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## HOW ANALYTICS AND BIG DATA ARE CHANGING APPROACHES TO CREATING ADVERTISING CAMPAIGNS

Research article

**Notkin I.M.**<sup>1,\*</sup>

<sup>1</sup> Advertising agency "Paradigm Advertising", Moscow, Russian Federation

\* Corresponding author (notkin[at]paradigma.ru)

### Abstract

The article explores how analytics and big data are revolutionizing approaches to creating advertising campaigns. It emphasizes that with the advancement of technology and the availability of vast amounts of data, advertisers can personalize their advertising campaigns, making them more relevant and effective for the target audience. The article highlights the trend towards a transition from mass advertising to highly targeted messages based on consumer preferences and behavior. The authors discuss how analytics allows advertisers to understand their customers' preferences and needs, and to predict which products or services may be of interest to different audience segments. This allows you to reduce advertising costs and increase conversion. The article also highlights the importance of collecting and analyzing real-time consumer behavior data to tailor advertising campaigns on the fly. It emphasizes that such data analysis becomes the basis for smarter and more adaptive advertising strategies. In conclusion, the article highlights that analytics and big data are changing the advertising landscape, making it more targeted, effective and adaptive. Advertisers who integrate these technologies into their strategies gain a competitive advantage in the market and better meet the needs of their customers.

**Keywords:** machine learning, big data, analytics, closed surveys, marketing.

## КАК АНАЛИТИКА И БОЛЬШИЕ ДАННЫЕ МЕНЯЮТ ПОДХОДЫ К СОЗДАНИЮ РЕКЛАМНЫХ КАМПАНИЙ

Научная статья

**Ноткин И.М.**<sup>1,\*</sup>

<sup>1</sup> Рекламное агентство «Парадигма Адвертайзинг», Москва, Российская Федерация

\* Корреспондирующий автор (notkin[at]paradigma.ru)

### Аннотация

В статье рассматривается, как аналитика и большие данные революционизируют подходы к созданию рекламных кампаний. Она подчеркивает, что с развитием технологий и доступностью огромного количества данных рекламодатели могут персонализировать свои рекламные кампании, делая их более релевантными и эффективными для целевой аудитории. В работе подчеркивается тенденция перехода от массовой рекламы к узконаправленным сообщениям, основанным на предпочтениях и поведении потребителей. Авторы рассуждают о том, как аналитика позволяет рекламодателям понимать предпочтения и потребности клиентов и прогнозировать, какие продукты или услуги могут быть интересны различным сегментам аудитории. Это позволяет сократить расходы на рекламу и повысить конверсию. Статья также подчеркивает важность сбора и анализа данных о поведении потребителей в режиме реального времени для адаптации рекламных кампаний на ходу. Она подчеркивает, что такой анализ данных становится основой для более интеллектуальных и адаптивных рекламных стратегий. В заключение в статье отмечается, что аналитика и большие данные меняют рекламный ландшафт, делая его более целевым, эффективным и гибким. Рекламодатели, внедряющие эти технологии в свои стратегии, получают конкурентное преимущество на рынке и лучше удовлетворяют потребности своих клиентов.

**Ключевые слова:** машинное обучение, большие данные, аналитика, закрытые опросы, маркетинг.

### Introduction

The growing volumes of data caused by the digitalization of the business world have historically been served mainly by transactional and analytical systems. Such systems are widely used in many companies, and a wide range of ready-made software solutions is available on the market. Transactional business applications and operational databases today are designed to process high-quality business data with high data consistency and transaction throughput based on structured data. The growing volume of transactional data and the growing need of specialized departments and management for extensive special analyses and reports lead to increasingly stringent requirements for basic systems. Despite similar tasks, the focus between big data solutions and transactional/analytical systems differs significantly.

In order to meet the growing needs for data analysis, new tools were developed at an early stage, which were summarized under the terms "data warehouse" and "business analytics". These tools are based on existing transactional systems and allow you to obtain information based on data that should be directly used in business decision-making processes. These systems are especially optimized for structured data suitable for SQL queries and table structures. They are designed to be used on several powerful but expensive computers. This approach is often accompanied by periodic creation of compressed and cleaned copies of the source data in order to increase the speed of analysis. The adaptation of compression algorithms in data warehouse tools

often takes a lot of time in companies, especially due to software development and quality assurance processes [1, P. 1088-1107].

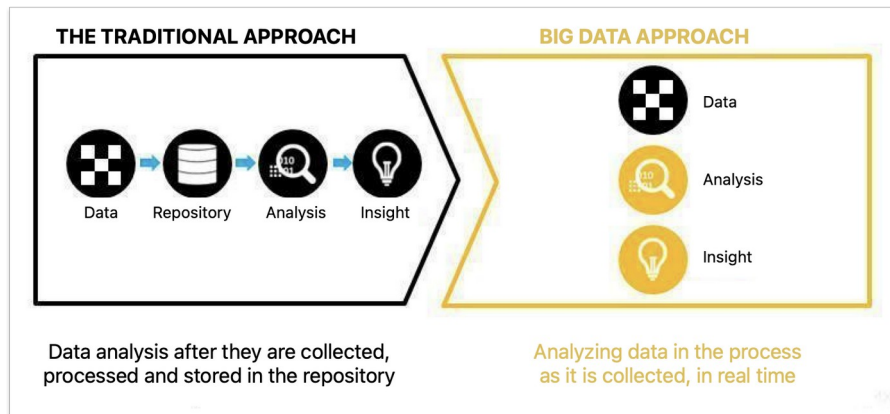


Figure 1 - Differences in marketing approaches [2]  
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Most systems of this type today process data volumes in the range of small terabytes, which is also found in approaches to small large data. Despite the coincidence of tasks, existing analytical systems and big data have clear differences in their priorities. These differences are reflected in the technological and organizational approaches used. Targeted use of big data methods can complement existing business intelligence solutions, for example, by speeding up the evaluation of big inventory data or increasing the frequency of updating transaction data. The volume of unstructured data is growing faster than Moore's law: the constant creation of documents, audio, images and video recordings by smartphones leads to a massive increase in the volume of data [3, P. 101-106].

The challenge of big data is to make these data formats accessible and usable in business processes and solutions. To do this, you first need to convert inaccessible data into "sufficiently" structured data. For example, text messages from social networks can flow into the product development process. This requires the development of many different data sources, including external ones, and their integration into the solution. Automatic content recognition and semantic analysis are necessary to evaluate multimedia data formats, such as audio or video, for example, to identify product logos in video clips. Therefore, the central task of many big data solutions is to provide access to unstructured data and facilitate their transformation.

### Literature review

The integration of Big Data (BD) into advertising is a significant development in marketing strategy transformation. This evolution is highlighted by the transition from traditional marketing methods to data-driven approaches, where BD's ability to process large volumes of information enables businesses to uncover hidden patterns and insights. Such capabilities are essential for optimizing inventory management and production planning in retail, leading to improved efficiency and cost savings.

The relevance of BD in marketing is also emphasized through its role in personalizing customer experiences. By analyzing customer data, businesses can tailor their marketing efforts to individual preferences, increasing engagement and loyalty. This personalization is increasingly important as consumers expect more tailored experiences [4, P. 1-17].

This review underlines the need for further research into how BD reshapes customer interaction and campaign management in the digital age, focusing on the specifics of BD's role in evolving from mass advertising to targeted, data-driven campaigns.

### Materials and methods

A comparative method was used to analyze the existing forms of using big data in marketing. A descriptive method was also used to highlight the main differences with traditional marketing. The scientific works of Daniel Johnson, Andrian Stevenson, Roger Grimsby and others are taken as materials.

The primary objective of this study is to explore the potential impact of BD on marketing, specifically in the context of advertising campaigns. This involves a systematic analysis of existing literature to understand the transformative role of BD in marketing and its implications for future strategies. The research aims to identify the perceived benefits of BD adoption in business marketing activities and how it reshapes marketing approaches.

In contrast to the existing literature, this study aims to provide a comprehensive overview of the transformative impact of BD specifically in the realm of advertising campaigns. While previous research has outlined the general benefits of BD in marketing, this study delves into the specifics of how BD can optimize advertising strategies, personalize customer experiences, and enhance the overall effectiveness of marketing campaigns. The unique contribution lies in the detailed examination of BD's role in the evolution from mass advertising to targeted, data-driven campaigns.

### Results

Text data already written in natural language should be automatically recorded and structured. Many tool manufacturers offer extensions for linguistic data processing, including with respect to open source implementations. Integration of

previously unused unstructured data increases the volume of analyzed data by more than a thousand times. Storage and analysis of local data reach their technical and economic limits.

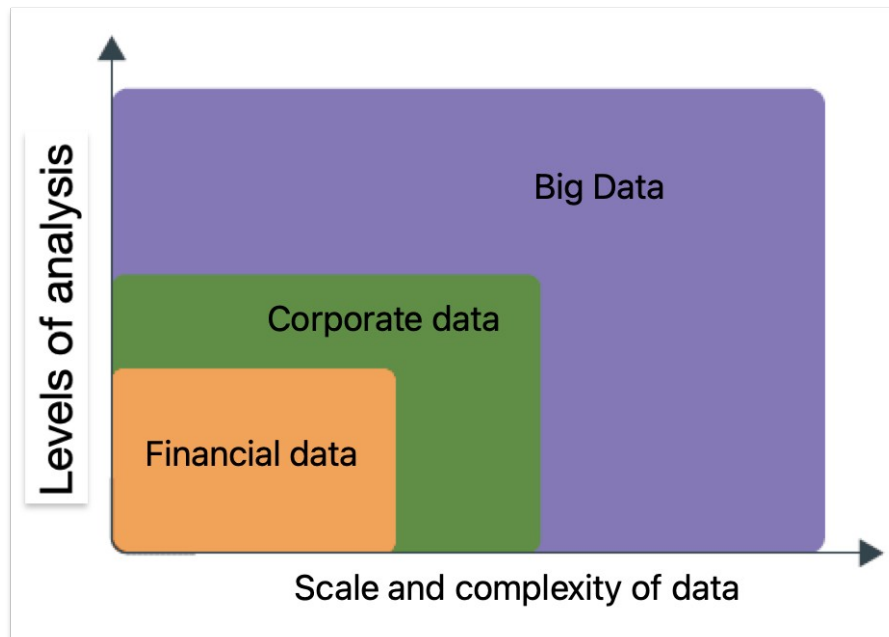


Figure 2 - Ranking of data in advertising campaigns [5]  
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Analyzing the degree of data inheritance, we note two strategies for using them in the process of creating advertising campaigns. The first strategy, the zero value strategy, was created relatively recently, the first mentions date back to 2018. The strategy features consist in the constant updating of segments, clusters of idea development at the level of the same data dissemination tools. Let me give you an example – when launching an Aston Martin advertising campaign in 2018, right before the first public auction, the company began collecting data on the evaluation of its own products on the Internet. The analysis was carried out in three stages, during each month the collected data made it possible to build a correlation with the financial resources spent by evaluating the "dead segments" [6].

So the company completely abandoned advertising on billboards, but for the first time began to increase the percentage of contextual advertising and embedded intro videos. Statistics allowed us to draw up a portrait of the consumer, also checking the interest factor through direct sales through attracted customers. The advertising campaign began to pay off immediately, since, firstly, inefficient directions were immediately reduced, and the released funds were used to maintain effective tools.

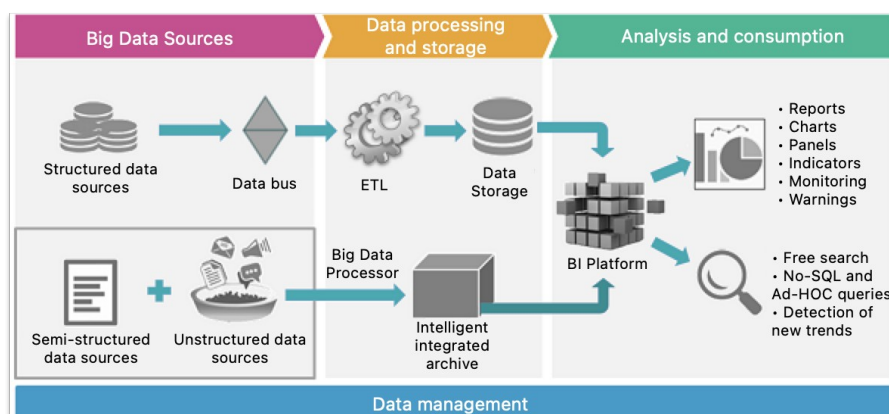


Figure 3 - Big data management chain in advertising companies [7]  
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Another way is to build a unified inheritance system. A person is removed from the equation, and the build system itself spends money on the purchase of traffic, but such a system can only work in digital format. An example of such a system is the internal Aberdeen Group platform, which allows not only to attract new customers by transferring them directly to managers without actually processing cold leads by a person, but also to distribute the issued budget in the most efficient way [8, P. 79-87].

However, Internet users expect quick estimates in fractions of a second, as time is a crucial factor for big data queries. In addition to the characteristics of big data, which include growing volumes of data and increasingly unstructured data, in the future data will have to be collected, integrated and analyzed at higher speeds [9, P. 162-178].

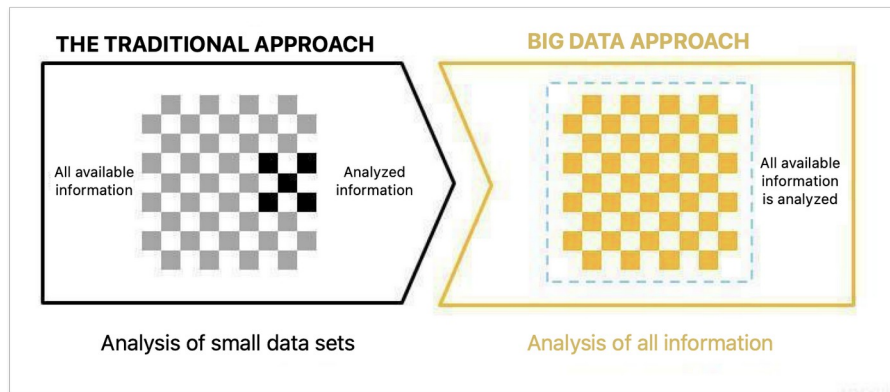


Figure 4 - Difference cluster analysis [10]  
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Thus, big data imposes requirements on existing systems and opens up new scenarios for the use of big data-oriented technologies. Big data makes it easier for marketing and sales departments to adapt product and service offerings to specific customer segments or individual customers, which can minimize marketing losses. This requires evaluating a large amount of data on user behavior on the Internet in order to measure the success of measures and online campaigns, as well as to determine how many additional sales are generated by certain measures.

### Discussion

In retail, cross-selling opportunities arise when retailers identify typical purchasing decision-making patterns. Online stores use this analysis to increase sales per purchase transaction. Cross-selling can also be based on known customer information, such as transactions or current location data, and linked in real time with other data, such as demographic information. This allows retailers to send targeted offers to customers at a specific time and place. In addition, big data analysis significantly expands the possibilities of monitoring the market and competitors. The analysis may include information from competitors' websites, specialized and business press or specialized portals. Social media content from platforms such as Facebook, blogs, wikis and forums is also a valuable source of data. All this data can be collected using intelligent methods, including screen cleaning to extract text from computer screens [11, P. 159-182].

Semantic markup of web content gives an idea of the meaning of information. Search engine results provide additional information. The analysis of this structured and unstructured data allows you to get more complete and timely reports on the market and competitors, compared to traditional reports. Location-based marketing, also known as point-of-sale marketing, allows you to individually reach customers on the spot in the store. Customers receive information and offers on discounts on additional products when paying when placing an order. By analyzing all customer data, it is possible to identify patterns of behavior and purchases that would hardly be noticeable without big data analysis. Such micro-segmentation is the basis for targeted marketing measures with fewer losses.

Big data can also be used to detect and counter the impending outflow of customers at an early stage. For example, mobile phone providers can analyze which customers have experienced network or quality issues in the past and which customers are most likely to leave based on their behavior on the phone. Targeted discount offers or advertising campaigns can increase customer loyalty. In the financial industry, big data analysis can help optimize target group marketing. Information such as customer data, accounts or applications from different systems are combined in a database, for example, to analyze the trading behavior of depository clients. Thus, it is possible to create more targeted offers that meet the needs of customers. Data analysis also makes it possible to attract new customers more effectively by determining the proportion of responses to each email message and client and adjusting mailing lists accordingly [12, P. 415-429].

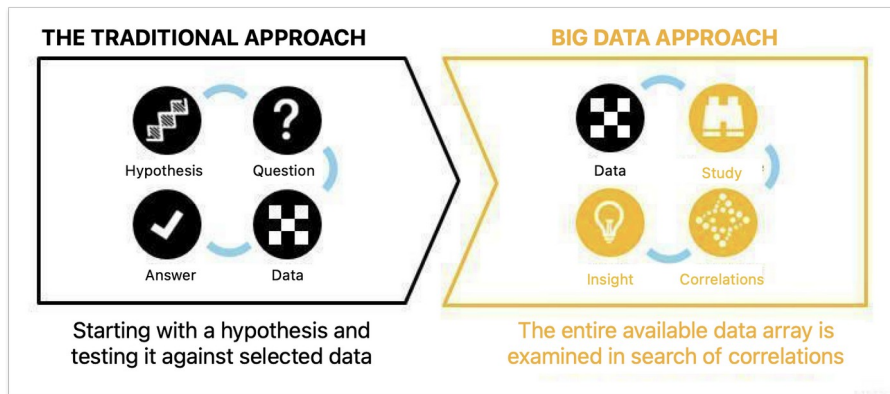


Figure 5 - Differences in the formulation of research hypotheses [13]  
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In corporate research and development departments, databases of customer reviews of products from various sources can be combined to get hints for product design. Through targeted analysis of user forums and opinions, as well as social media platforms, it is possible to systematically assess shortcomings and opinions about products and services in order to generate new product ideas or identify potential for improvement. Such assessments can also be used to analyze sentiment and improve brand perception, taking into account applicable data protection rules.

Companies can get valuable ideas for further development of their products from social networks such as Facebook and Twitter, as well as from blogs and forums. At the same time, there is no point in continuing to develop products that constantly receive bad reviews from consumers on these channels. When companies view critical opinions as an opportunity to improve rather than a defeat, they can reap significant benefits. You can quickly stop expensive production and unnecessary marketing campaigns and instead use consumer offers received from crowdsourcing [14, P. 152-181].

Analysis of social media platforms can provide early signals about social trends and offer companies the opportunity to develop markets with adapted products. Developers can collect information and share it with partners on virtual collaboration sites or on idea markets to use it for further product development. Joint and parallel development, as well as rapid prototyping, reduce the time of product launch to market and offer clear competitive advantages at the product implementation stage, which leads to increased sales opportunities and profits. Successful companies, such as Apple and Google, skillfully use these opportunities.

In the pharmaceutical industry, the development and testing of new active ingredients and drugs generates huge amounts of data, which is a serious problem. Big data allows you to aggregate data from various research institutions and conduct a joint assessment. Computational modeling and data-intensive modeling lead to better and more accurate results when analyzing the effects of drugs and increase the likelihood of successful clinical trials. This leads to lower research and development costs and shorter time to market.

Big data also offers approaches to solving a well-known problem in healthcare. Rising health care costs require sustained savings and improved health care. Big data analytics can help reduce costs by demonstrating the long-term cost-reduction effect of expensive treatment. With the help of complex DNA analysis, doctors can predict diseases and recommend preventive measures. Based on this analysis, it is possible to develop individual medications for people with similar DNA structures.

### Conclusion

The first and most noticeable change was a more precise definition of the target audience. Analytics and big data allow marketers to understand preferences, behavioral patterns and consumer trends more deeply. For example, the analysis of purchase data and interests in the online space allows you to create personalized advertising messages that accurately reflect the needs and expectations of the target audience. The second key change was improved targeting. With the use of big data, advertising campaigns can be more accurately targeted at certain segments of the audience. For example, machine learning algorithms can analyze user behavior and predict which products or services they may be most interested in. This helps to optimize budgets and increase conversions.

The third change is the transition to more interactive advertising formats. Analytics allows you to evaluate audience engagement and reaction to various advertising elements. For example, based on the analysis of data on clicks and interaction with ads, you can determine the effectiveness of specific ad elements and adapt the strategy in real time. In addition, analytics and big data play a key role in measuring the ROI (return on investment) of advertising campaigns. Marketers can now more accurately assess the effectiveness of their efforts, adapt strategies based on performance data, and optimize costs. Finally, it is worth emphasizing that analytics and big data not only change current approaches to advertising, but also create the basis for the future development of the industry. Forecasting trends, modeling consumer behavior and the use of artificial intelligence open up new horizons for innovation in the advertising world. Thus, taking into account specific examples and trends, it can be concluded that the integration of analytics and big data into advertising strategies provides marketers with powerful tools for more effective interaction with the audience and achieving business goals [15, P. 791–806].

**Конфликт интересов**

Не указан.

**Рецензия**

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**Conflict of Interest**

None declared.

**Review**

All articles are peer-reviewed. But the reviewer or the author of the article chose not to publish a review of this article in the public domain. The review can be provided to the competent authorities upon request.

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