The Role of Business Analytics and Strategic Positioning in Corporate Digital Transformation

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Abstract. In the era of the digital economy, digital transformation is an inevitable choice for enterprises to enhance their competitiveness; however, vague strategic positioning often leads to poor transformation results. Data-driven decision-making based on business analytics can solve the empirical dilemma of strategy positioning. This study focuses on how business analytics can help strategic positioning amid corporate digital transformation while clarifying its core mechanism and corresponding practice models. This study suggests that business analytics plays a crucial role throughout the whole process of data-driven decision-making: in the initial stage, it lays a strategic foundation by digital maturity assessment along with internal and external analysis; In the middle stage, the strategic positioning will be transformed into a set of quantifiable indicator systems; In the later stage, data-driven method is used to ensure the synchronization between strategy and environment. Regarding practice models of different enterprises, large enterprises can cooperate through unified analysis platforms, while small and medium-sized enterprises (SMEs) rely on lightweight tools to build advantages. To cope with key challenges during transition, including ambiguous strategic goals and insufficient digital foundation, enterprises are advised to acquire systematic and self-generated digital capabilities, such as strengthened data governance, improved organizational digital literacy, and an integrated decision loop. This research promotes business analytics from a mere tool to a strategic decision enabler, providing enterprises with a feasible path to convert their strategic positioning from experience-driven to data-driven, which is of guiding significance for reducing risks and optimizing allocation.

Keywords: Business analytics; strategic positioning; corporate digital transformation.

1. Introduction

Digital transformation and resultant business model innovation have fundamentally altered consumers' expectations and behaviors, pressured traditional firms, and disrupted numerous markets [1]. With the rapid development of digital technology, digital transformation has become an inevitable choice for enterprises to enhance their competitiveness and to adapt to an ever-changing market. However, in practice, the effectiveness of transformation for many enterprises has failed to satisfy their expectations, partly because of ambiguous or unrealistic strategic positioning, which leads to resource misallocation and target deviation [2]. Against this backdrop, business analytics, as a data-driven decision support tool, can systematically collect, process, and analyze internal and external data of enterprises, providing a reference basis for digital transformation strategies. It has gradually become a focus of attention in both academia and the business community. The research topic of this article focuses on exploring how business analytics supports the strategic positioning in corporate digital transformation, aiming to reveal its core mechanism, practical model, and strategies for addressing key challenges.

Although corporate digital transformation has received widespread attention, previous studies suggested that strategic positioning often relies on experience and intuition rather than data support, which can easily lead to transformation failure [3]. Business analytics, on the other hand, can enhance the accuracy and adaptability of strategic positioning through quantitative assessment and a dynamic feedback mechanism, and has great theoretical value and practical significance in reducing transformation risks and optimizing resource allocation. Existing research has mostly focused on exploring digital transformation based on a technical or organizational perspective or discussing the

instrumental role of business analytics in isolation; hence, there are few documents that analyze the dynamic correlation mechanism between it and strategic positioning, and particularly lack comparative studies for enterprises of different scales.

This paper systematically constructs a research framework based on the insufficiencies of existing research. The second chapter analyzes the core mechanism of business analytics supporting strategic positioning, discussing it in three stages: the early stage (maturity assessment, internal and external environment analysis), the intermediate stage (strategy dimension selection and target quantification), and the later stage (key performance indicator (KPI) tracking and iteration). The third chapter compares the practical models of strategic positioning between large enterprises and SMEs. The fourth chapter identifies key challenges such as data foundation, analytical capability, and strategic deviation, and proposes coping strategies such as data governance and capacity building. Through multi-dimensional analysis, comparison, and integration of relevant research contents, this paper aims to provide actionable references for enterprises' decision-making process and to promote the digital transformation to evolve from experience-driven to data-driven.

2. The Core Mechanism of How Business Analytics Supports Strategic Positioning Amid Corporate Digital Transformation

Before making the strategic positioning decision analysis for an enterprise, decision-makers need to recognize that the digital transformation of the enterprise is a dynamic and evolving process, which means that the entire transformation needs to go through multiple stages. In each stage, business analytics plays an indispensable role as the core tool for data-driven decision-making, guiding the direction and focus of strategic positioning.

2.1. Early Stage of Digital Transformation

During the initial stage of digital transformation, the main task of the enterprise is to identify potential digital opportunities and to conduct a comprehensive diagnosis of the enterprise's current situation. Business analytics mainly use data-driven assessment to help enterprises clarify the starting point and direction of the transformation. During this stage, the role of business analytics is mainly reflected in the following two aspects:

Firstly, business analytics can analyze the current digital maturity of the enterprise, converting the abstract level of digital transformation into quantifiable and comparable specific dimensions, enabling enterprises to assess their existing digital foundation, thereby identifying potential digital opportunities for the enterprise and providing a reference for the next strategic decision [4]. Hashem's study also confirms the digital business model maturity's positive and significant moderating effect on these indirect relationships [5]. The specific measure is embodied as follows: by collecting and analyzing various types of data from enterprises, including business data (such as the proportion of online business, the degree of data integration), organizational data (such as the proportion of digital talents), and technical data (such as the degree of system integration), these data can help decision-makers to gain a basic understanding of the current digitalization level of the enterprise, thereby objectively assesses the current transformation status, identifying the disparities with industry benchmarks, and on this basis, setting the general strategic decision-making direction.

In addition, enterprises need to apply various business analytics methods to analyze their internal and external environments and thereby identify specific improvement measures.

Regarding the internal environment of the enterprise, business analytics can help enterprises to identify their core business pain points, enabling a more targeted digital transformation and implementing priority ranking for the transformation process. The fundamental purpose is to solve the inherent bottlenecks and challenges encountered during the development of core businesses, thereby establishing competitive advantages. Business analytics can quantitatively describe and locate the fundamental business-level pain points caused by the enterprise's own resources, capabilities, and processes, ensuring that the digital transformation strategy is well-directed and

determines the priority of digital transformation appropriately. For example, scholars such as Matt have classified the enterprise's digital capabilities into dimensions such as technical infrastructure, data governance, and organizational agility, they have quantitatively analyzed the business pain points of each dimension using the fuzzy analytic hierarchy process (FAHP), enabling enterprises to dynamically adjust their priority ranking based on real-time business data [6].

Regarding the external environment of the enterprise, business analytics can analyze external data such as market data, industry reports, and customer data to understand the external environment, identify transformation opportunities, and reduce the uncertainty in strategic execution [7]. For instance, the analysis of macro market data helps enterprises understand the digital initiatives of competitors, enabling them to clarify the competitive landscape quickly; industry reports provide preliminary integrated insights that allow enterprises to acknowledge the digital development direction and pace within its industry, thus identifying the appropriate timing for transformation; while the study of customer behavior preferences helps enterprises predict emerging consumption trends and unmet potential demands. Therefore, business analytics can conduct systematic and data-driven investigations of the external environment to transform uncertain market demands into predictable digital transformation opportunities.

2.2. Intermediate Stage of Digital Transformation

In the middle stage of enterprise digital transformation, the adjustment of strategic positioning has entered a crucial stage where precise implementation and continuous verification are necessary. The core objective of business analytics in this stage is to quantify and break down the goals of digital transformation, convert the qualitative strategic positioning into a set of quantifiable indicator systems, and decompose them systematically.

At this point, the selection of strategic positioning dimensions often focuses on the two fundamental and measurable sources of value creation: customer orientation (creating external value) and efficiency orientation (optimizing internal value) [7]. Essentially, this represents the basic choice of internal and external paths for enterprise value creation.

In regard to the customer-oriented dimension, the core of its strategic positioning is the differentiation of customer experience. This means that enterprises no longer adopt traditional customer service methods, but instead, they will utilize digital methods to create individual customer profiles and conduct hierarchical analysis of customer needs, focusing on the goal of " upgrading digital customer experience ", and thereby achieve the ultimate customer experience, high customer loyalty, and continuous customer lifetime value for every individual customer. In today's rapidly developing digital economy, big data analytics have immense potential to empower customer experience management as they can help organizations achieve a better and faster understanding of the customer journey and make decisions to improve customer experience [8]. Measuring criteria of this dimension are usually related to customer lifetime value, customer satisfaction, customer retention rate, the proportion of high-value customers, cross-selling rate, etc.

With respect to the efficiency-oriented dimension, the core of its strategic positioning is the refinement and intellectualization of the enterprise's business operation model. The main goal of this dimension is "reduction of digital operational cost". Enterprises utilize data flow to assist strategic decision-making, eliminate resource wastage, optimize business processes, generate economies of scale and scope, and thereby achieve the purpose of cost reduction and efficiency improvement. Liu's research suggests that by establishing technology integration framework (integrated intelligent platform system for business and finance， standardized data governance system), adopting strategic collaboration model (a hierarchical mechanism for strategic indicators), and implementing organizational alignment mechanism (a cross-functional digital collaboration team), enterprises can systematically address the contradictions in strategic collaboration, break through data-flow barriers, provide sufficient information support for strategic decision-making, ensure dynamic matching of resource investment and strategic focus, and build a value creation system with dynamic adaptability for the enterprise [9]. Measuring criteria of this dimension

generally focus on unit operation cost, process automation rate, asset turnover rate, average productivity rate of employees, project lifecycle span, product defect ratio, etc.

2.3. Later Stage of Digital Transformation

In the later stage of corporate digital transformation, the establishment of digital systems within the enterprise has been basically completed and achieved deep integration with its core businesses. At this point, the focus of the enterprise's strategic positioning shifts from "how to transform" to "how to achieve sustainable growth and value creation based on digital capabilities". During this stage, the main role of business analytics is to ensure that the strategic positioning always remains in sync with the complex and ever-changing environment.

In order to achieve this goal, enterprises generally adopt the following three methods: key performance indicator (KPI), deviation analysis, and root cause diagnosis, and an iterative strategy mechanism to ensure themselves to be well-balanced as well as sustainable and keep their transformation strategies on track.

In the later stage of transformation, the enterprise's understanding of the KPI system must be deepened. Traditional indicators that only focus on financial statement data have become significantly outdated and are insufficient to guide the current enterprise strategy. The enterprise needs to establish a complete digital transformation measurement mechanism to monitor strategic positioning-related indicators (such as digital marketing conversion rate, data-driven decision-making ratio). When the tracking results of KPIs show that strategic execution has deviated from its course, the core task of business analytics is to conduct root cause diagnosis, tracing from the phenomenon to the essence. Through data analysis, the root cause of the problem can be traced, enabling the enterprise to locate the macro strategic deviation in specific business processes. As Kane illustrates in his study, root cause diagnosis is the key for enterprises to achieve the transformation from descriptive analysis to precautionary analysis [3]. In addition, apart from the internal data, business analytics can also dynamically adjust the enterprise's strategic positioning based on market feedback data (such as customer acceptance of new digital services) and current technological changes (such as upgrades in AI tools). Just as Rita McGrath emphasizes, in a rapidly changing market, enterprises must possess the ability to continuously reconfigure their businesses in order to seize short-term competitive advantages, and the speed and accuracy provided by business analytics are the foundation for enterprises to acquire such ability [10].

3. Practical Models of Strategic Positioning Driven by Business Analytics Amid Corporate Digital Transformation

The emphasis and route of digital transformation vary among different types of enterprises; therefore, enterprises should clearly define an appropriate strategic positioning for digital transformation based on the characteristics of their own industries and their needs for business development [11]. In the process of corporate digital transformation, business analytics act as the core hub connecting various types of data and strategic decisions, showing significant differences in the practical model of driving strategic positioning due to the variations in enterprise scale and resource endowment.

3.1. Large-Scale Enterprises

Large-scale enterprises usually adopt a systematic, comprehensive, and forward-looking practice model for their business analytics-driven strategic positioning, making the most of their abundant resources, enormous data volume, and well-structured organizational frameworks. The core of their practice models lies in achieving overall optimization and strategic synergy. They typically aim to build a unified business analytics platform, integrating, governing, and standardizing all the data scattered across various functional departments and business units, and forming reusable data assets.

Each business unit conducts targeted analysis based on the central database to support its own differentiated strategic positioning.

Practice models of large enterprises mainly embody the "dynamic capability" theory. Teece, Pisano, and Shuen defined dynamic capability as "the ability of an enterprise to integrate, construct, and reconfigure internal and external capabilities to cope with a rapidly changing environment" [12]. For large enterprises, business analytics itself is a pivotal dynamic capability. It enables the enterprise to continuously perceive market changes, seize opportunities for value creation, and reconfigure its resource base. Moreover, the digital business capability framework proposed by Bharadwaj also indicates that when enterprises synergistically utilize digital resources (such as data, analysis platforms) with other complementary resources (such as brands, supply chains), the generated strategic value can be maximized [7]. The practice of large enterprises is to take business analytics as the core digital capability, empowering and reconfiguring their traditional advantageous resources.

3.2. SMEs

Compared to large-scale enterprises, SMEs often face specific constraints, such as a lack of financial resources, a shortage of data-skilled talent, and technological capabilities, that impact their approach to big data analysis implementation compared to larger firms [13]. Additionally, the rapid pace of technological change can overwhelm SMEs lacking robust infrastructure to support large-scale data initiatives [14]. The core of their practice models mainly focuses on addressing specific business bottlenecks or seizing the most direct growth opportunities, avoiding resource dispersion and wastage.

As Minshull and other scholars suggest, SMEs possess inherent flexibility and agility that enable them to reallocate resources swiftly, experiment with new approaches, and adapt their strategies to navigate the complexities [15]. When it comes to strategic positioning, they often avoid building complex, large-scale data platforms and instead make full use of existing low-cost or free third-party analysis tools, such as SaaS analysis software, as well as obtaining reference data directly from external environments like social media.

The practice model of small and medium-sized enterprises embodies the "absorptive capacity" theory. Cohen and Levinthal pointed out that absorptive capacity is the ability of an enterprise to identify, assimilate, and apply new external knowledge to achieve its own business goals [16]. The success of small and medium-sized enterprises is greatly dependent on the sensitivity and learning ability of their leaders and teams to external market data and ongoing technological trends. Business analytics has become a key tool for enhancing the absorptive capacity of small and medium-sized enterprises.

4. Key Challenges and Coping Strategies

4.1. Key Challenges

The digital transformation of enterprises represents a profound and systematic change to the entire business framework; as a result, the concomitant challenges are multi-dimensional and interrelated.

The digital transformation of many enterprises begins with blindly following current technological trends rather than strategy-driven incentives, which often leads to a deviation between the actual execution of the enterprise's strategy and results derived from business analytics. A certain number of enterprise management simply view digital transformation as introducing a brand-new technology tool (such as cloud computing, big data platforms), while at the same time relying too much on past experience and lacking explicit strategic goals that are closely related to business outcomes. Digital transformations of these enterprises turn into merely a project of one individual department (such as the IT department), rather than an interconnected development plan involving all departments under unified leadership. Without explicit strategic goals, consensus

cannot be formed throughout the entire organization, and conclusions resulting from business analytics cannot be appropriately incorporated into the strategic decision-making process.

Data management is the cornerstone of digitalization, but historical leftover issues within enterprises often hinder such development. The initial design of information systems for various departments within enterprises ignored data-sharing ability from the outset; they are relatively isolated from each other, having incompatible data standards and varying data quality, resulting in so-called "data islands", making it difficult for enterprises to conduct effective data analysis based on these scattered and inconsistent data.

Ultimately, it will be up to people, not machines or algorithms, to carry out digital transformation. For enterprises, the shortage of their employees' digital capabilities is an undeniable obstacle. Traditional enterprises generally lack compound talents who are proficient in both business capabilities and data analysis, as well as in mastering new technologies. Moreover, the average learning speed of existing employees cannot keep up with the iteration speed of digital technologies.

4.2. Coping Strategies

In the process of digital transformation, the key to effectively addressing challenges lies in building a systematic and self-generated digital capability. This can be broken down into three strategies: data governance and collaboration, hierarchical capability construction, and the establishment of a decision-making loop.

Firstly, traditional data governance is often led by the IT department, which can easily lead to "data islands". An effective strategy is to establish a cross-functional collaborative governance framework and keep improving the enterprise's digital infrastructure. Digital infrastructure reflects the basic situation of an enterprise's digital resources and can provide support for technical exchanges and digital resource flows among cross-domain, cross-organizational, and cross-departmental teams [17]. A well-implemented enterprise digital infrastructure can enable the internalization of data as a strategic asset for the entire enterprise, thereby breaking down departmental barriers and achieving more efficient strategic collaboration relationships.

Secondly, the success of digital transformation is never solely dependent on the technical team alone; it requires all personnel within the organization to possess corresponding professionalism. A common misconception is to provide the same set of digital training courses to all enterprise employees without distinction, lacking pertinence for employees of different positions. The effective coping strategy is to build a hierarchical digital capabilities framework for employees of different levels and responsibilities. For middle and senior managers, their training should not focus on technical details, but on cultivating their "digital thinking mindset". To be specific, such a way of thinking can assist these managers in transforming digital trends into beneficial business strategies and lead the entire organization to implement and embrace technical changes. For the majority, those executive-level employees, the training should focus on enhancing their data literacy, developing basic analytical skills, and improving the efficiency and quality of routine work processes with digital tools.

Finally, digital transformation is not a simple technical transformation; it is a disruptive transformation based on the enterprise's core; it emphasizes the deep integration of digital technology along with the business model [18]. The conclusions drawn from business analytics must be seamlessly integrated with the strategic decision-making process of senior management. This requires enterprises to deeply embed business analytics into every section of strategic formulation and execution, forming a continuous optimization decision loop.

5. Conclusion

This paper explores the pivotal role of business analytics in the strategic positioning of enterprise digital transformation, and conducts an analysis based on the practices of enterprises at different stages of transformation and of various scales. The key findings are as follows.

Business analytics can transform strategic positioning from an experience-based approach to a data-driven one through quantitative analysis. In the early stage of transformation, digital maturity assessment, along with internal and external analysis, provides objective foundations as a reference. In the middle stage, the strategy is decomposed into quantifiable goals to ensure execution. In the later stage, KPI tracking and root cause diagnosis form a decision-making loop, adapting to changing external environments. And practice mode is influenced by enterprises' scale: large-scale enterprises rely on unified data platforms to support complex strategies, while small and medium-sized enterprises use lightweight third-party tools to solve core problems. The actual strategic position enterprises hold must be in accordance with their own resource endowment and strategic priorities.

When implementing digital transformation, enterprises will face key challenges such as data islands, a shortage of employees with digital talent, and a deviation between strategy and analysis. These dilemmas can be solved through organizational systematic reconstruction. Data governance can be carried out to lay the foundation, and a hierarchical digital capabilities framework should be put in place to enhance digital skills for all company members. Business analytics should be embedded in the strategic decision-making process to build a data-driven loop, ensuring that strategic positioning is both feasible and agile.

The theoretical contribution of this paper lies in bridging the gap between business analytics and strategic research and constructing a dynamic strategic framework throughout the entire digital transformation cycle. On the practical level, this paper provides references for enterprises of different scales to help them avoid common transformation traps and optimize resource allocation.

The research framework of this study still needs further empirical verification. In the future, the effectiveness of this study's mechanism can be verified in different industry sectors (such as manufacturing, finance, and retail). Further studies can also explore the reshaping effect of generative AI on the relationship between business analytics and strategic positioning processes and efficacy, enriching the theoretical framework.

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