in BDAC infrastructure and human capital such as training programs and analytics literacy—ensures that data insights translate into agile decision-making. Magableh et al. (2024) emphasize embedding analytics across functions (marketing, HR, supply chain) to drive organizational responsiveness. Furthermore, aligning analytics initiatives with strategic goals enhances relevance; for example, using predictive analytics to accelerate innovation or improve customer experience. In volatile emerging markets, agility can be institutionalized through flexible planning, scenario-based budgeting, and rapid-response teams. This creates what can be termed a *data-savvy agile organization*, combining BDAC-informed insight with adaptive action. Policymakers should complement these firm-level initiatives by investing in digital infrastructure and data education ecosystems, fostering national competitiveness.

Table 2. Managerial and Policy Implications of BDAC–Agility Integration

	Focus Area	Managerial Actions	Supporting References
Building agile and innovative culture	Encourage experimentation, reduce hierarchy, reward adaptability	Dubey et al. (2021)	
Strengthening BDAC capabilities	Combine analytics tools with data literacy and skill development	Magableh et al. (2024)	
Strategic alignment	Link BDAC projects with key organizational objectives	—	
Operating under uncertainty	Implement scenario planning and adaptive strategy cycles	—	
Policy-level enablers	Develop national analytics talent and digital infrastructure	—	

Research Gaps and Future Directions

Despite progress, inconsistencies remain in defining and measuring BDAC, agility, and performance (Mateen et al., 2024). Studies differ in whether BDAC is seen as technology, skill, or process, complicating cross-study comparisons. Contextual richness is another missing element Zhang and Yuan (2023) and Vrontis et al. (2022) observe that most research is concentrated in developed economies, with little exploration of emerging-market conditions. Longitudinal and cross-industry designs (Yin & Jamali, 2016) are urgently needed to establish causality and understand how BDAC-agility interactions evolve over time. Future studies should test multi-path mediation (Zaravasan, 2021; Li et al., 2023) and explore moderators such as competitive intensity and technological turbulence. A promising avenue lies in linking BDAC and agility to sustainability and resilience outcomes (Alyahya et al., 2023; Dubey et al., 2021), examining how analytics-driven agility supports ESG goals.

In summary, future research should emphasize consistent measurement, contextual richness, and longitudinal validation while exploring new mediating mechanisms and sustainability outcomes. Together, these refinements will deepen theoretical understanding and guide practical implementation of BDAC-enabled agility as a cornerstone of digital-era competitiveness.

Advancing the Theoretical Understanding of BDAC and Dynamic Capabilities

The findings of this review contribute to a deeper theoretical understanding of how BDAC functions as part of a firm's dynamic capabilities. We have consolidated evidence that BDAC is not merely a set of IT tools, but a capability embedded in organizational processes that enables sensing of opportunities and threats, quick decision-making, and resource reconfiguration – in line with the Dynamic Capabilities View (DCV). By showing that BDAC enhances strategic agility, innovation, and learning (the micro-foundations of dynamic capabilities), our review positions BDAC squarely as a strategic enabler rather than a technical afterthought. Our synthesis refines the understanding of mediating roles within the BDAC-performance linkage, confirming that strategic agility, organizational learning, and entrepreneurial innovation mediate BDAC's impact on performance, helping to answer the question "through what processes does big data create value?". Our review also highlights the importance of contextual contingencies in dynamic capability effectiveness – in volatile emerging markets, BDAC-driven agility is especially crucial for performance, whereas in stable developed markets its role may be more supplementary.

Practical Implications for Managers in Emerging-Market MNCs

The insights from this review carry several practical implications, particularly for managers of MNCs operating in emerging markets where the environment is fast-changing and resource constraints are common. First, managers should focus on fostering a culture of agility and innovation by instilling values of adaptability, experimentation, and cross-functional collaboration in the workforce, encouraging employees to take calculated risks and learn from failures without fear of punitive consequences (Dubey et al., 2021). Second, there is a clear mandate to invest in BDAC infrastructure and skills simultaneously – managers should integrate analytics into strategic and operational decision processes across all functions, rather than siloing big data initiatives in the IT department (Magableh et al., 2024). Third, align analytics initiatives with strategic priorities to ensure BDAC actually drives agility where it matters, by

establishing clear linkages between data analytics projects and strategic objectives. Fourth, managers in emerging markets must build strategic agility as a core competence for uncertain environments, including making strategic planning processes more adaptive (scenario planning, flexible budgeting) and establishing rapid-response teams when disruption looms. Finally, policy-makers and ecosystem builders in emerging economies can draw insights by developing digital infrastructure and talent pools to create an environment where more firms can successfully implement BDAC and agility.

Inconsistencies and Research Gaps in the BDAC–Agility–Innovation–Learning Nexus

While progress has been made in understanding the BDAC-agility-performance nexus, our review uncovered several inconsistencies and gaps in the current literature that warrant further investigation. One prominent issue is inconsistent operationalization of key constructs across studies – BDAC, agility, innovation, and performance have been defined and measured in varying ways, making it difficult to directly compare results and likely contributing to mixed findings (Mateen et al., 2024). Another gap is the lack of contextualization in many studies – relatively few empirical studies explicitly incorporate industry or regional context into their models, with emerging markets being under-represented in the data (Zhang & Yuan, 2023; Vrontis et al., 2022). A significant methodological gap is the predominance of short-term, cross-sectional studies that limit our ability to make causal inferences and understand the dynamic evolution of capabilities (Yin & Jamali, 2016). Another under-explored area is multi-path mediation models – other mediators such as customer-centric capabilities or knowledge ambidexterity could be potential channels (Zararavasan, 2021; Li et al., 2023). Finally, we note a conceptual gap: while our review connected BDAC with DCV and agility, the role of sustainability outcomes (e.g., ESG performance or resilience) in this nexus is only beginning to be studied (Alyahya et al., 2023; Dubey et al., 2021).

Strengthening Causal Inference through Longitudinal and Cross-Industry Designs

Given the identified need for causal clarity, we advocate for future research employing longitudinal, cross-industry, and mixed-methods designs to strengthen our understanding of how BDAC and agility drive performance. Longitudinal studies are particularly vital – by tracking firms over time, researchers can observe how BDAC investments and agility practices evolve and how these relate to performance trajectories, revealing whether improvements are sustained or temporary and what the time lags are between capability development and results. Cross-industry comparisons can enrich external validity and uncover boundary conditions by examining multiple industries side by side to discern how context alters the BDAC → agility → performance chain (Zhang & Yuan, 2023). Mixed-methods designs can strengthen causal inference by combining quantitative breadth with qualitative depth – for example, using surveys to establish broad patterns and then conducting case studies or interviews with a subset of firms to explore the mechanisms behind the numbers (Chong et al., 2023). Incorporating contextual variables explicitly in models with interaction terms or multi-group analyses for factors like market turbulence, digital infrastructure, and institutional pressures will also help (Vrontis et al., 2022). These rigorous approaches, though more resource-intensive, would significantly elevate our field's ability to draw conclusions about causality and generalizability, moving from correlation to causation and building a richer theory that accounts for when and how BDAC-enabled agility truly matters.

CONCLUSION

This systematic literature review synthesizes findings from 42 studies (2019–2025) to examine how Big Data Analytics Capabilities (BDAC) drive firm performance in emerging-market multinational corporations, framed through the Dynamic Capabilities View (DCV). The review concludes that BDAC functions as a foundational dynamic capability enabling *sensing*, *seizing*, and *transforming* whose value is realized indirectly through strategic agility, which subsequently fosters entrepreneurial innovation and organizational learning as proximal performance drivers. These relationships are significantly moderated by contextual factors including environmental turbulence, organizational culture, national culture, and digital infrastructure, with the BDAC–agility–performance link proving strongest in volatile environments and data-driven, learning-oriented organizations. For managers in emerging-market MNCs, the findings underscore the need to treat BDAC as a strategic priority, balancing technological investment with people, culture, and process development, while policymakers are urged to strengthen enabling environments through digital infrastructure and data literacy initiatives. Future research should move beyond cross-sectional, single-country designs toward longitudinal, multi-context, and cross-industry studies that can establish causality, examine underexplored moderators such as national institutional frameworks and sector-specific dynamics and develop context-sensitive theory that more precisely maps the pathway from data analytics to sustainable competitive advantage.

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