Tuijin Jishu/Journal of Propulsion Technology
ISSN:1001-4055
Vol. 44No. 4 (2023)

The Impact of Big Data Analytics Capability and Strategic Marketing on SMEs performance: Required Strategyand Capability

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***Abstract*: -**Big data analytics capability (BDAC) has become a significant focus of investigation within the academic and professional realms. Despite the escalating potential value attributed to BDAC, there remains a notable dearth of studies exploring its influence on firm performance. In this ongoing research, we aim to address this gap by examining the impact of BDAC on various dimensions: BDA management capability, BDA technology capability and BDA talent capability, aligning them with marketing strategic concepts. We aim to provide a comprehensive concept of overall BDA Capability. Through the lens of dynamic capability theory, our study posits that BDA capability affects performance of firms, with strategic marketing acting as a mediating factor. This study builds upon previous research, offering novel contributions, particularly in the domain of strategy and its interconnectedness with BDA. The findings of this research not only elucidate the crucial components of BDA capability and their impact on firm performance but also offer practical insights that can serve as a roadmap, bridging the expectations of managers regarding BDA with the actual implementation of BDAC within marketing strategies.

Keywords:*Big Data, Big Data Analytics Capability, Dynamic Capability, Strategic Marketing firm performance.*

1. Introduction

In the contemporary landscape of business operations, the ascendancy of big data analytics capability (BDAC) has emerged as a critical determinant of competitive advantage and organizational success. Rapid advancements in data collection technologies, storage capabilities, and analytical tools have spurred an unprecedented growth in the volume, velocity, and variety of data. This explosion of data has shifted the spotlight towards harnessing its potential for valuable insights and informed decision-making, paving the way for the study and exploration of BDAC.

BDAC encapsulates an organization's ability to harness, process, and derive actionable insights from vast and diverse sets of data. [1] define big data (BD) as the data-sets from heterogeneous and autonomous resources,

with diversity in dimensions, complex and dynamic relationships, by size that is beyond the capacity of conventional processes or tools to effectively capture, store, manage, analyses, and exploit. It encompasses not only the technological infrastructure but also the skills, processes, and strategies needed to navigate and make sense of this data abundance. As businesses increasingly recognize the transformative potential of BDAC, academic researchers and industry practitioners alike have sought to understand its multifaceted implications on firm performance [2].

Despite the growing acknowledgment of BDAC's potential value, the link between BDAC and firm performance remains a domain necessitating further exploration [3]. The empirical evidence regarding the specific mechanisms through which BDAC impacts firm performance is still evolving. Moreover, understanding how to effectively integrate BDAC within a strategic framework is an ongoing challenge.

While the potential benefits of BDAC to enhance firm performance are significant, recent reports show that many chief information officers (CIOs) and business executives have hesitated to make major investments in BDA specifically after direct experience on disappointing results or observing other firms failing in BDA investment [4]. [5]state despite the important role of BDA in value creation there is an obvious gap between managers' expectation in applying BDA and what is currently emerged. In addition, many organizations appear to- still be in earlier stage of learning how to conduct with BDA, required technologies and skills and how to create value of BDA [6].

Regardless of the burgeoning acknowledgment of BDAC's potential, a comprehensive understanding of its influence on firm performance and the strategies required to mediate this relationship remains underexplored [7]. This paper seeks to bridge this gap by presenting a conceptual framework that integrates BDAC, firm performance, and strategic marketing mediation within the realm of contemporary business dynamics. Our exploration of BDAC extends beyond a mere technological facet, and strategic orientation effect. We categorize BDAC into three critical dimensions: BDA management capability, BDA technology capability, and talent BDA capability. These dimensions form the foundational framework through which we assess the impact of BDAC on firm performance.

On the other hand, strategic marketing, characterized by its proactive market orientation and adaptability, is identified as a potential mediator in the BDAC-firm performance relationship. By strategically integrating BDAC into marketing efforts, organizations can gain a competitive edge by leveraging timely, data-driven insights to shape their marketing strategies, enhance customer experiences, and drive business performance [8]. Furthermore, we propose to employ the dynamic capability theory as a guiding lens to illuminate the dynamic nature of BDAC. This theory offers a nuanced perspective, considering the organization's ability to adapt, innovate, and learn as fundamental components that drive BDAC and, consequently, impact firm performance.

Hence, this conceptual paper strives to enrich the academic dialogue on BDAC by presenting a framework that underscores the strategic mediation required to maximize its impact on firm performance. This contribution serves to fulfill prior recommendations by academics for future research on BDAC and its ramifications on firms' performance [7]. The distinctive aspect of this framework lies in its innovative integration of strategic marketing as a mediator with BDAC and firm performance, presenting a noteworthy resolution for both academic consideration and practical application. Through the synthesis of existing knowledge and the proposition of this unique framework, our objective is to lay the foundation for further empirical investigation and the development of practical implementation strategies within the evolving landscape of big data analytics.

2. The Concept of BDAC, Strategic Marketing (Required Strategy and Capability)

The concept of big data analytics is defined by [9] as massive amounts of various observational data which support different types of decisions. In their definition of big data analytics, [10] focused more on the greater scope of information which included real-time information, non-traditional forms of media data, new technology-driven data, the large volume of data, the latest buzz-word, and social media data. Although 'volume' and 'variety' received much attention in defining big data analytics [11], other studies illuminated the

roles of velocity and veracity [12], and the business value, variability and visualization aspects of Big Data Analytics [13].

[14] defined marketing big data analytics as a holistic approach to manage, process and analyze the '7Vs' of data-related dimensions (volume, variety, velocity, veracity, value, variability, and visualization) so as to create actionable insights for sustainable value delivery, measuring performance, and establishing competitive advantages. Some scholars and practitioners have described 'big data analytics' as data coming from various channels, including sensors, satellites, social media feed photos, video, cellphones, and GPS signals. It is no doubt that, big data analytics drive big firms to success but the use of big data analytics amongst all business strategists and managers remains unknown [15].

Furthermore, Big Data Analytics Capability (BDAC) is broadly defined as the competence toprovide business insights using data management, infrastructure (technology) and talent (personnel) capability to transform business into a competitive force [16]. The literature also focused on strategy-led BDAC, that is, analytics that create sustainable value for business [17]. For example, [18]identified the BDAC as the ability to use big data for decision making, which is essentially connected with the firm's business strategy. [19]focusedcompetitive advantages and differentiation while applying big data analytics to analyses real-time data. [16]emphasized creating an analytics climate where strategy and capability (data management, technology and talent) were well aligned in order to achieve competitive advantages. Although BDAC dimensions differ in their terminology, the taxonomy schemes proposed by the literature are similar as they reflect the BDA management capability, BDA infrastructure capability and BDA talent capability-related aspects.

There is little empirical evidence that supported the relationships between big data analytics capability and strategy for make a strategic decision [20]some researchers recommend the necessity to study more the phenomena of this time which is big data analytics capability and its influence on the strategies and lead the companies to have competitiveness [7]. Add to these is the impact of big data analytics capability and the effect on firm's performance. All of which in turn help to generate and sustain firm's competitive advantage. Regardless of this little evidence abound with regards to these occurrences in European, America, Latin America, and Asia, there are no adequate literature on the relationship between big data analytics capability andstrategic marketing planning as they affect firms in African countries.

Extant research and researchers supports the notion that big data analytics and IT capability function positively influences organizational success and contributes to a firm's business-level strategic, specifically in how it competes in a given product market [21]. However, fails to address the dramatic influence the big data phenomenon is having on corporate-level strategy. Does a firm's business-level strategic dictate how it uses data to exploit currentmarkets, or do data flows generated from a firm's positioning play a more important role in the diversification and the development of firm's strategic?.

To Executethe process of big data analytics capability, SMEs are challenged by various of BDAC dimensions that emerge as the lack of understanding how to apply analytics approach and its importance, the lack of supportive strategic marketing management, lack of human resources' skills, poor organizational culture to share data, unclear data governance, insufficient technologies to support high volume unstructured data, inadequate organizational talent to understand how can start with big data, unclear strategy to present what they should extract and why it is important, lack of alignment between the business, ITand strategy [22]. These challenges contain various concepts: physical capital (BDA technologies, infrastructure and security issue), human capital resources (data scientists and organizational talent) and organizational capital resources (managerial approach, culture and business process). To respond these challenges, we propose required dimensions of BDA capability by adopting from IT capability, which influences strategic andfirms' performance.

2.1 Big Data Analytics Capability (BDAC) Dimension

The existing body of research and literature pertaining to the capability of big data analytics has outlined three fundamental foundational components of BDAC: the organizational dimension (referred to as BDA management), the technological dimension (comprising technology infrastructure), and the human dimension (encompassing analytical skills, talent, or knowledge) [23].

1.Big Data Analytics management capability (BDAMAC); the ability of BDA executives to configure routines in a structured manner to manage BDA resources in line with business needs and priorities [24].

2.Big Data Analytics Technology Capability (BDATEC); refers to the ability of the technology and technical software (e.g., applications, data, and networks) that enable data scientists to improve, deploy and support necessary system components quickly [25].

3.Big Data Analytics Talent Capability (BDATC); the ability of data scientists (e.g., skills and knowledge about how to use analytical technologies and data analysis and make insight) to conduct with BDA [25].

2.2 Strategic marketing

Strategic marketing formulation and implementation effectiveness has become an established construct in the marketing strategy literature due to its relevance to managers (Slater et al., 2010). Empirical findings show that most strategy failures have been caused by poor implementation or behavioral problems in organizations [26]. Marketing strategies produce excellent results for an organization only when they are successfully implemented [27]. Even inappropriate but excellently implemented strategies can produce better results than excellent but poorly implemented strategies. Although there is some research on marketing strategy implementation, the role of a company's marketing department is of an organization in implementing marketing strategy has received little attention.

As per [28], the strategic marketing planning process conducted by marketing managers can be distilled into four interconnected tasks: (1) setting marketing objectives, (2) identifying the target market, (3) devising the marketing mix, and (4) executing and overseeing the strategy:

1. **Setting Marketing Objectives:** In this initial step, marketing managers define clear and achievable marketing objectives that align with the overall organizational goals. These objectives should be specific, measurable, achievable, relevant, and time-bound (SMART). Examples of marketing objectives might include increasing market share, boosting sales revenue, expanding into new markets, enhancing brand awareness, or improving customer satisfaction.

2. **Identifying the Target Market:** Identifying the target market involves understanding the characteristics and preferences of the ideal customer segments for the product or service being offered. This step entails market research to identify demographics, psychographics, behaviors, and other relevant factors that influence consumer purchasing decisions. Target market identification helps tailor marketing strategies to effectively reach and engage the intended audience.

3. **Devising the Marketing Mix:** The marketing mix comprises the strategic combination of the four Ps: Product, Price, Place, and Promotion.

- **Product**: Define the features, benefits, and attributes of the product or service that cater to the identified target market's needs and desires.
- **Price**: Set an appropriate pricing strategy based on market research, competition, cost structure, and perceived value to ensure profitability and competitiveness.
- **Place (Distribution)**: Determine the distribution channels and locations where the product or service will be made available to customers, optimizing convenience and accessibility.

- **Promotion**: Create promotional strategies to raise awareness about the product or service, utilizing various marketing channels such as advertising, public relations, sales promotions, and digital marketing.

4. Executing and Overseeing the Strategy: Implementation involves putting the marketing plan into action, ensuring that each aspect of the marketing mix is executed as planned. This step includes allocating resources, coordinating teams, and monitoring progress against set objectives. Simultaneously, overseeing the strategy involves continuous evaluation of performance, tracking key performance indicators (KPIs), analyzing feedback and results, and making necessary adjustments to the marketing plan to improve outcomes and achieve the set marketing objectives.

Thus, The comprehensive integrated BDAC is an outcome of the interconnected relationship among these three dimensions. The synergies arising from this relationship empower organizations to modify their business processes, consequently driving enhanced firm performance. BDAC signifies an organization's capacity to efficiently mobilize and utilize BDA resources, align BDA planning with marketing strategies, and ultimately gain a competitive edge, thus augmenting overall firm performance. Drawing from the dynamic capability view and inherent BDA characteristics, firms are encouraged to continuously adapt and renew their BDA capability, ensuring effective responsiveness in line with the available BDA resources. We perceive BDAC as a fundamental construct that encompasses the synergistic interplay among the three BDAC dimensions. This overarching BDAC construct is modeled after IT capability, considering the dynamic attributes of BDA, and serves to improve real-time decision-making processes.

3. Research Hypothesis

Drawing upon the dynamic capability literature, this study introduces the research model depicted in Figure 1. Within this model, we posit that the intricate nature of BDA necessitates a dynamic process to adapt and rejuvenate organizational resources and capabilities to fully realize the potential value of BDA. Dynamic capability is defined as distinctive organizational processes that enable integration, reconfiguration, acquisition, and release of resources in response to environmental dynamics [29]This continuous process establishes organizational and strategic routines, allowing firms to acquire new competencies for competition and potentially create novel market opportunities. We contend that realizing the potential value of BDA is an ongoing and dynamic process involving the reconfiguration of resources and the continuous enhancement of organizational capabilities to effectively navigate the volatile nature of BDA. Moreover, the provision of BDA capability induces changes in business processes, influencing the operational conduct of firms. Consequently, these capabilities significantly impact firm performance, aligning with evolving operational processes, financial outcomes, and market performance. Notably, BDA capability fosters routines for knowledge creation, especially when market dynamism is high [30]. In line with the Information Systems literature, the primary impact of IS resources and capabilities manifests in operational processes, influencing transformational aspects (altering a firm’s capacity to gather, store, process, and disseminate information) and informational processes (affecting firm structure and operations).

In addition, the effect on strategic marketing, consequently influences the firm’s performance, as well as its adaptability to changing market dynamics and competitive landscapes. Strategic marketing, encompassing market positioning, branding, customer engagement strategies, and product/service differentiation, serves as a critical bridge between the inherent dynamic capabilities derived from BDA and the overall performance of the firm. When successfully aligned with the evolving BDA capabilities, strategic marketing not only influences operational efficiencies but also enhances the firm's ability to identify and capitalize on market opportunities swiftly. This alignment facilitates informed decision-making, targeted marketing campaigns, and personalized customer experiences, directly impacting market share, customer loyalty, and revenue generation. Moreover, in a rapidly evolving digital landscape, BDA-enabled strategic marketing empowers firms to stay ahead of market trends, swiftly adapt to consumer preferences, and tailor their marketing strategies for optimal outcomes.Furthermore, as BDA capability engenders knowledge creation routines, the impact extends beyond immediate marketing strategies. It influences the organizational learning process, fostering a culture of data-

driven insights and continuous improvement. This iterative learning and adaptation further contribute to the firm's long-term competitiveness and innovative edge. Ultimately, the effective integration of BDA capabilities into strategic marketing not only enhances operational efficiencies but also cultivates a dynamic and responsive organizational culture, positively influencing the firm's performance in multifaceted ways[31]. In this line the study hypotheses are:

H1: BDA Capability effects on Strategic marketing planning.

H2: Strategic marketing planning effects SMEs performance.

H3: Strategic marketing planning mediates the relationships between BDAC and SMEs performance.

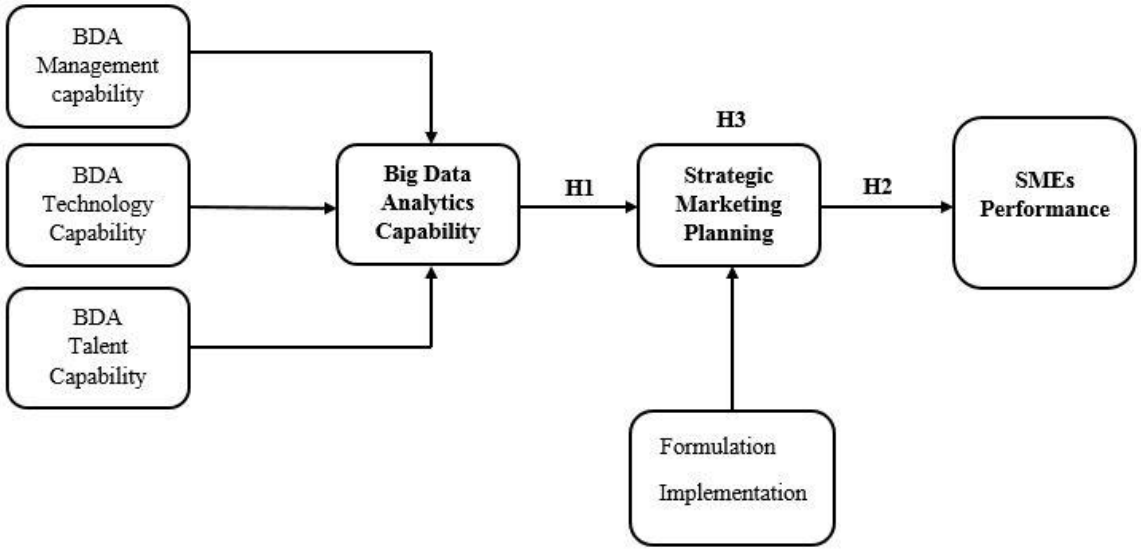

Figure 1. Conceptual model BDA capability, strategic marketing effect on firm performance

4. Methodology

To test our research hypotheses, we will conduct a survey to collect data from CEOs, managers, and marketing managers in the Home Appliances, Electronics, and IT sector who have made investments in the BDA process. The survey items have been meticulously designed to ensure maximum relevance and readability for the respondents[32]. Prior to the main survey, we will conduct pilot testing focusing on the validity in the context of BDA capability and SMEs performance. Based on the results of the pilot testing, the questionnaire will be modified before being administered to the sample group. The questionnaire incorporates several existing valid instruments that have been adapted to suit the objectives of this study. The primary objective of this survey is to explore the relationship between BDA capability and SMEs' performance, considering both direct and indirect effects."

In this study, we also incorporate control variables such as the number of employees, type of industry, and size of the company, considering their potential influence on BDA capability and the three dimensions of performance outcomes outlined in the research model. To aid respondents in effectively answering the BDA capability questions, we will provide definitions of Big Data (BD) and BDA capability at the beginning of the survey to ensure a common understanding among the respondents. Responses will be measured on a seven-point Likert scale, ranging from 'strongly disagree' (1) to 'strongly agree' (7). For data analysis, we will utilize SPSS software and Smart-PLS to conduct the necessary statistical analyses [33].

5. Expected Findings

The integration of strategic marketing with BDA technology holds the potential to significantly impact an organization's position and performance. By leveraging the analytical power and insights derived from BDA, organizations can refine their marketing strategies, enhance customer targeting, and optimize marketing campaigns. This data-driven approach enables organizations to tailor their marketing efforts to align with consumer preferences, trends, and market dynamics in real time."

Strategic marketing informed by BDA can result in improved market positioning, heightened brand visibility, and a deeper understanding of customer behaviors and needs. Consequently, this strategic alignment can drive higher levels of customer engagement, satisfaction, and loyalty. Moreover, the efficient utilization of BDA in strategic marketing can lead to cost savings, streamlined processes, and more effective resource allocation. Ultimately, the symbiotic relationship between strategic marketing and BDA technology is expected to elevate the overall performance of organizations, fostering growth, competitiveness, and sustained success in the dynamic business landscape.

Furthermore, this research underscores the pivotal role of BDA capability in shaping organizational capabilities and driving value creation. BDA capability offers a comprehensive view of the current capabilities within a firm, enabling them to effectively engage with BDA and mitigate the likelihood of failure in BDA projects. Additionally, we utilized the framework of dynamic capability to investigate the influence of BDA capability on firm performance. While existing literature acknowledges the significance of BDA in value creation, there remains a need for a more detailed exploration of the mechanisms through which this effect is manifested."

The primary theoretical contribution of this paper centers on accentuating the value creation process facilitated by dynamic BDA capability. We highlight that merely acquiring BDA is insufficient for deriving value; rather, firms must possess dynamic capabilities to continually reconfigure resources and effectively integrate BDA elements into their decision-making processes. This ongoing, dynamic process plays a vital role in enhancing financial and market performance, mediating the effect of strategic marketing. Consequently, our findings offer a theory-driven comprehension of BDA capability and its practical utilization, offering valuable insights for managers as they integrate BDA, a rapidly emerging competitive resource."

However, it is important to acknowledge certain potential limitations within this research. Given the nascent stage of BDA's evolution and the relative absence of a distinct definition for 'BDA capability' in the existing literature, further exploration and validation of the conceptual model are warranted. Moreover, this study faces challenges regarding data collection, particularly in accessing critical information from CEOs and marketing managers, who constitute the target sample for this research and are integral to testing the proposed model.

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