

How Analytics Creates Strategic Business Value: Perspectives from French MNCs

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Abstract

Big data analytics is a prominent tool of value, capable of developing competitive advantage and better company efficiency. This paper presents the first empirical exploration of the theoretical design, since the mediating consequences of four value development mechanisms on the connection between big data analytics abilities and four benefit targets. The four value development mechanisms investigated are proactive adaptation, discovery, access, and transparency, while the four benefit goals are business efficiency, business process improvement, consumer experience as well as industry enhancement, and product as well as service innovation. The proposed empirical validation design uses an econometric analysis of information gathered by a survey involving 129 business development center (BDC) professionals in France. The results show that transparency mediates the connection for all value targets, while entry and practical adaptation mediate just in case of some worth targets, and discovery doesn't have some mediating outcome. Practical and theoretical implications are discussed in the conclusion of the paper.

Key terms: big data analytics, transparency, access, discovery, organization performance, business process improvement, innovation

JEL Classification: G32, L21, L25

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1. Introduction

The important information paradigm envisions scenarios recognized by a huge amount of information produced, as well as computed at a high speed, coming from structured and unstructured sources, which features doable incongruences as well as non-reliable info, which don't impact the complete value which you can gain from it. Big data analytics are a visible tool of worth to attain naturally competitive edge and better company efficiency, even if their distinctive attributes, for example, volume, variety, and veracity, don't constantly guarantee individually value creation. Big data analytics uses are already found to improve decision making procedures as well as operations in several domains, which include supply chain management, customer relationship management, or maybe healthcare management in the target to get additional info on businesses and enhance the firm's efficiency. There are lots of examples of actual programs of big data in organizations and firms.

Although the increasing literature on the developments and BDC research of info technology capabilities research persists, there is a pertinent gap in our understanding of BDC impact on organizational outcomes. Much more particularly, too little is thought about the following: the worth development mechanisms, which can

play a crucial role in detailing the connection between firm performance and BDC; the mechanisms by which data-based insights are converted into measures and company value (Balbin *et al.*, 2020). Not many scientific studies investigated the effect of BDC on value development targets by thinking about the mediation impact of the worth creation mechanism. This presents a crucial hole worth investigation and study, as it could expose the mechanisms by which an asset in BDC means performance. Put simply, we empirically assess the mediating friendships proposed hypothetically by Xyz trying to reply to the next investigation question:

“Do transparency, discovery, access, as well as practical adaptation as value development systems have a mediating job in connection between BDC and value targets?”

The study investigates the current relationship between BDC and benefit targets, qualifying and discovering potential mediators that could affect such linkage (Hao *et al.*, 2019). Particularly, the importance of development mechanisms symbolizes the achievable ways in which BDC produces outcomes that can be transformed into steps to influence worth. We focus on transparency, which applies to the openness of info and communication flows, access, which concerns accessibility and possibility to use information, find which issues data drive decision making, and practical adaptation, which concerns the ability to stay within industry changes as well as needs. We thought the four value development mechanisms stated above since relevant constructs were previously started in the literature, allowing a much better evaluation of the relevant principle and emerging nomological community. Future investigation will provide additional evidence by evaluating the opposite value development mechanisms suggested hypothetically by Jahan and Sazu (2022a).

Value targets symbolize the achievable ways through which BDC can produce worth for organizations. Particularly, BDC might influence performance through strategic and decision-making positioning; company process improvement as well as cost-efficient business of the job; client satisfaction as well as market penetration; product; and service innovation.

We tried research questions cited above by employing a survey involving 129 BDC professionals accredited by the French Ministry of Economic Development, who had considerable expertise in the layout and implementation of BDC tasks within organizations and companies. The majority of the paper is organized as follows: the following part details the theoretical background of the hypotheses and the study searched for. Next, it's presented the methodology adopted, as well as the results achieved. Lastly, findings are reviewed by highlighting both exploration and managerial implications. The content ends by providing guidelines and conclusions for later studies.

2. Theoretical framework

According to the conceptualization of BDC supplied by Kayser *et al.* (2018), the task of a method of mechanisms, for example, transparency, accessibility, find, and practical adaptation, is analyzed to recognize the strategic value goals produced by BDC. Jahan & Sazu (2022b) suggest hypothetically these four value development mechanisms, and we also examine them empirically.

Because of this, the managerial theories underpinning this analysis derive from the theoretical framework of Sazu and Jahan (2022a) help and study to realize “how” value is produced in organizations. We talk about the resource-based view, powerful capability view, and absorptive capability view.

In this perspective, the concept history of this information grounds on these three frameworks for their relevance toward the dynamics of the research that investigate numerous sights of value development, like the integration of heterogeneous components, the adaptable mixture of expertise energy, the learning flows, as well as the identification of outside expertise to innovate.

2.1. BDC as well as BDC capabilities

Present evidence indicates that the deployment of BDC helps firms to hook emerging threats and opportunities, create crucial insights, and adjust their businesses based upon naturally competitive green trends. By leveraging BDC, businesses get a competitive edge in the marketplace by making predictions for later events.

Sazu (2022) found that businesses undertake BDC initiatives to evaluate customers' purchases and foresee customers' propensities, thus achieving several goals, like to improve product sales and boost the personalization amount of future purchases; to build in genuine time the fundamental factors of imperfections and failures, or maybe to forecast possible problems; to evaluate and comprehend internet customer opinions to enhance quality and obtain development goals; to apply rapid reactions and create anomaly detection capability; and to change procedures and determine functional roadblocks.

■ **Mediating impact of transparency**

Transparency represents not only the ability to allow reliable and consistent data visualization, but also offers a systemic view of company processes and outcomes. Transparency is a kind of value creation mechanism for big data initiatives, and numerous programs enable it, from innovative analytic insights to real time tasks (Zhu *et al.*, 2019). Although BDC are crucial in detailing the impacts on firm efficiency, other things, like the transparency with which information is discussed in the business, can easily describe the various powers of firms to acquire value from the BDC created (Yang *et al.*, 2017). They can offer a much better customer experience via customization, which could boost sales and client satisfaction. Because it's claimed that BDC aren't even regarding business results, and since transparency should have a mediating impact among BDC and the business benefit targets. Talking about theoretical design (Sazu & Jahan, 2022a), we hypothesize the following:

H1a. Transparency mediates the connection between BDC and business efficiency.

H1b. Transparency mediates the connection between BDC and business process improvement.

■ **Mediating impact of access**

Access is the ability to offer descriptive details and send them during the entire group. It measures the extent to which the BDC process can be purchased over time, ensuring scalability and convenience (Nguyen *et al.*, 2018). A benefit in acquiring big details, and therefore in boosting the readily available information volume, variety, and velocity, is the enhancement of information accessibility, which enables businesses to make faster and more informed choices. Working with information analytic resources allows firms to enhance decision-making performance, make real-time adjustments to their offerings, interact with their customers continuously, and boost economic advantages. Access is considered among the system quality pieces that allow foresee the company's worth and organization's performance. For instance, dashboards can offer real time entry to info on company activity methods. Based upon this context, and talking about Sazu and Jahan (2022b) theoretical design, and since it's claimed that BDC aren't even regarding company results, the mediation function that access has in the interactions between BDC and value goals leads to the following hypotheses:

H2a. Access mediates the connection between BDC and business efficiency.

H2b. Access mediates the connection between BDC and business process improvement.

■ **Mediating impact of discovery**

In the BDC domain, discovery typically refers to "deeper dive" into the information to understand relationships, trends, and patterns to derive pragmatic outcomes which could deliver essential results. Discovery examines "what happened in the past", then diagnoses "why it happened", and finally establishes the real cause to recognize and know the larger picture of "why it's happening".

Discovery inside BDC is usually a prospective benefit creator for a company, which can enable handling big data to acquire the real meaning of theirs and produce insights to help and promote their usage (Wright *et al.*, 2019). Lee *et al.* (2014) demonstrate that the prospective and retrospective attributes of find analytics enable service innovations and therefore help to produce new benefit propositions. For instance, many banks wear BDC programs via discovery to enhance the quality of bank customer interactions by identifying consumer potentials along with difficulties. Based upon this context, and talking about theoretical design (Sazu & Jahan,

2022b), and since it's claimed that BDC aren't even regarding business results, the mediation part that finds have in the interactions between BDC and value goals leads on the following hypotheses:

H3a. Discovery mediates the connection between BDC and business efficiency.

H3b. Discovery mediates the connection between BDC and business process improvement.

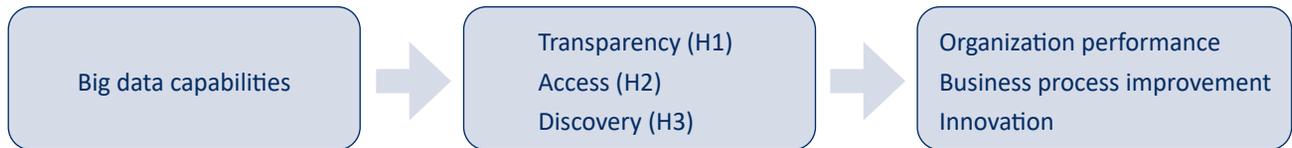


Figure 1. Summaries of the hypotheses tested

Originating from a mathematical viewpoint, Figure 1 may be represented by showing the indirect impact of X on Y through M1 = a1b1, as follows:

$$M1 = a0 + a1X + eM1$$

$$M2 = b0 + a2X + eM2$$

$$M3 = c0 + a3X + eM3$$

3. Methodology

3.1. Machine development

On September 2021 we sent a questionnaire to a sample of 1,394 BDC professionals accredited by the French Ministry of Economic Development, who had considerable expertise in the layout and implementation of BDC tasks within organizations and companies. We shipped the questionnaire to empirically verify the theoretical framework suggested by Isenberg *et al.* (2022). Just before delivering the last questionnaire, a double validation procedure was performed. To determine the operationalization of the variables, we began thinking about the initial wording of the scales, after which we readapted to our BDC's case the current Likert scales now validated in the literature.

3.2. Measures

■ Impartial variable

The impartial variable contained in the research framework refers to BDC abilities. It's dependent on seven first order variables, that are dependent on a seven-point Likert scale, along with being grouped in three dimensions: tangibles, human abilities, plus intangibles.

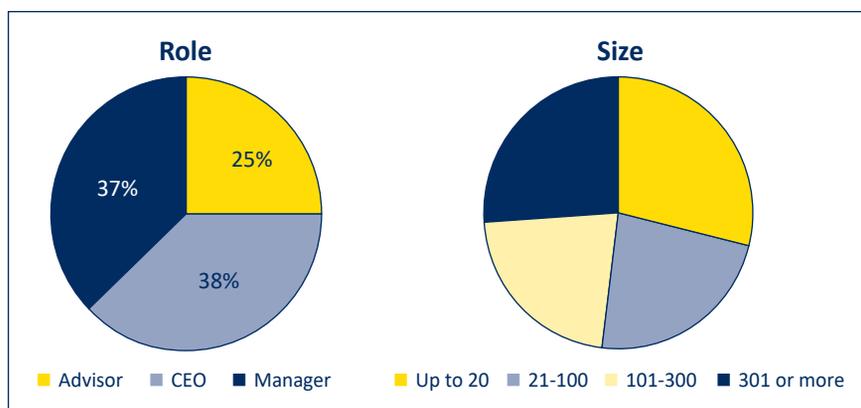


Figure 2. Distribution of managers and company size

■ *Mediating variables*

As mediating variables, we chose the worth development elements recommended by Xyz. Every value development mechanism was based on a seven-point Likert scale. The first variable, transparency, describes the ability to produce great, depending on the ability to come up with descriptive info about the firm's business procedures and results. Next, access represents the ability to have and disseminate information broadly throughout a firm. Discovery represents leverage BDC for obtaining insights. Hands-on adaptation leverages organizational agility to identify probabilities for originality; to grab naturally competitive industry potentials. Lastly, agility entails a firm's ability to communicate with customers, manage inner operations, and interrelate with external business associates.

■ *Reliant variables*

The dependent variables are described in the research framework as worth targets. In keeping with Xyz, we identified four distinct targets of BDC value creation: organizational performance; company process improvement; product as well as service innovation; plus consumer experience as well as industry development. They're operationalized on a seven-point Likert scale.

4. Results

4.1. Psychometric qualities of the measures

Prior to the regressions, we conducted a confirmatory component analysis to assess the psychometric qualities of the variables. We verified the convergent validity by computing the *t* statistic of every aspect loading. They have been almost all statistically significant, and all the *t* values were much higher compared to the cutoff point of 1.980. Furthermore, the constructs were all pleased with the Kaiser-Meyer-Olkin measure with a value of 0.83, as well as the Bartlett's test with a chi square worth of 612.65. We additionally examined for typical technique bias, and then discovered it wasn't a big deal, since the Harman's single factor test indicated a worth of 42.14% of the entire variance, less than the suggested threshold of 50%. We also checked the non-response bias issue. Wagner and Kemmerling (2014) found a method to evaluate the non-response bias as the comparison of responses from early compared to late respondents. We verified the non-response bias in this direction and found that there were absolutely no variants in the way of the adjustable between the comparison of early compared to late respondents.

Table 1. The correlation present among the variables

1	BDA capabilities	0.72								
2	Transparency	0.56	0.79							
3	Accessibility	0.50	0.44	0.82						
4	Discovery	0.57	0.56	0.46	0.74					
5	Proactive adaptation	0.41	0.45	0.26	0.34	0.82				
6	Organization performance	0.55	0.48	0.44	0.41	0.32	0.76			
7	Business processes improvement	0.55	0.56	0.45	0.47	0.41	0.64	0.77		
8	Products and services innovation	0.53	0.52	0.41	0.45	0.41	0.58	0.60	0.75	
9	Consumer experience	0.48	0.48	0.39	0.38	0.34	0.64	0.57	0.59	0.77

4.2. Regression results

We used the procedure macro for IBM's SPSS applications to look at the structural design. In this research, the mediation procedure of transparency, discovery, access, and practical adaptation on the connection between BDC and benefit targets was examined. Bootstrapping was put on to check the significance of the four indirect consequences, with 5,000 bootstrap samples, along with a 95% confidence level for all time periods. Table 1 illustrates the result on the result variables.

Generally, Table 2 suggests that the immediate impact of BDA on the three goals is usually statistically significant. It's the same as 0.07 for organization capabilities, 0.1 for business process improvement, 0.09 for services innovation. Furthermore, the general impact of the product is above the one immediate impact of BDC on the four benefit targets, showing the value of the mediating variables.

Table 2. Direct and indirect effect

Effect	Effect	SE	LLCI	ULCI	t	P
Direct effect of X on Y						
BDA on organization capabilities	0.07	0.02	0.03	0.12	4.20	0.00
BDA on business process improvement	0.10	0.03	0.05	0.15	3.32	0.00
BDA on service innovation	0.09	0.03	0.04	0.14	3.06	0.00

■ **Mediating impact of transparency**

Table 3 highlights that transparency generally has a mediating impact on the connection between BDC and the four benefit goals. The bootstrapping range between the lower LLCI and the top ULCI confidence level of transparency, pertaining to the indirect impact of the BDC on the four benefit targets, doesn't put in almost all four cases zero. This confirms the mediating impact of transparency as a value development mechanism.

Moreover, when contemplating Table 3, it appears that BDC has a significant and positive impact on the four value creation mechanisms. This offers extra evidence of the mediating impact of transparency as a value development mechanism. Consequently, dependent on such results, it's possible to conclude that hypotheses H1a and H1b are confirmed.

Table 3. Hypotheses results

Hypothesis	Mediation Effect	Supported/Not supported
H1a	BDA capabilities > Transparency > Organization performance	Supported
H1b	BDA capabilities > Transparency > Business process improvement	Supported
H2a	BDA capabilities > Access > Organization performance	Supported
H2b	BDA capabilities > Access > Business process improvement	Supported
H3a	BDA capabilities > Discovery > Organization performance	Not supported
H3b	BDA capabilities > Discovery > Business process improvement	Not supported

■ **Mediating influences of access**

Table 3 highlights that access has a mediating impact on the connection between BDC and business performance, as well as business process improvement. This provides additional evidence of the mediating impact of access on these two value development mechanisms. Consequently, dependent on these results, it's possible to conclude that hypotheses H2a and H2b are supported, while H3a and H3b aren't.

■ **Mediating impact of discovery**

Table 3 shows that discovery never has a mediating impact on the connection between BDC and the four benefit goals. The place that the consequence variables are the four value targets, as well as the four value development mechanisms will be the independent variables. Finding in all four cases doesn't have a positive and significant outcome. This offers extra evidence of the lack of a mediating consequence of the discovery value development mechanism. Consequently, dependent on such results, it's possible to conclude that hypotheses H3a and H3b haven't been confirmed.

5. Conclusion and discussions

The study offers a holistic perspective of the many dynamics of the mediators that could influence the relationship between BDC and the dimensions of worth targets that will encompass organizational performance, product innovation, process improvement, and client experience. We surveyed 129 BDC professionals accredited by the French Ministry of Economic Development, who had considerable expertise in the layout and implementation of BDC tasks within organizations and companies. From the sample of ours, we observed that BDC is much more well known in service and manufacturing industries, but firms continue to neglect to extract proper worth from their BDC investments. We demonstrate that BDC has an optimistic impact on the achievement of strategic business benefit in terminology of organizational performance, business process improvement, product as well as service innovation, client experience, then industry advancement. These results confirm the results of earlier studies which investigated the effect of BDC capability advancement on strategic company worth. Transparency was a vital mediating element for all the value targets investigated. Info transparency supports the sharing of information and data among businesses and helps the correct systems to remove worth out of the skills produced by using big information. Transparency works well, since it's "an outcome of interaction behaviours inside a group", which mirrors the degree to which workers can access the info requisite for their responsibilities. Furthermore, transparency can make people more aware of how their role fits into the strategic direction of the business, improving their trust and engagement toward the control in obtaining much better company efficiency.

Lastly, the transparency of info that a company reveals about it as well as shows generally provide a credible signal of brand integrity, which improves consumer attractiveness, plus supports the customization of the internet client experience. Surprisingly, find, arguably the most marketed facet of BDC, was discovered to not play a major role in detailing the systems through which BDC causes value creation. While we didn't collect info regarding the maturity of the firm in handling BDC, the complete image emerging from the information points implies that BDC investments are directed at supporting today's practices and processes.

5.1. Theoretical implications

Much more particularly, for first chance, we empirically test the mediating consequences of the worth development mechanism between BDC, as well as benefit targets as theorized in Lee (2018). We discovered that exploiting big data analytics effectively to realize its business value requires related investments not only in terminology of information infrastructure and technologies, but also in the ability to idealize the rewards from these investments. Through the empirical analysis, certainly, we demonstrated that companies must cultivate many mechanisms to facilitate the positioning of the company with the approach.

5.2. Functional implications

Our analysis found counterintuitive outcomes, which refute several of the most emphasized industry areas of BDC. Factors like easy access to information; discovery are found irrelevant in mediating the connection between BDC and value creation. Even though the result was unanticipated and thus discovered with very little contextual details to additionally examine it. We assume that both organizational readiness and maturity components, as indicated in earlier studies, might play a major role.

5.3. Future research and limitations

Much like quite a few explorative scientific studies, this research has several limitations, which constitute remarkable possibilities for future research. While we implemented a cross sectional look with the actions collected at a similar point on time, a longitudinal analysis could spread the results and capture the characteristics of the mediation. Likewise, future studies might check out deeper, and ultimately via qualitative techniques, the causes determining the observed distinction in the mediating consequences.

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