

CASE STUDY OPEN ACCESS

# Data-Driven Marketing Processes: A Roadmap for Big Data Analytics Adoption in a Brazilian SaaS SME

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## ABSTRACT

Small and medium-sized enterprises (SMEs) often face unique challenges in integrating advanced digital technologies due to limited resources and organizational constraints. While much attention has been given to large firms' adoption of big data analytics (BDA) and artificial intelligence (AI), less is known about how SMEs can leverage these tools effectively. This study addresses the research question of how SMEs, especially SaaS B2B, can transform marketing processes through advanced data analytics, large language models (LLMs), and generative AI. Drawing on a qualitative case study of a SaaS company, this research proposes a framework for integrating web mining and LLMs into a semantic analysis process to improve client acquisition by better targeting potential clients, i.e., leads. It optimizes lead qualification and facilitates the replication of successful cases by automating data collection, generating tailored marketing content, and creating customized commercial proposals. Based on the business analytics success model (BASM) framework, our study investigates the organizational changes necessary to embed innovative data-driven business processes into existing workflows through process mapping. Key stakeholders evaluate the proposal via interviews, which discuss the barriers to aligning and opportunities associated with adopting AI-driven solutions and emphasize the importance of technological capabilities with business goals. The findings reveal that for SMEs, adopting advanced analytics is contingent upon overcoming resource constraints through targeted organizational adjustments, such as incorporating dominant logic identification into strategic planning. This research contributes theoretically by customizing the BASM for SaaS SMEs and offering a roadmap for implementing AI-driven marketing solutions, demonstrating how SMEs can enhance operational efficiency and achieve competitive advantages, even in resource-constrained environments.

## 1 | Introduction

In recent years, small and medium-sized enterprises (SMEs) have increasingly recognized the potential of data-driven marketing to enhance lead qualification processes and improve client acquisition, thereby boosting business performance (Chong et al. 2024). However, while large enterprises have more readily adopted big data analytics (BDA) due to greater access to financial and human resources, SMEs face significant challenges in leveraging these technologies (Mikalef et al. 2019). The

integration of BDA into marketing processes, especially in lead qualification, demands a shift not only in technical infrastructure but also in the strategic and operational mindset of SMEs (Gupta and George 2016; Mikalef et al. 2018).

Despite the potential for substantial benefits, such as more effective targeting and personalization, the adoption of BDA in SMEs is often hindered by high implementation costs, lack of specialized personnel, changes in organizational processes and a perceived complexity that discourages investment in these

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technologies (Hashem et al. 2016; Gupta and George 2016). The review concludes that, despite these challenges, SMEs can effectively harness the power of big data by adopting tailored strategies that align with their specific business needs and resources (Davenport and Ronanki 2018). By leveraging data-driven insights, businesses can create personalized experiences that drive more leads and convert more clients (Kumar et al. 2023).

Lead qualification, a critical component of the sales funnel, refers to the process of identifying potential customers most likely to convert into actual buyers. Traditional lead qualification methods rely heavily on intuition or manual processes, often leading to inefficiencies, particularly in SMEs with limited resources (Gupta and George 2016; Mikalef et al. 2019). This challenge is especially pronounced in Software-as-a-Service (SaaS) B2B companies, where scalability depends on efficiently acquiring new customers. In this context, dominant logic—the shared cognitive map and strategic mindset of the management team—plays a central role in shaping business practices (Bettis and Prahalad 1995).

In B2B SaaS SMEs, lead generation and qualification are not merely operational marketing tasks but a central constraint to scalable growth, as slight changes in lead quality can substantially affect conversion rates, customer acquisition costs, and sales cycle duration. Prior research shows that digital platforms and AI-enabled analytics play an increasingly key role in helping SMEs systematize customer acquisition processes and integrate data-driven decision support into customer-facing activities, despite limited resources and specialized expertise (Wei and Pardo 2022; Li et al. 2023). From a managerial perspective, contemporary B2B lead generation increasingly relies on analytics-enabled, digitally mediated processes rather than relationship-based prospecting alone, reinforcing the relevance of BDA for structuring and prioritizing leads in resource-constrained SME contexts (Harvard Business Review 2021).

Building on this strategic view, for many SaaS SMEs, the dominant logic revolves around replicating successful business cases as a strategy for scaling operations. This logic, defined as the shared cognitive map and strategic mindset of an organization's top management (Bettis and Prahalad 1995), shapes decision-making, resource allocation, and business development. The replication process typically involves designing customized solutions for initial clients willing to invest in tailored projects. Once a project is completed, it becomes a reference case, demonstrating the firm's capabilities and forming the foundation for attracting similar customers (De Rolt 2000). In the context of SaaS firms, this means leveraging past success cases to guide client acquisition and solution development.

To support this strategy, businesses must develop a deep understanding of their value proposition and, crucially, their existing customer base. Determining the ideal customer profile (ICP) is a key step in this process, as it helps companies identify prospects with similar characteristics to their most successful clients (Iacobucci 2018). BDA enhances this capability by allowing SMEs to analyze CRM data, refine the ICP dynamically, and assess prospective clients in real time. This leads to improved lead scoring, more precise segmentation, and highly personalized marketing strategies (Rancati et al. 2015).

However, despite the clear advantages, many SMEs struggle to implement these advanced techniques due to financial and human resource constraints, creating a gap between their potential and actual use of BDA (Al-Sai et al. 2020; Fosso Wamba et al. 2016; Maroufkhani et al. 2022; Noonpakdee et al. 2018; Maroufkhani et al. 2022; Noonpakdee et al. 2018). This study aims to address this gap by proposing an improved framework for integrating BDA into the lead qualification process of SMEs. Through a use case in a SaaS company, this research explores how SMEs can overcome the barriers to BDA adoption and improve marketing processes. Specifically, the study examines the transition from traditional lead qualification methods to a data-driven approach, assessing the implementation through qualitative insights gathered from interviews with managers involved. The guiding research questions are:

**RQ1.** How can big data analytics be integrated into the lead qualification process within SMEs?

**RQ2.** What are the key barriers SMEs face when adopting big data technologies for B40 marketing?

**RQ3.** How can these barriers be addressed to enable effective BDA adoption in SMEs?

This study contributes to the growing body of literature on BDA adoption in SMEs while also delivering actionable insights for practitioners seeking to leverage data-driven approaches in resource-constrained environments. It proposes an expanded version of BASM tailored for SaaS SMEs, including mapping business processes and considering the dominant logic, bridging the strategic goals and practical elements of BDA adoption. It provides a roadmap for SME managers to implement data-driven marketing processes, with a specific focus on lead qualification, which can be adapted to various organizational contexts.

## 2 | Conceptual Background

This section outlines the conceptual foundations used in this study. It first situates data analytics within a business process perspective, emphasizing how organizational routines, decision-making, and dominant logic shape the adoption and use of analytics capabilities. Building on this foundation, the section then focuses on BDA in digital marketing, with particular attention to customer acquisition processes relevant to SaaS SMEs.

### 2.1 | Business Processes and the Role of Data Analytics

The business analytics success model (BASM) offers a comprehensive approach that integrates people, technology, and process flows to understand how organizations derive value and benefits from adopting data analytics (Seddon et al. 2017). BASM posits that the primary drivers of commercial value in data analytics are actions inspired by new insights, which enable better decision-making.

The BASM process model is based on several literature streams, namely problem-solving theories (Newell and Simon 1972; Pretz

et al. 2003), insight generation and organizational frameworks such as the resource-based view (Barney 1991) and dynamic capabilities. It also incorporates principles from the viable system model and insights from IS literature on business analytics and intelligence, particularly the foundational work of Davenport (2010).

BASM outlines several key components that contribute to the successful use of data analytics, emphasizing the integration of people, technology, and decision-making processes. The model identifies the following essential components for business success (Seddon et al. 2017):

1. *Analytical leadership*: Strong leadership that champions the use of data in decision-making processes.
2. *Enterprise-wide analytics orientation*: The extent to which the organization embraces a corporate-wide approach to data analytics.
3. *Well-chosen objectives*: The degree to which objectives for new data analytics initiatives are carefully chosen based on their business potential and the organizational resources required.
4. *People with an analytical mindset*: The presence of individuals within the organization with the skills and mindset to drive commercial value through data analytics.
5. *Availability of high-quality data*: Reliable data forms the foundation of effective analytics.
6. *Analytical workforce*: Skilled personnel capable of extracting actionable insights from data.
7. *Data-driven decision-making*: The incorporation of evidence-based decisions into the organization's core operations.

In summary, the BASM model suggests that the use of data analytics can uncover insights, which in turn lead to informed decisions. If these decisions result in beneficial actions, they generate commercial advantages for the organization. Conversely, if no insights are produced, or if the insights fail to translate into decisions that lead to beneficial actions, no value will be derived from data analytics. For this reason, the BASM model proposes that the “analytics-insight-decision-action” cycle should be “repeatedly executed across different parts of the organization” (Seddon et al. 2017).

However, BASM faces limitations when applied to SMEs, as these firms typically lack the infrastructure, technical expertise, and financial resources required to implement large-scale data analytics initiatives. While BASM works well for large organizations, its complexity and resource requirements make it less accessible to SMEs, where decision-making is often driven by immediate operational concerns rather than long-term strategic analytics (Seddon et al. 2017).

According to Wee et al. (2022), to address the specific challenges of SMEs, the BASM framework needs to be adapted, focusing on resource efficiency and simplified processes. The key adaptations for SMEs include:

- *Simplified analytic tools*: SMEs should prioritize accessible, cost-effective tools like cloud-based BI platforms, which can deliver insights without requiring large infrastructure investments.
- *Operational efficiency*: Instead of aiming for enterprise-wide analytics, SMEs can focus on optimizing key operational areas, such as supply chain management or customer retention.
- *Owner-manager leadership*: In SMEs, decision-making is often centralized, with the owner-manager playing a crucial role in driving analytics initiatives. Therefore, the analytics strategy should be tailored to this decision-making structure.

Building on the adapted BASM model, we propose a new approach to shaping business processes using advanced BDA tailored to SMEs. This approach leverages web scraping and large language models (LLMs) to streamline business processes, with a focus on digital marketing. Next, we describe the methodology employed.

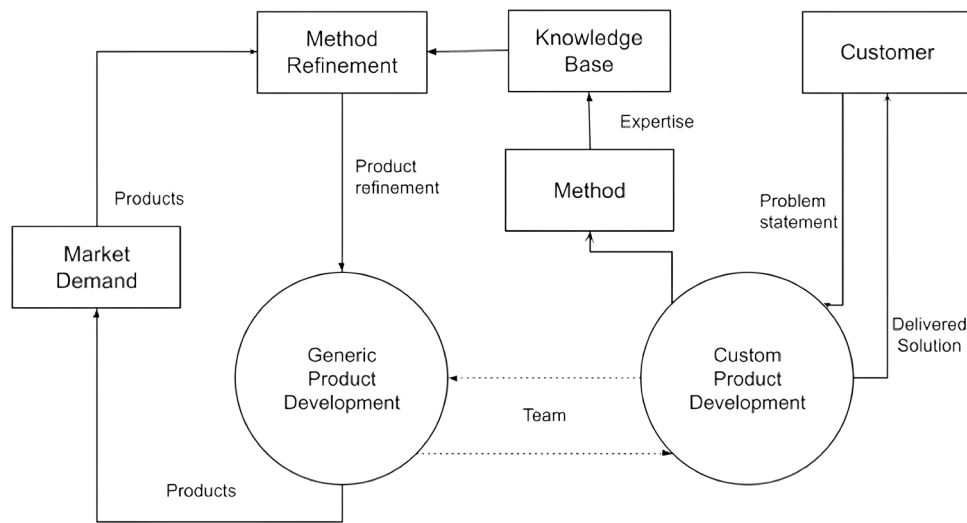
## 2.2 | Defining Dominant Logic in SMEs

The advent of BDA has introduced both opportunities and challenges for SMEs. Data-driven insights enable firms to enhance decision-making, improve efficiency, and develop competitive advantages (Mikalef et al. 2019; Côte-Real et al. 2017). However, for SMEs to capitalize on these benefits, they must undergo a transformation in their dominant logic, shifting from intuition-based decision-making to structured, analytics-driven strategies (Bettis and Prahalad 1995).

Dominant logic, as introduced by Prahalad and Bettis (1986), refers to the cognitive framework that shapes how top management teams perceive and interpret strategic decisions. It is embedded in an organization's management principles, control actions, culture, resource allocation, and strategic approaches (Côté et al. 1999; Jarzabkowski 2001). In SMEs, this logic is particularly influential due to the centralized nature of decision-making, where strategic and operational actions are closely intertwined (Kugler 2020). While this approach can support agility, it often limits the adoption of data-driven decision-making, as SMEs tend to rely on tacit knowledge and informal processes (Bettis and Prahalad 1995).

The process follows a structured flow: the client presents a problem, the service provider prepares a project, development occurs in stages, and payment is linked to milestone deliveries. At the conclusion of the project, the company not only gains revenue but also adds another validated success case to its portfolio, reinforcing its ability to replicate solutions for new clients (De Rolt 2000). The knowledge acquired during the development of the customized solutions and the feedback gathered during deployment provide input to the product development team to continuously refine the generalized, e.g., generic offering. Figure 1 illustrates the complete workflow.

Adapting dominant logic to incorporate BDA requires intentional transformation. Many SMEs operate with a



**FIGURE 1** | Replication of success case processes flow (adapted from De Rolt 2000).

decision-making approach that prioritizes rapid responses over structured analysis. This can create resistance to adopting data-driven practices, such as organizational routines, leadership perspectives, and resource constraints that hinder the shift toward analytics-driven strategies (Bettis and Prahalad 1995; Kugler 2020). Without an adaptation of dominant logic, businesses may struggle to extract value from BDA or misinterpret analytical insights, leading to ineffective strategic responses (Côté et al. 1999).

The process of updating an SME's dominant logic involves gradual changes, requiring investments in data literacy, the integration of analytical tools, and the establishment of new decision-making routines (Gupta and George 2016; Côte-Real et al. 2017). Studies suggest that SMEs with a strong commitment to fostering a data-driven culture are better positioned to leverage BDA for strategic innovation and operational efficiency (Mikalef et al. 2019). Shifting from intuition-based approaches to data-driven strategies can enhance competitiveness and long-term sustainability in an increasingly digital business environment.

Taken together, the business process perspective and the notion of dominant logic provide a lens to understand how analytics capabilities are embedded in organizational routines and strategic decision-making. This foundation enables a more focused examination of how BDA are operationalized in specific functional domains. Accordingly, the following section turns to digital marketing, where analytics-driven lead generation and qualification represent a critical application area for SMEs.

### 2.3 | BDA and Digital Marketing

The adoption of BDA is growing rapidly, with its primary value being the acceleration of decision-making processes, offering organizations a competitive advantage (Côte-Real et al. 2017; Ertz et al. 2021; Müller et al. 2018). BDA projects can serve a variety of purposes, such as improving customer satisfaction, managing supply chain risks, generating competitive intelligence,

optimizing pricing, predicting sales trends, and detecting fraud (Ertz et al. 2021; Lehrer et al. 2018). Studies demonstrate the tangible benefits of adopting BDA, such as higher productivity, reduced operational costs, and better alignment between technology and business strategy (Raguseo and Vitari 2018).

Digital marketing, intrinsically linked to and greatly enabled by BDA (Chaffey and Smith 2017; Wedel and Kannan 2016), involves the promotion of products and services through online channels such as social media, search engines, email, and websites. BDA plays a transformative role in digital marketing by enhancing strategies through deeper insights into customer behavior, preferences, and market trends.

Key concepts in digital marketing encompass strategies such as lead generation, branding, and account-based marketing (ABM) (Kotler et al. 2021; Kumar et al. 2021). Lead generation focuses on identifying potential customers through targeted campaigns designed to attract and engage prospects effectively. In B2B SME contexts, recent research emphasizes that analytics-enabled platforms and AI-based tools increasingly support the structuring, prioritization, and personalization of lead generation processes, helping firms systematize customer acquisition despite limited resources and specialized expertise (Wei and Pardo 2022; Li et al. 2023). Marketing-specific applications of AI, such as automated marketing platforms and chatbots, have been shown to improve customer interaction and operational efficiency when embedded in broader digital workflows, while data-driven targeting and campaign optimization can significantly enhance lead volume and quality (Kedi et al. 2024; Pamungkas and Wandebori 2025). Branding aims to build a company's identity and foster customer loyalty by delivering consistent and compelling messaging. Meanwhile, ABM adopts a personalized approach, concentrating marketing efforts on key client accounts to strengthen relationships and drive tailored engagement. Together, these strategies form the foundation of effective digital marketing initiatives.

BDA enhances digital marketing strategies by providing actionable insights that enable businesses to optimize their operations

across several dimensions. First, BDA facilitates the effective targeting of customer segments by leveraging historical data and predictive models to identify and prioritize high-potential prospects (Wedel and Kannan 2016; Kotler et al. 2021). Second, it allows for the optimization of campaign performance through real-time data tracking, enabling marketers to adjust tactics dynamically in response to evolving conditions (Chaffey and Smith 2017). Third, BDA supports the personalization of customer interactions, tailoring content and engagement strategies to individual preferences, thereby boosting both customer engagement and conversion rates (Kumar et al. 2021). Finally, BDA provides tools to measure the return on investment (ROI) of marketing efforts, delivering critical insights that aid in the more efficient allocation of marketing resources (Wedel and Kannan 2016).

Tools like customer relationship management (CRM) systems and data visualization dashboards allow marketing teams to make data-driven decisions, improving the marketing funnel's effectiveness. Furthermore, predictive analytics enables businesses to anticipate customer behaviors and needs, further refining their marketing strategies (Cruz and Zaghera 2018).

Recently, BDA methods and technologies have enabled large-scale data collection, such as web scraping, where textual information is retrieved from the web to capture business-relevant content, also referred to as web mining. This approach expands the reach of traditional methods that rely on third-party commercial data vendors (Kinne and Axenbeck 2019). Previous studies have shown that web mining uncovers insights directly from companies' self-reported information on their websites, which tends to be more comprehensive and tailored to their offerings than data from external sources (D'Haen et al. 2016). Websites not only function as a digital identity for companies (Oertel and Thommes 2018; Powell et al. 2016) but also serve as primary communication channels. They provide structured and detailed information aimed at attracting and informing potential customers, making them a valuable resource for up-to-date and relevant data (Kimiloglu and Zarali 2009).

Web scraping offers several advantages for CRM. For instance, by leveraging online data, acquisition costs can be significantly reduced when prospecting through digital channels compared to more traditional, cost-intensive offline methods (Chelariu and Sangtani 2009). Furthermore, the speed and efficiency of data collection through web scraping surpass manual or offline approaches (Kalaiganam et al. 2008) and can be used for advanced qualification and customer acquisition (D'Haen et al. 2016). By combining web mining with advanced BDA technologies, organizations can systematically extract, process, and analyze web data, transforming it into actionable insights that drive customer engagement, innovation, and long-term business success.

The introduction of LLMs, such as BERT (Bidirectional Encoder Representations from Transformers), marks a pivotal development in BDA (Devlin et al. 2019). These models utilize embeddings to represent text as multidimensional vectors, enabling semantic similarity calculations that go beyond simple keyword matching (Han et al. 2021). By analyzing text contextually, LLMs

provide a deeper, more accurate understanding of information. This shift allows businesses to automate complex information retrieval tasks, achieving both scale and precision while reducing the manual effort traditionally required (Brown et al. 2020).

BERT has been particularly influential in semantic search due to its ability to interpret context bidirectionally, enhancing tasks like classification, clustering, and retrieval (Devlin et al. 2019). Its application ensures that information is not only retrieved but also understood in a meaningful way, enabling actionable insights (Raffel et al. 2020). These advancements represent a major productivity breakthrough, allowing human resources to focus on strategic and expert-level work while delegating repetitive tasks to AI (Vaswani et al. 2017). The scalability offered by LLMs further enhances their appeal, enabling organizations to process vast amounts of data more efficiently (Brown et al. 2020).

Consequently, LLMs enable a wide range of potential business applications. One of them is the marketing and sales process, which is the focus of this study. Here, we propose the use of web mining and LLMs to improve marketing operations through a data-driven lead qualification. By combining web scraping for data collection with the semantic search capabilities of LLMs, businesses can more effectively identify and prioritize leads, making marketing operations more targeted and efficient.

However, effective adoption often requires an organizational change to incorporate new or transformed business processes. Finally, we ground our study on BASM, which will be discussed next. In this paper, we investigate adoption through the lens of BASM, including the logic-dominant perspective in a case study, as explained next.

### 3 | Methodology

This research employs a qualitative approach with an exploratory and descriptive design, adopting a case study methodology to examine the integration of BDA into the business processes of an SME. The study focuses on digital marketing within the context of a SaaS company, aiming to map existing processes, identify opportunities for BDA application, and propose a new organizational framework aligned with enhanced analytics capabilities.

The case study methodology facilitates an in-depth exploration of contemporary phenomena, particularly when the boundaries between the phenomenon and its context are not clearly defined (Yin 2001). Business process modeling (BPM) is employed to depict the current organizational structure, outlining the context and mapping the specific business processes for marketing and sales. To that end, internal business documents and workflow diagrams were analyzed to identify bottlenecks and inefficiencies. Using the data flow diagram (DFD) technique (Gane and Sarson 1983), the study modeled the current state of these processes, emphasizing the flow of data within the organization and identifying points where data-driven insights could be introduced to optimize operations. The application of these process modeling techniques used the BASM framework adapted for SMEs.

Semistructured interviews were conducted with key stakeholders in the organization, including the marketing analyst, the marketing director, the sales director, and the CEO, to complement the process mapping activities. The interviews with the marketing analyst and the marketing director were conducted virtually using Microsoft Teams software, and we received permission to record the entire interview. In the case of the sales director and the CEO, the interviews took place in person at the company headquarters. Each interview lasted approximately 60–90 min and followed a flexible interview guide aligned with the study objectives. The interviews provided qualitative insights into perceived benefits, challenges, and organizational readiness for adopting BDA in digital marketing. While sales are depicted as a distinct macro-process in the process mapping, sales-related perspectives were captured through the Commercial Director, who holds responsibility for sales management and for coordinating the marketing–sales interface, rather than through direct interviews with individual sales staff. The interviews were embedded in an iterative process-mapping exercise, including the discussion of context diagrams and data flow representations derived from internal documentation, and the resulting insights informed the development of an organizational framework for integrating BDA into marketing processes and workflows.

### 3.1 | Processes Modeling

To understand and model the business processes of the company under study, BPM was employed. BPM provides a structured approach to analyzing and optimizing organizational workflows, ensuring alignment with business objectives and operational efficiency (Dumas et al. 2013). It encompasses mapping, evaluating, and continuously improving processes to achieve organizational goals. Frameworks such as business process reengineering (BPR) have historically emphasized radical changes to enhance productivity and customer satisfaction (Hammer and Champy 1993). BPM further extends these principles by fostering continuous improvements that align processes with strategic objectives (Dumas et al. 2013).

Incorporating BDA into BPM frameworks enhances real-time monitoring and data-driven decision-making, enabling businesses to dynamically adapt to evolving environments. By leveraging data analytics, organizations can identify inefficiencies and implement timely adjustments, thus optimizing their operational processes (van der Aalst 2016). These integrations underscore the evolving capabilities of BPM, making it a critical tool for modern data-driven enterprises.

Our analysis allowed the identification of specific changes needed to integrate advanced analytics into business processes. These changes were structured as a roadmap, illustrating the step-by-step application of BDA in digital marketing processes to improve sales, customer retention, and overall business outcomes.

Additionally, a qualitative analysis of interview data was conducted to assess the feasibility and expected impact of the proposed changes. Managers' insights were coded and categorized to understand the organization's readiness for change, the expected challenges in implementing BDA, and the long-term benefits anticipated.

## 4 | Case Study

This case study focuses on the analysis and mapping of business processes in a SaaS company located in the technological hub of Florianópolis, Santa Catarina state, Brazil, which has over 1700 companies. The organization was selected for its role as an innovative player in the regional SaaS B2B market, offering an ideal context for examining the integration of BDA into marketing and business processes. Founded in 2001, the company is a publicly traded entity headquartered in Florianópolis city (Brazil), a consolidated technological hub in Brazil. With a workforce of 110 employees and a revenue of approximately R\$ 20 million (ca. 5 million US dollars), the company has experienced steady growth in the SaaS sector, providing secure cloud-based services to various industries such as finance, insurance, telemedicine, and human resources.

The company's value proposition is offering authentication services for digital documents. Its clients include medium-sized and large enterprises from both the public and private sectors, with a strong presence in the national market and plans for further international expansion.

The organization employs a systemic approach to its business processes, with a clear hierarchical structure overseen by a Board of Directors and managed by a CEO and two additional directors. The primary macro processes in the organization include infrastructure support, customer services, product development, marketing, and sales, the latter two of which are the focus of our analysis. The organization's process landscape is illustrated as context mapping in Figure 2, including, after mapping the current situation, the insertion of a new business process called similarity analysis.

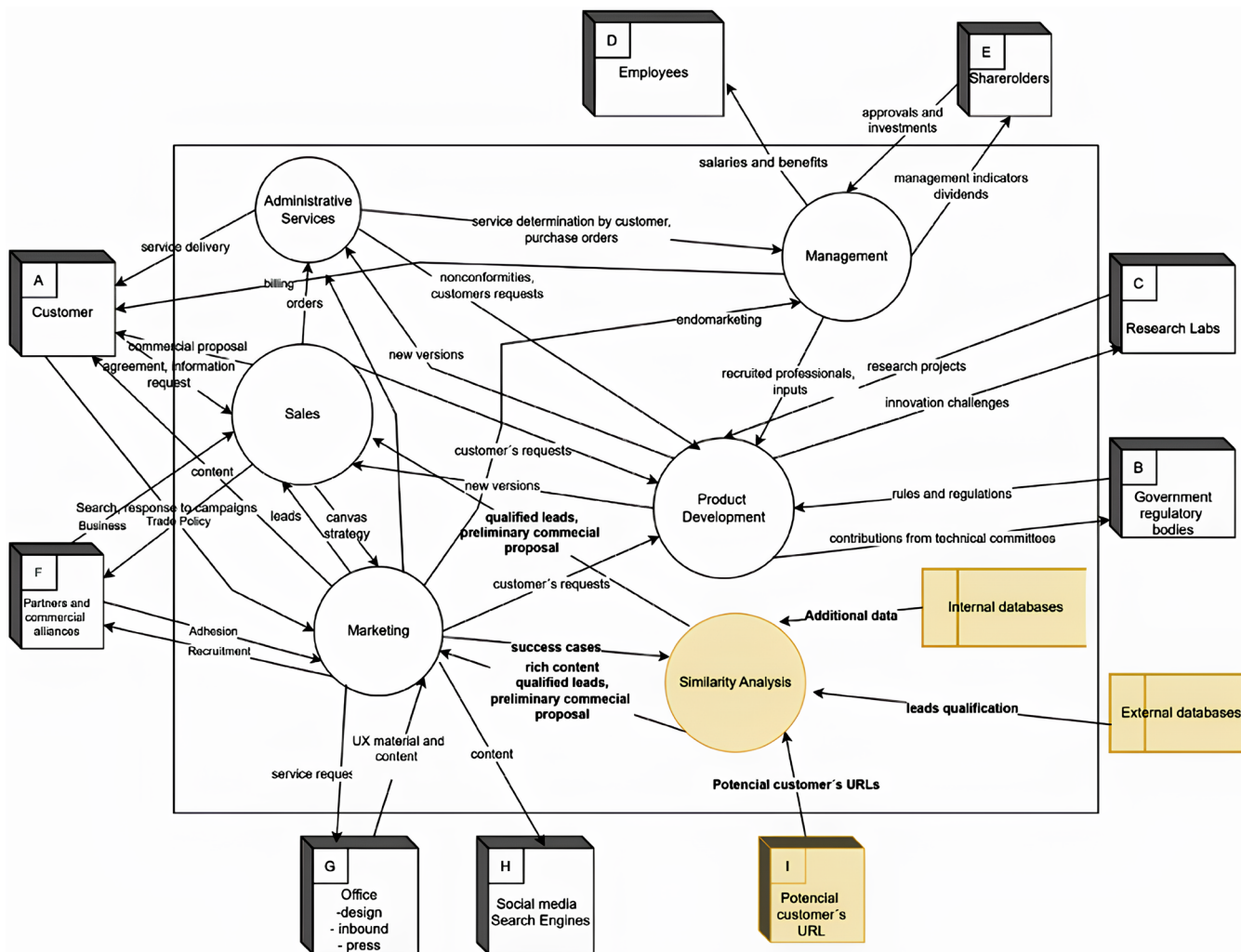
In this context mapping, we present a bird's-eye view of the relationships between macro processes. Next, we zoom in on the intervention on marketing and sales processes.

### 4.1 | Marketing and Sales Business Processes

Marketing and sales processes are critical areas, especially for SaaS B2B, where BDA can be leveraged to drive growth. The marketing process is particularly important for customer acquisition and engagement, while the sales process is directly tied to the company's revenue generation. By mapping these processes, we aim to propose how advanced analytics can be integrated to optimize performance.

The company's marketing department is structured and already employs a variety of digital marketing strategies, including inbound marketing, ABM, branding, and user experience (UX) design. The marketing business process was further detailed using a DFD diagram, broken down into subprocesses, including expressions of interest, generating inbound and outbound content, monitoring performance, creating smart lead lists, qualifying leads, analyzing results, and tracking performance, as can be seen in Figure 3. Highlighted are the processes impacted by the proposed new method.

The marketing processes integrate commercial strategies into content creation for potential clients (Inbound) and the generation



**FIGURE 2** | Businesses process mapping. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

of SmartLead Lists based on internal and external data sources (Outbound). The process of content generation involves multiple channels, such as social media and blogs indexed by search engines, emails, and direct communication. Content is tailored to the lead's progress in the marketing journey, aiming to generate interest in the company's products. Once the lead meets pre-defined qualification criteria, it is forwarded to the sales process.

The key distinction between inbound and outbound strategies lies in the SmartLead List, which is generated internally from external and internal databases. These lists are developed based on the sales strategy, defining the value proposition for specific potential client profiles, and are refined through data analysis to align with these characteristics. The process then seeks to attract, prepare, and educate potential clients, guiding them toward evaluating the company's products. The generation of SmartLead Lists involves significant data analysis, relying on third-party service providers for access to databases and requiring a great level of expertise and knowledge to curate the list and align it with the current commercial strategy. Therefore, this process, together with the existing lead qualification, is the target of the proposed method.

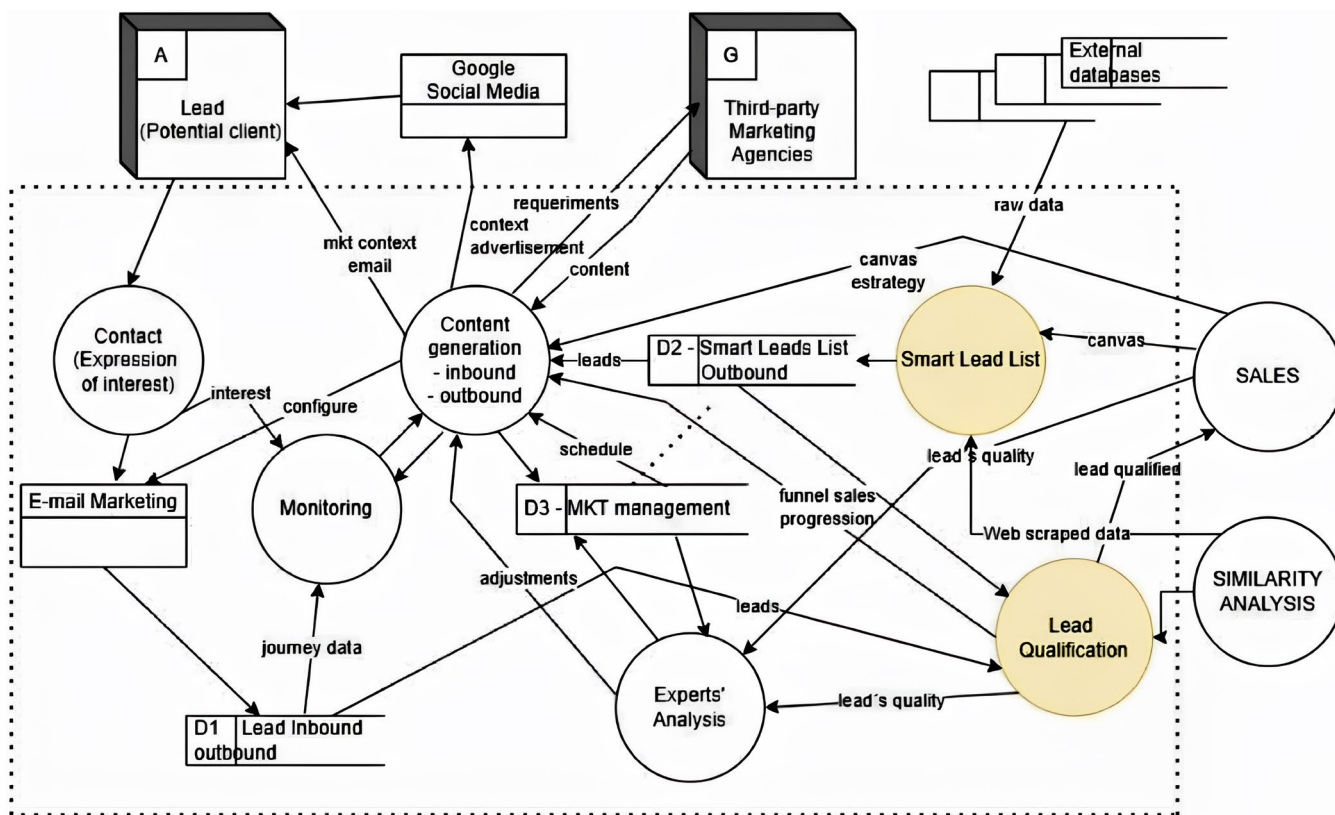
The legacy business processes in the case study organization show a formalized approach to marketing and sales. However,

this process is fragmented and requires close and intense interaction with the Marketing and Sales personnel. Based on theoretical findings and an in-depth understanding of the organization, the proposed solution focuses on introducing a BDA approach to the replication of successful cases. This approach, hereby named "Similarity analysis," allows SMEs to leverage their accumulated knowledge and artifacts from past projects and current clients to boost client acquisition and growth.

**4.2 | The Similarity Analysis Process**

The new process, named "Similarity Analysis," is designed to enhance the speed and effectiveness of replicating success cases by identifying potential clients with profiles, challenges, and needs similar to those of its existing clients. This approach aligns with the company's dominant logic, which frames its commercial strategy around replicating successful projects, particularly in industries where it has established expertise.

The similarity analysis process integrates web scraping techniques and natural language processing (NLP) to match potential clients with the company's portfolio of successful cases. Additionally, it uses LLM to generate tailored content for these



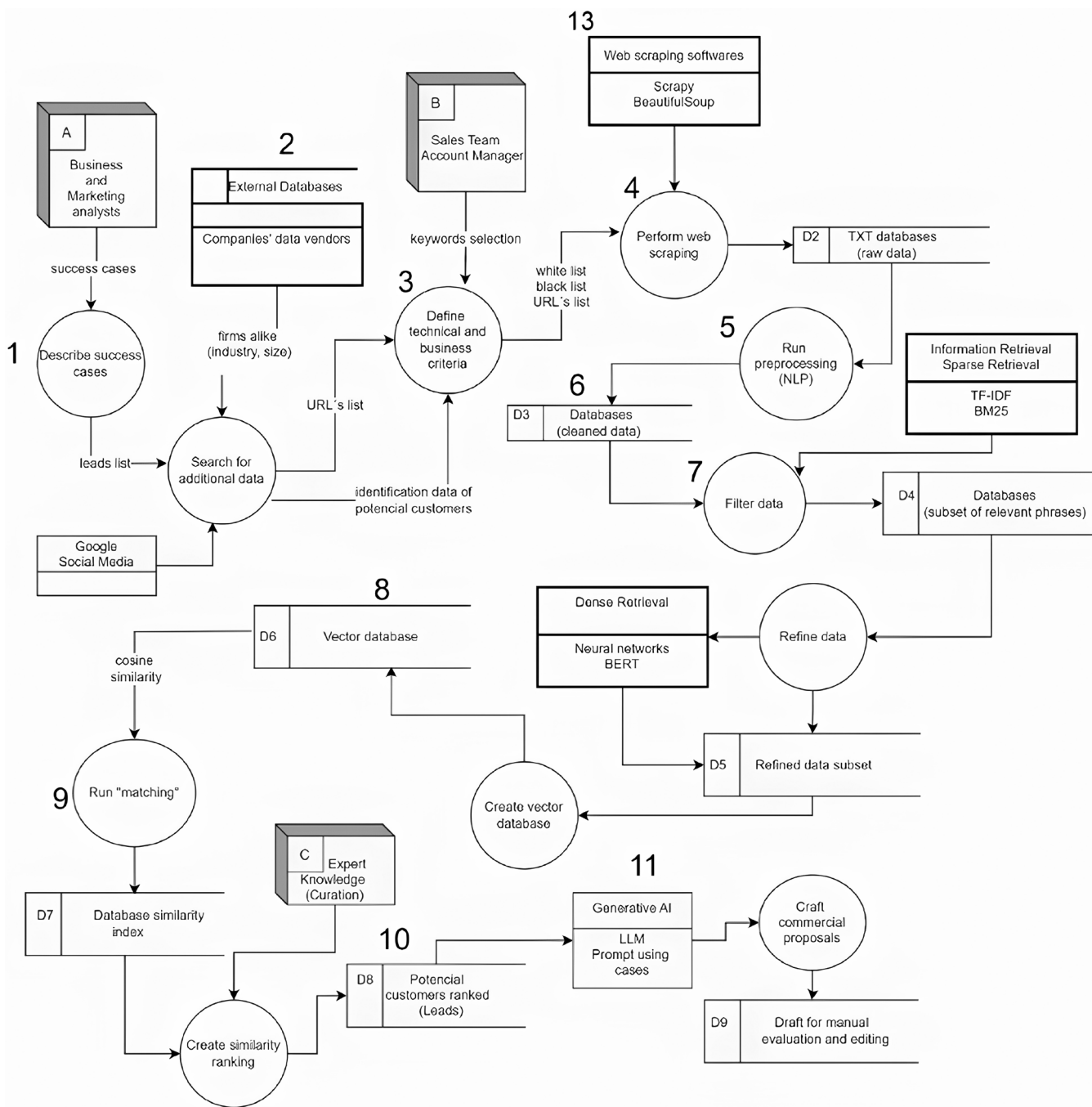
**FIGURE 3** | Marketing business processes. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

prospective clients and even customized commercial proposals. Figure 4 shows the workflow, from the data collection to the commercial proposal generation.

We compile the complete process into 11 key activities that summarize the workflow as follows:

1. *Documenting success cases*: The first step is to document each success case thoroughly, including key client characteristics, problems solved, technologies used, and project outcomes. These cases are then used to increase the context for finding similar companies, e.g., leads.
2. *Data collection on potential clients*: Using web scraping and commercial firms' databases, the company collects data on potential clients who share characteristics with current clients. The data includes industry, size, geography, and other relevant details.
3. *Criteria definition*: Business and technical criteria are established to guide the web scraping process. This includes specifying relevant keywords for client identification and setting limitations on the depth of data extraction.
4. *Automated web scraping*: The process then collects textual information from identified potential clients' websites, storing this data in a raw, unprocessed format.
5. *Data preprocessing*: The collected data is cleaned and prepared for analysis, filtering out irrelevant content such as slogans and call-to-action messages.
6. *Data filtering*: Information retrieval methods like TF-IDF or BM25 are used to filter data further, focusing on relevant information to ensure a high-quality match with existing success cases.
7. *Dense retrieval using neural models*: Advanced neural networks like BERT are used to capture complex relationships in the text, enabling a more nuanced understanding of the potential client profiles.
8. *Vector database creation*: Each client, both current and potential, is represented as a vector in a multidimensional space using embedding techniques. A vector database is used to store and search for these representations.
9. *Similarity matching*: Using cosine similarity, the system calculates the degree of similarity between current and potential clients, identifying which new prospects are most likely to benefit from the company's services.
10. *Ranking of potential clients*: A ranked list of potential clients is generated based on their similarity scores, which is then validated by the sales and marketing teams.
11. *Customized proposal generation*: Finally, LLMs like GPT4 or Llama 3 are used to create personalized commercial proposals for the highest-ranking potential clients. These proposals leverage the similarities found in the successful cases, offering tailored solutions that align with the client's needs.

Integrating similarity analysis into the company's marketing and sales processes can lead to three key outcomes: increased



**FIGURE 4** | Similarity analysis' workflow.

reach, improved precision, and greater efficiency. By employing web scraping, the company can identify a broader range of potential clients and uncover new opportunities. Customized proposals tailored to the specific needs of potential clients enhance alignment and significantly improve the likelihood of conversion. Additionally, automation streamlines operations, reducing the workload on sales teams, enabling them to focus on high-quality leads, and ultimately shortening the sales cycle.

This proposed process introduces a new set of business activities that align with the company's goal of scaling through automation, creating more opportunities for growth while reducing the dependency on manual processes. It represents a significant

improvement in the company's current marketing and sales operations, transforming BDA into a practical and actionable tool that drives business performance.

## 5 | Case Analysis and Findings

In this section, the insights gathered from the interviews conducted with key managers in the case study company are analyzed. The purpose of the interviews was to capture perceptions regarding the proposed adjustments to organizational processes, specifically the introduction of Similarity Analysis to improve business performance through data analytics. The analysis delves into each manager's view on the proposal, identifying

common themes and challenges related to data-driven decision-making, marketing automation, and the application of Big Data techniques.

The proposed adjustments to organizational processes, including the integration of Similarity Analysis, were presented to key marketing and sales managers through semistructured interviews. The discussions aimed to evaluate the feasibility, alignment, and potential impact of the proposed changes on existing business practices. Across roles, the feedback underscored usual challenges, opportunities, and perceptions regarding the proposal. The questions are available in Appendix A.

### 5.1 | Challenges in Replicating Success Cases and Leveraging Data Analytics

A recurring theme across the interviews was the difficulty in efficiently replicating success cases, particularly when transitioning solutions across industries. Managers described the process as highly manual, slow, and resource-intensive. The lack of a structured approach to leveraging data analytics further compounded these challenges. While some data-driven practices were in place, such as basic LinkedIn Ads campaigns or isolated CRM-based analytics, these efforts were fragmented and underutilized.

The Marketing Analyst and Chief Marketing Officer (CMO) both highlighted the need for improved data collection and analysis to better identify potential clients. They noted that current methods relied heavily on manual work and lacked automation, limiting the company's ability to scale efforts. The Commercial Director echoed these sentiments, pointing out that existing analytics initiatives were confined to small, isolated projects that did not fully support strategic goals.

### 5.2 | Opportunities for AI-Driven Transformation

Managers across roles recognized the transformative potential of similarity analysis, particularly in automating lead qualification and streamlining sales and marketing alignment. The marketing analyst emphasized that such a solution could revolutionize client acquisition by automating lead generation, using web scraping to identify prospective clients, and applying AI to uncover patterns beyond human perception. Similarly, the CMO saw great value in using similarity analysis to educate potential clients on unmet needs and shift efforts from “attending demand” to “generating demand.”

The Commercial Director and CEO saw similarity analysis as a critical tool for enabling more precise segmentation and personalization. They appreciated the potential for AI-driven insights to create tailored content and efficient sales pitches, thereby improving client targeting and engagement.

### 5.3 | Barriers to Implementation

Despite their enthusiasm, managers identified several barriers to implementing the proposed adjustments. One major concern

was resource constraints, including the small size of the marketing team and the limited availability of technical expertise. Both the marketing analyst and CMO stressed the need for dedicated resources to manage the automation and analysis processes, which would require investment in both people and technology.

Another key barrier was cultural resistance to change. The CMO and CEO highlighted the challenge of convincing stakeholders to prioritize data-driven decision-making, especially when immediate ROI might not be evident. The CEO noted that a phased approach to implementation would be essential, allowing the company to experiment, learn, and refine the process over time.

### 5.4 | Strategic Alignment and Organizational Readiness

Managers unanimously agreed that aligning the proposed adjustments with the company's strategic goals was crucial. The CEO emphasized that the proposal fits well with the company's broader transition to scalable cloud-based services and API-driven solutions. However, they also stressed the importance of incremental implementation to build organizational readiness and address the significant learning curve.

The CMO and Commercial Director highlighted the need for robust software solutions to support the proposed changes, with a focus on scalability and usability. They also pointed to the importance of fostering collaboration between marketing and sales teams, ensuring that the new processes would be seamlessly integrated into existing workflows.

Across roles, managers recognized the potential of Similarity Analysis to address current inefficiencies and unlock new opportunities. However, they also emphasized the need for careful planning, resource allocation, and cultural adaptation to ensure successful implementation. Key takeaways include:

- *Efficiency gains:* Automating data collection and lead qualification through similarity analysis could significantly improve marketing and sales processes, enabling faster replication of success cases and more precise targeting of potential clients.
- *Resource constraints:* Addressing the limited availability of human and technological resources will be critical to scaling the proposed solution.
- *Cultural shift:* Building a culture of data-driven decision-making will require persistent effort, clear communication of benefits, and demonstration of value through iterative implementation.
- *Strategic alignment:* Integrating Similarity Analysis into the company's existing goals and workflows is essential to maximize its impact and ensure long-term sustainability.

Table 1 presents selected illustrative quotes from the interviews, highlighting key challenges, opportunities, and barriers perceived by different organizational roles in relation to BDA-enabled lead qualifications.

**TABLE 1** | Representative quotes.

Theme	Quote	Role
Challenge	“We tried to replicate a successful case together with the commercial area, but the process was extremely labor-intensive and relied heavily on manual activities”	Marketing Analyst
Opportunity	“This project would be excellent for sales, because the salesperson would already have prior information about potential clients and their needs, which would allow us to scale sales through automated processes”	Marketing Analyst
Barrier	“We use data analysis, but in a very basic way. Decisions are often not based on data because we struggle to collect reliable information in a timely manner”	Chief Marketing Officer
Challenge	“Creating highly personalized marketing approaches with a team of only two analysts is unrealistic, even though we know this would generate better results”	Chief Marketing Officer
Challenge	“The main challenge for marketing and sales is opening doors to potential clients and reducing the gap between our products and the market”	Commercial Director
Opportunity	“Using AI to generate segmented and richer content would be extremely valuable, both for marketing and for sales”	Commercial Director
Barrier	“Salespeople are a very expensive resource, and in SMEs this role is often performed by the founders themselves”	Chief Executive Officer
Opportunity	“The similarity analysis proposal seems important to support sales and improve the interaction between marketing and sales”	Chief Executive Officer

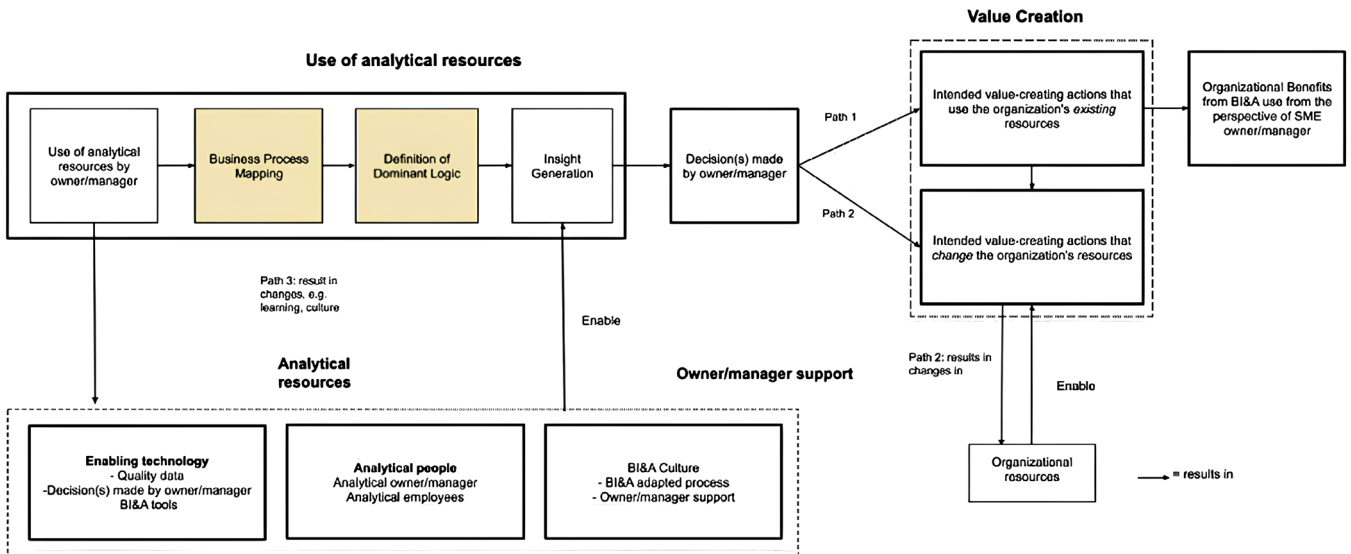
Collective feedback underscores the importance of a phased, adaptive approach to implementing the proposed adjustments, balancing innovation with practical considerations of organizational readiness.

## 5.5 | Roadmap for Organizational Change

Based on the insights from the case study and theoretical findings, a comprehensive 15-step roadmap was developed to guide the implementation of Similarity Analysis and broader data-driven organizational changes. This roadmap integrates the feedback from interviews and focuses on enhancing business processes, especially in marketing and sales, through BDA:

1. *Map business processes*: Begin with detailed process mapping to understand the current state and establish a baseline for future changes.
2. *Identify current dominant logic*: Recognize the company's current strategic mindset and how it informs business decisions.
3. *Maintain or update the dominant logic*: Evaluate whether the current logic should evolve into a more data-driven approach.
4. *Develop insights*: Leverage data to extract actionable insights that align with the dominant business logic.
5. *Select key insights*: Prioritize the most valuable insights for implementation based on available resources.
6. *Define new data-driven business processes*: Establish new processes informed by the selected insights, ensuring alignment with organizational goals.
7. *Assess the impact*: Evaluate the potential effects of introducing new data-driven processes on the company's structure.
8. *Integrate the new processes*: Seamlessly incorporate data analytics into existing processes, particularly marketing and sales.
9. *Acquire knowledge*: Build the technical and business expertise needed to execute the changes effectively.
10. *Implement a pilot project*: Test the new processes through a pilot project, ensuring careful monitoring and adjustment.
11. *Evaluate results*: Measure the outcomes of the pilot project against established success criteria
12. *Adjust*: Refine the processes based on the results of the evaluation, addressing any issues
13. *Run the pilot with adjustments*: Implement the adjusted processes in a second iteration of the pilot.
14. *Decide on continuous adoption*: Determine whether to fully adopt the new processes across the organization.
15. *Automate and integrate*: Once the processes have proven successful, automate them and integrate them into the broader organizational framework.

Our findings propose an enhancement to the BASM framework, originally developed by Seddon et al. (2017) and later adapted for SMEs by Wee et al. (2022), with a specific focus on SaaS SMEs. This refinement introduces two critical elements: business process mapping and the identification of dominant logic, which serve as foundational steps for aligning data-driven strategies with organizational objectives, as illustrated in Figure 5.



**FIGURE 5** | BASM adapted for SaaS SMEs (expanded from Wee et al. 2022). [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

In summary, the 15-step roadmap proposed updates to the BASM framework provide a structured pathway for integrating data-driven processes into SMEs, with a specific focus on marketing and sales activities. The case study highlights the importance of understanding and aligning the dominant logic with data-driven initiatives, emphasizing the need for careful planning, iterative evaluation, and gradual implementation.

**6 | Discussion**

Addressing RQ1 on how BDA can be integrated into lead qualification processes, this study expands on the BASM by incorporating organizational analysis and change as foundational elements for adopting BDA into marketing processes in SaaS SMEs. The updated framework emphasizes two new components—business process mapping and dominant logic identification—tailored to address the unique challenges of SMEs, particularly those operating under resource constraints (Wee et al. 2022). Using marketing processes as a practical use case, the research links organizational transformation to strategic and operational readiness for adopting BDA, highlighting how such initiatives can drive scalable and sustainable growth.

The insights gathered from the case study and interviews reveal that the integration of BDA into lead qualification processes requires a shift not only in technology but also in organizational structure and culture. In this study, organizational structure refers to concrete elements such as the allocation of roles and responsibilities for analytics-related tasks, coordination mechanisms between marketing and sales, and the formalization of workflows and decision rights associated with data-driven lead qualification. Business process mapping was identified as an essential step in this transformation, allowing the case company to visualize inefficiencies and align workflows with strategic objectives (Seddon et al. 2017). By analyzing existing practices, the company could pinpoint how data analytics could optimize lead qualifications, such as automating repetitive tasks and enabling real-time decision-making. This aligns with previous findings that underscore the value of data-driven insights

for refining customer segmentation and targeting strategies (Rancati et al. 2015).

From the perspective of RQ1, the BASM framework also underscores the importance of generating actionable insights through an iterative “analytics-insight-decision-action” cycle (Seddon et al. 2017). The roadmap developed in this study demonstrates how SMEs can progressively adopt BDA through small-scale pilots, allowing them to learn and adjust without overwhelming their limited resources. This approach not only aligns with the adapted BASM framework but also resonates with findings from the literature that emphasize the need for gradual adoption to overcome resource and expertise constraints (Gupta and George 2016; Bianchini and Veronika Michalkova 2019).

In relation to RQ2, which examines the key barriers SMEs face when adopting BDA for marketing, the interviews revealed several challenges that align with the existing literature. One significant barrier is the lack of technical expertise, which limits the ability to deploy and sustain advanced analytics solutions (Noonpakdee et al. 2018). For example, while the introduction of Similarity Analysis was perceived as transformative, the managers expressed concerns about the need for skilled personnel to manage the technology effectively. This mirrors prior research highlighting that resource constraints, including human capital, are among the most significant impediments to BDA adoption in SMEs (Maroufkhani et al. 2022).

Cultural resistance also emerged as a critical barrier. The CEO and CMO both noted that fostering a culture of data-driven decision-making would require clear communication of the benefits and gradual demonstration of ROI. This finding aligns with Kugler (2020), who emphasized that organizational transformation toward a data-driven culture depends on changing the dominant logic that governs decision-making processes. In the case study, the company’s dominant logic-centered on replicating successful business cases-provided a starting point for this cultural shift but required reconfiguration to fully embrace analytics.

The study highlights the importance of dominant logic as a strategic lens for understanding and implementing BDA in SMEs. Bettis and Prahalad's (1995) conceptualization of dominant logic as a cognitive framework underscores its influence on resource allocation and decision-making. In this case study, the dominant logic of replicating success cases informed the strategic design of data-driven marketing processes, particularly through Similarity Analysis. This structured approach reduced risks associated with scaling operations, demonstrating how aligning analytics with dominant logic can streamline adoption.

Addressing RQ3 on how these barriers can be overcome, the roadmap proposed in this study advocates for leveraging cost-effective tools like web scraping and sentence transformers such as BERT. These technologies automate labor-intensive tasks and enable real-time analysis of unstructured data, making them accessible even to resource-constrained SMEs (Devlin et al. 2018). This aligns with broader findings in the BDA literature that emphasize the democratization of analytics tools as a key enabler for SMEs (Lehrer et al. 2018).

The iterative implementation of BDA, as outlined in the roadmap, also addresses cultural resistance by allowing organizations to experiment, learn, and demonstrate value incrementally. This phased approach, supported by clear communication and cross-functional collaboration, facilitates the alignment of analytics initiatives with strategic goals, ensuring both buy-in and sustainability.

In sum, this study shows that integrating BDA into lead qualification in SaaS SMEs requires alignment between analytics initiatives, business processes, and dominant logic. While resource constraints, limited expertise, and cultural resistance remain significant barriers, a phased and process-oriented adoption approach enables SMEs to build analytics capabilities incrementally. By combining business process mapping, dominant logic awareness, and iterative experimentation, SMEs can gradually embed data-driven practices into marketing and sales routines, supporting scalable and sustainable growth.

## 7 | Conclusion

This study examined the adoption of BDA in marketing processes through the lens of the BASM, proposing an adaptation to address the specific needs of SaaS SMEs better. The proposed enhancements to the BASM framework include the incorporation of dominant logic analysis and business process mapping as foundational steps for organizational transformation. Using a qualitative case study approach, this research focused on the organizational changes and process reengineering required to adopt data-driven strategies, exemplified through a method leveraging web scraping and LLMs for improved lead qualification and customer acquisition in a SaaS B2B context.

The findings emphasized the importance of understanding and aligning an organization's dominant logic with the adoption of data analytics, as well as the need to map business processes to identify integration points for modern technologies. These steps were shown to facilitate organizational change by addressing challenges related to resource limitations, technical expertise,

and cultural shifts. Interviews with key stakeholders highlighted both the opportunities presented by data-driven strategies, such as the replication of success cases through similarity analysis and the barriers SMEs must navigate to realize these benefits.

Based on the insights gathered, a practical roadmap was proposed to guide SMEs in gradually integrating BDA into their business processes, particularly in marketing and sales, where its impact can be most pronounced. By framing these technological changes within the broader context of organizational analysis, this study provides a comprehensive approach to data-driven transformation tailored to the realities of SaaS SMEs. The integration of dominant logic and business process mapping within the BASM framework offers a structured pathway for SMEs to transition toward data-intensive operations, contributing to the literature on BDA adoption by filling a gap in practical, SME-focused methodologies.

### 7.1 | Contributions and Implications

This research contributes to the theoretical development of the BASM framework by extending its applicability to SaaS SMEs. By incorporating business process mapping and dominant logic identification, the adapted BASM framework provides a practical tool for guiding SMEs through the organizational changes necessary for BDA adoption. These additional components emphasize that successful analytics implementation requires not just technical solutions but also a comprehensive understanding of organizational processes and strategic alignment.

From a practical perspective, this study offers a roadmap that SMEs can use to integrate BDA into their operations, starting with marketing processes as a use case. The roadmap balances innovation with resource efficiency, demonstrating how SMEs can overcome barriers such as limited technical expertise and cultural resistance. Moreover, it highlights the role of dominant logic in shaping data-driven strategies, providing a structured approach to organizational transformation.

### 7.2 | Limitations and Future Research

One limitation of this research is that the proposed roadmap has been examined within the context of a single SME, which may affect the generalizability of the findings to other industries or larger organizations. While the roadmap offers a structured approach to integrating data-driven strategies into business processes, its broader applicability would benefit from further exploration in diverse organizational settings.

Future research should focus on applying and validating the proposed roadmap in multiple SMEs across different sectors to provide a more comprehensive understanding of how data-driven strategies can be adapted to varying industry contexts. Additionally, further investigation into the integration of AI-driven analytics with traditional methods could enhance our understanding of how these technologies can complement each other to improve SME performance. Finally, developing standardized metrics to evaluate the cost-effectiveness and ROI of

data-driven initiatives in SMEs could strengthen the case for broader adoption of such strategies.

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## Conflicts of Interest

The authors declare no conflicts of interest.

## Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Appendix A

### Questionnaire

1. Is the company able to replicate success cases quickly?
2. Is data analytics being used to become more competitive? What strategies are applied?
3. Does the company understand the profile of its potential clients? Do they match current clients?
4. Does the company have the technology infrastructure to implement the proposed process?
5. What is the perception of the viability of adjusting organizational processes to implement the proposed similarity analysis?