



# "Towards Strategic Business Value: A Comprehensive Research Agenda for Big Data and Business Analytics Integration".

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## Introduction

In the contemporary landscape of organizational strategy, big data and business analytics stand as pillars of innovation and competitive advantage. This significance, emphasized by H. Chen, Chiang, and Storey (2012a), underscores their pivotal role in shaping organizational performance. Recent empirical studies, including those conducted by Ashrafi et al. (2019), Lehrer et al. (2018), and Côte-Real et al. (2019); Mikalef et al. (2019), provide compelling evidence of the profound impact of these technologies on critical outcomes such as agility, innovation, and competitive performance.

As Gupta & George (2016) assert, the effective utilization of these technologies necessitates a strategic approach. Organizations must cultivate the capacity to harness data effectively, strategically plan analytics initiatives, and assemble the requisite resources for actionable insights. Despite variations in terminology, scholars broadly agree on the essential resources for building robust big data or business analytics capabilities, a consensus echoed by Gupta & George (2016).

Diverse perspectives offered by scholars such as Sharma, Mithas, and Kankanhalli (2014), Abbasi, Sarker, and Chiang (2016), Chiang et al. (2018), Pappas et al. (2018), Hindle et al. (2019), and George, Haas, and Pentland (2014) have enriched the discourse on big data analytics. These discussions have explored the subject from behavioral science, design science, economics, and management angles.

Building upon the insights of these scholars, this editorial endeavors to synthesize existing knowledge and identify key assumptions warranting further investigation regarding the business value of big data and business analytics. In doing so, it proposes a framework illustrating the intricate associations between the core elements of these technologies. Within this framework lie potential research areas, as outlined by the aforementioned scholars, which hold significance for both research and practice.

However, as noted by these scholars, the integration of big data and business analytics into organizational operations presents both challenges and opportunities for innovative research. By embracing these challenges and delving into unexplored territories, scholars can contribute meaningfully to advancing our understanding of these transformative technologies.

## Charting the Course: Navigating Big Data and Business Analytics Research

The fascination with big data and business analytics has skyrocketed in the last decade, sparked by groundbreaking articles envisioning their potential to transform industries and daily life. Researchers in the field of Information Systems (IS) have eagerly delved into this realm, seeking to understand how organizations can harness the power of their data for strategic advantage.

This surge of interest is palpable in the academic landscape, evident in the vast number of articles published on the subject. A search spanning from 2010 to 2018 unearthed a staggering 5,495 articles, illustrating the burgeoning attention and investment in this field. This exponential growth underscores the expanding horizons of inquiry and the increasing number of scholars dedicating their efforts to unraveling the complexities of big data and business analytics.

Amidst this burgeoning literature, there arises a need for synthesis and reflection. By critically examining prevailing research paradigms and underlying assumptions, researchers aim to uncover overlooked areas ripe for exploration. This introspective journey serves to distill the essence of major research streams, extracting valuable insights accumulated over the years.

Through this endeavor, scholars endeavor to navigate through the currents of inquiry, shedding light on topics that have commanded attention while also identifying new avenues for exploration. This process not only offers a comprehensive view of the field's evolution but also highlights areas deserving of renewed scrutiny due to their practical significance.

In the subsequent sections, researchers embark on this voyage, charting a course through the vast expanse of big data and business analytics research. By synthesizing existing knowledge and identifying emerging trends, scholars aim to contribute to the ongoing dialogue surrounding these transformative technologies.

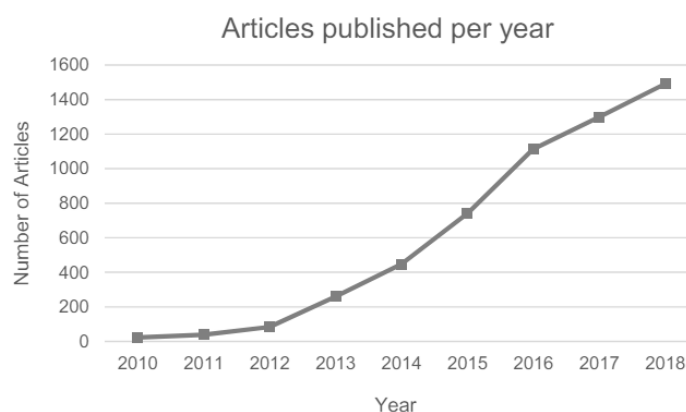


Figure 1 Articles published per year for the time period 2010-2018

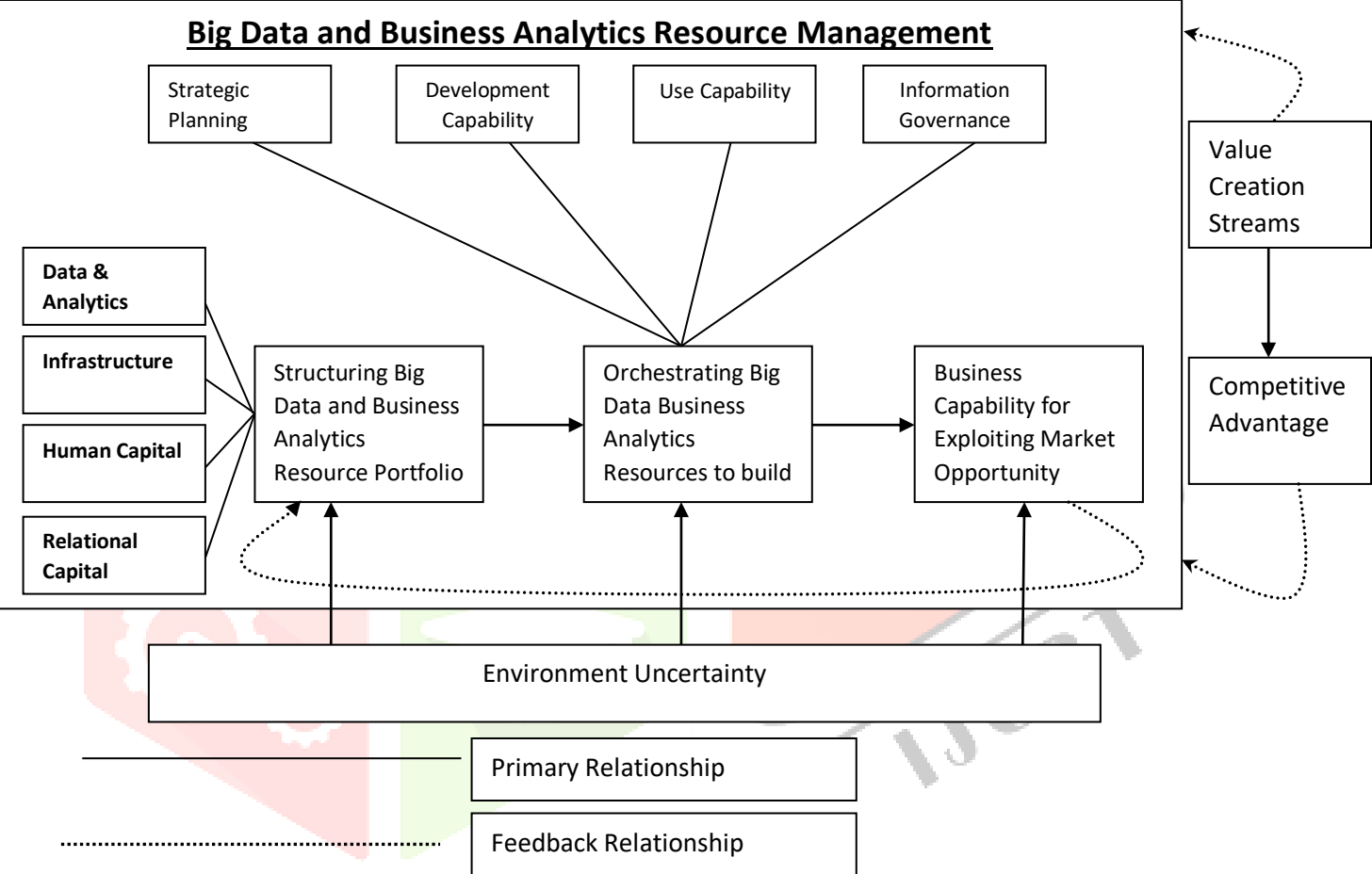
Over the past decade, big data and business analytics have surged into prominence, captivating both academics and practitioners. While these concepts aren't entirely new, their resurgence since 2010 can be attributed to several key factors. Firstly, advancements in technology have drastically reduced the cost of storing vast amounts of data, while also increasing processing power, making it feasible for organizations to capture and analyze data at a fraction of the previous cost. Secondly, the proliferation of sensors and connected devices has facilitated real-time data collection, enabling organizations to monitor previously inaccessible data streams. Thirdly, the maturation of network infrastructures and the rise of cloud computing have democratized access to scalable services, allowing organizations of all sizes to harness big data analytics capabilities at minimal cost.

These favorable conditions have reignited interest in how organizations can leverage big data and business analytics to drive performance improvements. However, implementing such initiatives is complex, often involving multiple departments and necessitating organizational transformations. Recent research has made significant strides in understanding the nuances of big data and business analytics, particularly in exploring their adoption across various industries and organizational contexts.

Despite this progress, challenges remain, prompting a call for further investigation. It's increasingly recognized that integrating big data and business analytics into organizational processes requires substantial changes in approach, resource planning, and strategic alignment. This shift necessitates a reevaluation of performance outcomes and the development of appropriate key performance indicators (KPIs).

To guide future research in this area, we propose a research framework that synthesizes key themes and identifies areas requiring greater attention. This framework encompasses the multifaceted nature of big data and business analytics adoption, emphasizing the need for holistic organizational redesign and strategic alignment. By addressing these research priorities, scholars can contribute to advancing our understanding of how organizations can effectively harness the transformative potential of big data and business analytics.

**Figure 2 A research framework for big data and business analytics resource management**



The study of big data and business analytics has become increasingly important in both academic research and practical applications over recent years. Scholars have identified several key research questions to guide further exploration in this area.

Firstly, researchers aim to understand how different methods of big data analytics come together to provide actionable insights. This involves examining the various techniques and tools used to analyze vast amounts of data and derive meaningful conclusions that can inform decision-making processes.

Secondly, there is a focus on how organizations bundle and orchestrate resources to leverage their big data and business analytics capabilities. This includes investigating the technological infrastructure, human skills, and knowledge needed to effectively utilize data resources for strategic purposes.

Thirdly, scholars seek to identify the organizational capabilities that big data analytics can enable or automate, and the impact of these capabilities on overall performance. This entails examining how organizations develop their analytics capabilities over time and the factors that influence their success in leveraging data for value creation.

When considering the attributes of data that define big data, researchers emphasize the importance of volume, variety, velocity, and veracity. Understanding these attributes is crucial for organizations to leverage data effectively and derive meaningful insights.

Additionally, scholars explore different approaches to big data analytics, such as inductive versus deductive methods, and their implications for insight generation. They also consider the strengths and weaknesses of each approach and how they can be overcome to produce objective and valuable insights.

Furthermore, research delves into the effects of various forms of information governance practices on creating value from big data investments. This includes examining the role of organizational structures, processes, and activities in managing and transforming data resources.

Moreover, scholars investigate the business value of big data and analytics and the mechanisms through which they influence organizational performance. This includes exploring the mediating organizational capabilities that enable value creation and the contextual factors that may amplify or dampen the impact of analytics investments.

### **Conclusion**

In summary, the study of big data and business analytics encompasses a wide range of research questions, from understanding data attributes and analytics methods to exploring organizational capabilities and governance practices. By addressing these questions, researchers aim to advance our understanding of how organizations can effectively leverage data for strategic advantage and value creation.

### **References**

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