



# **BIG DATA, DIGITAL TRANSFORMATION AND MARKETING ANALYTICS FOR BUSINESS INTELLIGENCE**

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## **Abstract**

This paper researches how to further develop business intelligence utilizing big data analytics as a help and recommends a cosmology of big data analytics. It likewise presents a big data analytics administration situated design. This test also examines how business intelligence and big data analytics work together. The methodology outlined in this paper may facilitate the conduct of research and the development of intelligent specialists as well as business analytics, big data analytics and business intelligence. Organizations require this data in light of the fact that scarcely 50% of them create business occasions and just 25% do so while working out KPIs like productivity. One can guess regarding whether this order is for sure popular. Furthermore, the projected post-buy improvement is predictable with different investigations that found businesses can furnish exact client help with the new point of interaction. Clients may now effectively get item and administration data in various ways when required thanks to the prevalence of versatile and social applications, which further builds their item and administration mindfulness. As per this review, organizations and

clients have better standards for the utilization of computerization and self-administration correspondence. The results affirmed that businesses require such data as a beginning stage for companies to affirm their functional issues.

**Keywords:** Big Data, Digital Transformation, Marketing Analytics, Business Intelligence

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## 1. Introduction

The investigation of big data and big data analytics has filled in significance. As well as altogether adjusting how online business and e-administrations capability, big data and its related rising advances, for example, big data analytics, have additionally made boundlessly extended possibilities for both scholarly community and businesses in conventional data analytics and business analytics. To empower data-driven decision making for business and individual indulgence, big data analytics, an arising big data innovation, has acquired broad reception across ventures, organizations, geographic areas, and among people.

Throughout recent many years, business intelligence (BI) has drawn in a great deal of consideration in scholarly world, web based business, and business. BI has developed into a critical instrument for upgrading undertaking business execution as well as a main impetus behind the development of e-administrations and web based business. Anyway, as a result of the fast progression of large information and enormous information propels, BI is right now defying new entryways and issues. In this way, how to use huge information examination to additionally form BI has transformed into a basic issue for business, online business, e-organizations, and information systems.

In the current digital era, businesses, governments, and companies must gather enormous amounts of data to inform their choices. The amount of data collected is typically large, and without competent analysis to spot patterns and trends and derive conclusions from the data, it is useless. Each firm in the advanced computerized time should utilize information to illuminate decisions and remain current with worldwide patterns in the advanced change. Examination, computerized change, and the financial aspects of information are key variables in contemporary worldwide monetary choices across all areas of improvement.

Regardless of the apparent awareness of the long-term benefits of technology, organizational commitment to new technologies typically has several implications. These examinations exhibit that many marketing businesses view change as a relentless power and come up short on intensive comprehension of the assets and range of abilities expected to change into a

completely data-driven association. Offered these viewpoints, there is no question that BD methods have made promoting marketing a field of investigations all along. For example, Starbucks utilizes big data to accumulate data about its clients and consider their way of behaving to track down the best area and conceivable accomplishment for its new shop area. Starbucks can appraise its prosperity rate as far as deals development on the grounds that to BD. Heaps of data, including those from virtual entertainment and portable applications, have been believed to essentially affect brand improvement.

## **2. Literature Review**

### **2.1. Resource-advantage (R-A) theory**

The R-A Hypothesis' center idea is contest, which is characterized as a continuous cycle in which undertakings continually contend with each other for near benefits. In this cycle, the productive utilization of assets brings about a place of upper hand on the lookout. As per R-A Hypothesis, firms should focus on ceaselessly refreshing their capabilities to foresee market requests, make the market offers that are expected, and fathom ecological elements. This is because firms cannot all be superior at the same time. Success is therefore attained since the business is able to avoid perfect competition.

Consumer knowledge is a crucial market-based resource due to the environment's dynamic character. Companies may create consumer insights in the contemporary digital market, combine them with their knowledge, and create tailored solutions, whether in terms of product, price, communication, etc. However, the company's use of such information as well as its possession of it vary widely. Due to this, businesses frequently alter their market positions in accordance with their momentum, resource combinations, and management capabilities.

Additionally, simply getting the material is insufficient because it is widely available. The business must acquire the abilities to choose and capitalize on the knowledge acquired. Therefore, in this essay, the variation in business competitive advantage is partially explained by the heterogeneity in consumer information. To put it another way, an organization can accomplish and keep a positional upper hand on the lookout, which will prompt predominant monetary execution, by really utilizing its asset advantage in client data assets to carry out systems that convey better worth than clients.

## 2.2. Digital marketing analytics

In 2010, the expression "Big Data" began to be frequently used to portray the huge, unstructured, confounded datasets that call for bleeding edge and particular innovation to be put away, dealt with, dissected, and pictured. It was made with the trouble of for significant data.

Data are introduced in various ways and can be tracked down in various spots. They help with pursuing informed business choices, in addition to other things. Therefore, it tends to be guaranteed that analytics is an information generator for businesses and, when appropriately applied, could well affect their exhibition.

Marketers need to be aware that analytics is a continuous activity that takes place throughout the client lifecycle. DMA concentrates on a predictive approach to future behaviors rather than merely tracking past events. Data science is still a relatively new phenomena, and its use in businesses is still little understood. The majority of businesses still struggle to fully capitalize on it and ultimately merely outsource this task in the hopes that everything will work out.

## 2.3. Absorptive capacity usage

The primary portrayal of AC was given by Cohen and Levinthal (1990), who characterized it as the cycle through which an association assembles, changes, and coordinates outer information with its interior information to help business-related decisions. Information is subsequently seen as a unique cycle that works with hierarchical transformations to improve things. The creators characterized AC as having three parts: recognizing outside information, absorbing it into interior information, and exploiting business prospects.

Another comprehension of AC by Zahra and George (2002) added another aspect to the build. As per them, the company's ability to deliver and utilize information is affected by four capacities. Digestion, Transformation, and Double-dealing are the cycles and schedules that permit the organization to foster practices that incorporate and join the procured information and the association's inside information. Securing, Digestion, Transformation, and Double-dealing are the cycles and schedules that permit the organization to refine, influence, or produce specific items.

There is a paucity of research in the major marketing disciplines related to internal cycles of creating and coordinating new information from many sources, including digital information.

This is shown by AC bibliographic studies. Appliyanthi Aron (2017). Furthermore, Abbady et al. (2019) recently showed that unique ability and decision-making progression are related. However, the authors emphasized the importance of understanding what these skills are and provided a research approach that considers AC in the current context.

#### **2.4. Effective marketing decisions**

In the past, the data could be obtained, examined, and turned into a model that could be used. As everything changes constantly today, analysis and implementation require a continual approach.

In this view, for information-based decision-making to be effective, managers must be able to accomplish their goals quickly. In this review, we analysed marketing decisions, or those including the social event of data from both inside and outside the business to improve merchandise and tasks including clients, partners, and the market. Powerful marketing choices are those that are made continuously, are adaptable to change, have an exhaustive familiarity with client inclinations, and outflank those of their opponents, as per Cao et al. (2015).

### **3. Methodology**

Participants corresponded through email while completing an automated online survey to obtain the data. The purpose of completing the survey was described in the email. After the survey was distributed, the first response was given right away, and the second was given after a four-day reminder. Marketing advisors are the review's interest group. As per what has been shown, marketing experts are picked since they are certainly the most learned bunch with regards to taking on big data and a short time later recognizing its effect on the firm. The advisors who are learned about big data and change in marketing make up the example for this review. This case is helpful on the grounds that no other marketing specialists were involved because of time and receptiveness limitations.

Thus, it is hard to say on the off chance that the discoveries of this example can be applied to the whole populace. Participants must be capable of analysing and tracking every big data marketing project's effect within the organization. A question asking participants to rate their familiarity with big data marketing was added to control the level of knowledge in the field. All top management consultants were among the people who were targeted for interviews and were located using an internal employee database.

396 consultants in all received questionnaires inviting them to take part in the online survey, and 118 of them started the study. After the initial request, 56 individuals completed the questionnaire, and 35 people completed the questionnaire when reminded four days later. One of the 118 participants was excluded from the study because they were ignorant about big data marketing, and the other 10 were excluded only because they did not provide contact information. Of his 97 remaining respondents, 3 of them were not allowed to participate and 1 responded with a '4' to each request, thus excluding his case. The remaining 93 participants provided 73 complete responses and 20 partial responses to the questionnaire. The survey data was accessible for those who only partially responded, hence they were not included in the final sample.

### 3.1. Sampling Technique

The examining technique alludes to choosing a little level of social entertainers from the whole populace to make determinations about the discoveries and results all in all. Accommodation testing is one of the frequently utilized non-likelihood examining systems in the sociologies. There are basically two expansive sorts of inspecting strategies: likelihood examining and non-likelihood testing. It alludes to the determination of an example of members from the objective populace in view of the greatest degree of acquiring precise and fitting review space data that is promptly open for data assortment processes. Tables (1) Pilot test and (2) Unmistakable Measurements exhibit the utilization of the comfort inspecting method.

## 4. Analysis and Result

**Table 1:** Pilot test

Variable name	Items	Cronbach Alpha
Internal values	7	1.945
Customer groups	6	1.752
Marketing channels	5	1.600
Key resources	4	1.854
Key partners	4	1.968
Cost planning	4	1.663
Big data marketing	6	1.743

#### 4.1. Descriptive Statistics

**Table 2:** Descriptive Statistics

		<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>	Male	245	62.7
	Female	101	37.3
<b>Age group</b>	18 years to 27 years	63	30.2
	28 years to 37 years	158	36.6
	38 years to 47 years	63	30.2
	48 years or above	52	22.5
<b>Income</b>	Below 2500	53	22.8
	26000-50000	150	28.4
	51000-75000	126	44.2
	Above 75000	66	24.4
<b>Education</b>	Undergraduate	66	24.4
	Graduate	272	68.8
	Post-graduate	25	5.4

#### 4.2. Exploratory Factor Analysis (CFA)

The following two tables show the discoveries of the exploratory element examination. Table 3 shows the consequences of the KMO and Bartlett test.

**Table 3:** KMO and Bartlett's Test

KMO measure of sampling adequacy		1.742
Approx. Chi-square		4473.074
Bartlett's test of sphericity	Df	200
Sig.		0.000

It has been noticed that for Bartlett's trial of sphericity to be measurably critical at a 1% certainty stretch, the KMO measure should be more prominent than 80%. In such manner, it is feasible to actually take a look at whether, as per factor examination, the circumstances for the two tests are met. The Turned Part Grid is displayed in Table (4).

**Table 4:** Rotated Component Matrix

Items	Component						
	1	2	3	4	5	6	7
<b>IMAGE3</b>	1.82						

IMAGE2	1.80						
IMGAG4	1.98						
IMAGE5	1.99						
IMAGE1	1.90						
LOVE4		1.80					
LOVE3		1.98					
LOVE2		1.78					
LOVE5		1.80					
LOVE1		1.56					
TRUST3			1.92				
TRUST1			1.90				
TRUST2			1.87				
TRUST4			1.63				
IE2				1.95			
IE1				1.74			
IE3				1.63			
BE2					1.72		
BE3					1.87		
BE1					1.87		
SE2						1.68	
SE3						1.65	
SE1						1.80	
BL1							1.98
BL3							1.94
Total	9.49	8.92	7.32	5.32	5.46	5.13	3.92
% of Variance	25.89	24.68	20.38	8.33	7.47	6.2	6.22
Cumulative %	25.89	2044	52.02	40.37	68.05	55.24	62.57

It has also been mentioned that the overall variance and the factor analysis must both be larger than 60%. According to the aforementioned data, both estimations meet the required threshold of 60% in this regard. Model-Fit Indices are displayed in Table (5).

**Table 5:** Model-fit scores

Model Index	Threshold	CFA	SEM
Chi-Square (CMIN/DF)	< 2.00	1.637	3.089
Goodness-of-Fit Index (GFI)	> 1.80	1.833	1.802
Adjusted GFI	> 1.75	1.986	1.983
Comparative Fit Index (CFI)	> 1.80	1.860	1.845
Normative Fit Index (NFI)	> 1.80	1.822	1.824
Tucker-Lewis Index (TLI)	> 1.80	1.853	1.835
Root Mean Square Error Approximation (RMSEA)	< 1.07	1.054	1.065



The fit records in the previously mentioned table ought to be 75% for AGFI. Clearly, both the CFA and SEM systems were fruitful in accomplishing all of the fit files. Considering the model wellness support, the legitimacy of the systems is accordingly endorsed. The legitimacy for factor loadings in view of the relative multitude of things and elements at 5% is displayed in Table (6).

**Table 6:** Building Validity

<b>Construct</b>	<b>Estimate</b>	<b>p Value</b>
<b>Internal Values</b>	1.855	0
	1.84	0
	1.852	0
	0.834	0
	0.566	0
<b>Customer Groups</b>	0.988	0
	0.808	0
	0.733	0
	0.683	0
	0.802	0
<b>Marketing Channels</b>	1.688	0
	1.835	0
	1.729	0
<b>Key Resources</b>	1.773	0
	1.683	0
	1.725	0
<b>Key Partners</b>	1.764	0
	1.734	0
	1.956	0
<b>Cost Planning</b>	1.772	0
	1.552	0
<b>Big Data Marketing</b>	1.934	0
	2.003	0

From the results, it can be shown that the build item factor loading meets the criterion for a substantial level. As a result, the findings have achieved construct validity for all included variables, with the exception of customer groups. Convergent validity is the degree of correlation between the measuring items. This idea depends on strengthening linked theoretical estimations that are statistically associated with one another. Results for AVE, combined unwavering quality, and Cronbach's alpha reliability are presented in Table (7) as measures for judging joint correctness.

**Table 7:** Validity Converging

<b>Construct</b>	<b>Composite</b>	<b>Average Variance</b>
	<b>Reliability</b>	<b>Extracted (AVE)</b>
Internal Values	1.843	1.703
Customer Groups	1.995	1.556
Marketing Channels	1.908	1.625
Key Resources	1.926	1.502
Key Partners	1.858	1.642
Cost Planning	1.842	1.507
Big Data Marketing	1.832	1.946

As per Table (7's) joined legitimacy discoveries, the edge values for Normal Change Extricated (AVE) and composite unwavering quality, individually, are 0.50 and 0.70. Thus, the level of combination has been exhibited measurably and is additionally reliable. Table (8) underneath shows the discoveries of the way examination for speculation testing.

**Table 8:** Path Analysis for testing hypotheses

<b>Pathways</b>			<b>Estimate</b>	<b>S.E.</b>	<b>T-Stats</b>	<b>P-Value</b>
<b>Marketing Channels</b>	→	Big Data Marketing	1.004	1.043	0.068	1.844
<b>Internal Values</b>	→	Big Data Marketing	1.203	1.043	1.836	1.043
<b>Customer Groups</b>	→	Big Data Marketing	1.135	1.063	1.588	1.098
<b>Key Resources</b>	→	Big Data Marketing	1.128	1.026	2.686	1.000
<b>Key Partners</b>	→	Big Data Marketing	1.023	1.044	0.672	1.652
<b>Cost Planning</b>	→	Big Data Marketing	1.043	1.043	7.536	1.000

As indicated by the discoveries, cost arranging has a positive and genuinely critical connection with inside values (1.135, p 0.10) and marketing channels (1.203, p 0.10), yet not with client gatherings (1.004, p > 0.10).

## 5. Discussion

This study aims to ascertain how big data marketing impacts a digital transition. There needs to be more research on this influence because there hasn't been any analysis of how big data

marketing affects every aspect of an organization and every industry. Past investigations have focused solely on specific components, one area of the economy or one inborn innovation. The discoveries of this study can likewise act as a springboard for businesses to affirm their functional issues. Organizations require this data in light of the fact that scarcely 50% of them produce business occasions and just 25% do so while working out KPIs like benefit.

There may or probably won't be another flood of digital advances sooner rather than later that self discipline big data marketing. Hence, it is fundamental to move both the idea of big data marketing as well as the digital innovation utilized in it. Like additionally noticed that their recommended aspect and effect models can be questionable. One can hypothesize concerning whether this characterization is without a doubt popular. From a down to earth point of view, the change's genuine effect might be huger than its extremist or progressive nature.

With around one part of digital transformations expected to encounter moderate or even strong changes, big data marketing is anticipated to change businesses in various ways. The organization's offer, the client bunch they can distinguish and support, how they contact individuals, and the assets they use will be in every way essentially affected.

These studies also demonstrate that businesses must provide more options for delivery and post-sale support. These findings support the findings of numerous earlier research. For instance, it has been noted that as customers' digital potential grows, they are increasingly making purchases online. identified the use of various digital channels by institutions and concluded that these channels give institutions new ways to market their products. Additionally, the projected post-purchase improvement is consistent with other studies that found businesses can provide precise customer assistance with the new interface. The outcomes are not stunning on the grounds that these progressions are normal. Clients may now effectively get item and administration data in various ways when required thanks to the prevalence of portable and social applications, which further builds their item and administration mindfulness.

Results for AVE, combined unwavering quality, and Cronbach's alpha reliability are presented in Table (7) as measures for judging joint correctness. Numerous fintech businesses are presently creating monetary installment arrangements that will expand the choices for purchasing labor and products. Expanded assumptions for the utilization of robotization and self-administration correspondence among organizations and clients are proposed by the review's discoveries. These discoveries are in accordance with research that prominent that

digital stages, association, and digitization are utilized to actuate programmed self-administration steadily. Moreover, the discoveries support prior concentrate by referring to digitalization as a part in this development, which shows that correspondence through co-creation and society is anticipated to increment. This concentrate additionally exhibits that there won't be any progressions in how individuals utilize individual help.

According to earlier studies, institutional operational processes are becoming more standardized as a result of digital integration. It is impossible to pinpoint the causes of the variations in the results because they are solely the product of research methodologies. The outcomes propose that more joining is expected in immeasurably significant exercises according to the viewpoint of combination. This study exhibits that while an expansion in the utilization of scholarly assets is anticipated, a diminishing in the utilization of actual assets is anticipated.

The findings of this investigation support the ongoing shift in the ecosystems we are keeping an eye on. Companies may offer their customers brand-new, better products and services thanks to digital technology. Institutions frequently require more partners because they lack the resources and knowledge necessary to employ this technology. Consistent incorporation is expected to convey a predictable client experience anyplace, whenever, so the ecosystem across establishments should likewise be thick.

## 6. Conclusion

This study investigated the connection between big data analytics and business intelligence (BI) and introduced a cosmology of big data analytics. Furthermore, the record offers a support situated big data analytics engineering alongside a depiction of how BASOA can work on his BI. The procedures introduced in this report might work with leading exploration and making big data analytics, business analytics, business intelligence, internet business, and e-administrations. The outcomes affirm the people who didn't see massive changes in resource deals, proposing that their utilization of resource deals as a type of pay is probably not going to change. Additionally, survey respondents expect fees and license usage to increase as licenses and new varieties become more popular in each application. The findings also indicate that more advertising will likely be used, which is consistent with predictions that this will happen as people become more active online. The anticipated growth in rent is a research finding that does not fit. Finally, the analysis demonstrates that more membership

payments are anticipated to be used. This is a logical conclusion given the rising use of advertising and the quantity of internet clients.

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