# Using Big Data in Analysis of Consumer Behavior: A Qualitative Study

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## Abstract

Big data, which has been used intensively in the field of marketing, is of great importance in the analysis of consumer behavior, in predetermining the changes in consumer needs and wants that may occur in the future, and in the development of marketing strategies suitable for these wishes and needs. Yet, there are few empirical studies of consumer behavior with big data. In this context, the aim of the study is to discuss how big data is used in the analysis of consumer behavior and to reveal its advantages. In addition to this, it is also aimed to observe the practitioners' attitudes on how big data determines consumer behavior. For this purpose, the interview technique was chosen in order to collect data in the study. In the survey, senior managers of 10 different companies in Istanbul, which are currently using big data, were interviewed as field research, and qualitative data analysis was carried out in the NVIVO program. As a result of the analysis, it is seen that companies obtain comprehensive information about consumers by using big data. In light of this information collected, companies can predict consumer behavior, carry out their digitalization activities more efficiently, and develop data-based consumer-specific advertisements.

*Key words*: Big Data, Digital Marketing, Consumer Behavior, Social Media.

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# Tüketici Davranışı Analizinde Büyük Verinin Kullanımı: Nitel Bir Çalışma

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## Öz

Pazarlama alanında yoğun bir biçimde kullanılmaya başlanan büyük veri, tüketici davranışlarının analizinde, gelecekte oluşabilecek tüketici istek ve ihtiyaç değişikliklerinin önceden belirlemesinde ve söz konusu istek ve ihtiyaçlara uygun pazarlama stratejilerinin geliştirilmesinde büyük önem taşımaktadır. Yine de, büyük verilerle tüketici davranışlarına ilişkin çok az ampirik çalışma var. Bu bağlamda yapılan çalışma ile amaçlanan, büyük verinin tüketici davranışlarının analizinde nasıl ve ne şekilde kullanıldığını ele almak ve tüketici davranışlarının büyük veri kullanımıyla analizinin avantajlarını ortaya koymaktır. Buna ek olarak, büyük verinin tüketici davranışlarını nasıl belirlediğine dair uygulayıcıların görüşlerinin de gözlemlenmesi amaçlanmaktadır. Bu amaçla çalışmada veri toplamak amacıyla görüşme tekniği seçilmiştir. Çalışmanın saha araştırması olarak İstanbul ilinde yer alan ve büyük veri kullanan 10 farklı şirketin üst düzey yöneticileri ile görüşmeler yapılmıştır ve NVIVO programında nitel veri analizi yapılmıştır. Yapılan analizler sonucunda, şirketlerin büyük veriyi kullanarak tüketiciler hakkında kapsamlı bilgiler elde ettiği görülmektedir. Şirketler, toplanan bu bilgiler ışığında tüketici davranışlarını tahmin edebilmekte, dijitalleşme faaliyetlerini daha verimli yürütebilmekte ve veriye dayalı tüketiciye özel reklamlar geliştirebilmektedir.

*Anahtar sözcükler*: Büyük Veri, Dijital Pazarlama, Tüketici Davranışları, Sosyal Medya.

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## Introduction

Technology is developing rapidly, and one more concept is added to technology every day. Thanks to these new concepts added, the amount of data reaches a very large scope. It is possible to use this data in many places in order to make things easier. Especially in social media where we spend time in daily life, applications we use, banks, shopping sites and many other areas that we can count, using this data will make our life easier. A huge range of data styles has emerged in services provided over the Internet (Hurwitz et al., 2013, p. 12-48). The use of smartphones, which are increasing day by day, plays an important role in this big data generation. Studies have shown that this increasing amount of data has a significant contribution not only to smartphones, but also to the increase of the data amount of frequently used devices such as radio, television and hospital records.

Brands that do their work with traditional media methods have now adapted to this developing and changing technology and started to use digital platforms. Developing media technology has a great impact on the consumer and consumption system. Brand Finance mentioned this effect in its media report published in 2019 (Brand Finance, 2019, p. 11).

Fox and CBS are included in the top 10 brands of traditional media outlets. However, digital media organizations that changed this list and displaced Fox and CBS, Netflix, and YouTube took their places in the 2nd and 3rd place, leaving behind all traditional media organizations except Disney (Brand Finance, 2019, p. 11).

Marketers have come up with a new method they call "online behavioral advertising." Thanks to this new method, they have decided which ad to put in front of users by monitoring the movements of users who are online on the digital platforms used. Big data has an important place in applying this method (Nill & Aalberts, 2014, p. 127).

Consumer behavior has long been the focal point of marketing literature; however, this focal point in relation to big data has not yet been fully explored, especially in Turkey. Considering that the use of big data has become inevitable today, it is necessary to discuss how companies analyze consumer behavior by using this technology, as well as examine the benefits of using it.

## 1. Literature Review

In this part of the study, big data and its components are defined, the behavioral monitoring and targeting are explained, and then new technologies to analyze consumer movements are described.

### 1.1. Big Data

The emergence of the concept of big data was featured in an article at the imaging conference in 1997. In the same article, it was explained that the data occupy a lot of space in computers and that there is no space even in the external memory added to the computer later, and this problem was called the "Big Data Problem" (Cox & Ellsworth, 1997, p. 235). Francis X. Diebold stated in his studies that big data will provide significant benefits to natural sciences, social sciences and many other fields of science (Diebold, 2003, p. 115). In line with

these statements, data constitute a very important place in the century we live in, and it is almost referred to as the most important raw material of today. Data subject constitutes the basic philosophy of large informatics organizations (Ege, 2013, p. 23-24).

Big data cannot be used with conventional data processing techniques; it is known that there are different types of digital content that make up the concept of big data (Gahi, et al., 2016, p. 953). The amount of information produced over the previous two years is almost the same as the amount of data produced during human development. Social media platforms, applications, health, bank, market, etc. That we use in all areas of daily life. With the virtualization of services provided in many fields, there has been a tremendous explosion in data increase and accordingly, many different types of data have emerged in the sector (Hurwitz et al., 2013, p. 9). It has been observed that big data differs according to the usage areas, the amount of usage, and the effect it shows on this field. Table 1 displays these.

Table 1. Big Data Format, Source and Sector Affected by Big Data

| Data Format | Data Source | Affected Sector |
|---|---|---|
| High Volume | Online | Financial Services |
| Not Configured | Video | Health |
| Continuous Flowing | Sensor | Production |
| Multiple Format | The genome | Travel /Transportation |

Reference: Davenport, 2018, p. 30

Big data was fully understood in 2011 and in the following years. The emergence of excess data and the thought of how to use these data revealed necessary studies (Gandomi & Haider, 2015, p. 138). After the understanding of big data, it is aimed to make the life we live better as the purpose of using this data. While the goals were in this direction, the existing big technology brands (IBM, Amazon, Google, etc.) looked at ways to benefit from this big data phenomenon for themselves and figured out how to use this data stack in marketing (Turner et al., 2012, p. 2-4). Consumer information, which brands used to make more sales in the field of marketing, later provided great convenience and benefit in the geographical and demographic areas. Thanks to this big data, they even got an idea about the behavior patterns of the consumers (Hasdemir, 2005, p. 49).

## 1.2. Components of Big Data

The factors that make up the big data concept are defined as 3V. These are determined as Velocity, Volume, and Variety. However, some sources added two more elements to this 3V and extended it from 3V to 5V. The elements added later are Value and Veracity. (Demchenko & Membrey, 2014, p. 104-112).

Variety

Data are not available in a single domain, but in different types and formats. There is no single rule restricted across data types. The data are segmented structural, non-structural, and semi-structured. Big data is fed by a variety of data conduits in different formats. There are numerous formats available, including application usage, social media platforms, bank transactions, and websites (Vijayarani & Sharmila, 2016, p. 3). Approximately 80% of the available data has been edited, and the remaining 20% is composed of unregulated data (Dülger, 2016, p. 505).

It is easier for the regulated data to be available to the institutions, but it seems to be a very difficult situation to use the unregulated data for the institutions working with traditional methods (Gökalp et al., 2018, p. 95). In modern societies that have emerged with the developing and changing world order, the increase in internet usage and the increase in the amount of data and data diversity have reached a great extent. For example, when we look at 2018, 475,450 twits were posted in 1 minute, 3,851,258 Google scans, 4,784,321 YouTube video views (Domo, 2018, p. 1).

Velocity

Data are in a constant state, so keeping track of these data has been a very important point for data scientists. In addition to using big data, how it will be stored and analyzed is more important. Institutions and businesses that will use the data must be equipped to perform these storage and analysis processes. It was stated in the figures how high the speed of data is produced, and the rate of data consumption reaches very high dimensions as it is in production (Aktan, 2018, p. 13). The main reason for the increase in data rate is trying to keep up with the consumption rate of modern societies. In the concept of speed, it is aimed to keep up with the fast consumption habits of individuals and delivering everything to individuals faster (Yavuz, 2013, p. 232).

With the changing world and developing technology, the increase in internet usage is quite high. In 2018, the number of people using the internet in the world is around 4.40 billion. This rate has increased by around 9% compared to the number of people using the internet in 2017. It has been observed that the only reason for the increase in data rate is not only due to the consumption of individuals. There is an increase in speed depending on the increasing amount of data of businesses and institutions (Lueth, 2018, p. 3).

Volume

The concept of volume is the key component of big data. State-of-the-art tools are needed to store and access this much data at any time. The data that is newly produced every day and where that data has to store is the volume. The volume actually shows how large the data produced is. For example, each patient has a file in the health institution. In this file, there are many data, such as the date of each examination, the drugs prescribed, and the examinations performed. Each time the patient goes to the hospital, a new one is added to these data, which shows how high the volume is. As the doctor who tries to view this data of

the patient reaches the older data, the level that the volume will reach in bytes will be very high (Cyganek et al., 2016, p. 498).

Huge volumes have been reached with the increase of large data to terabytes and petabytes, too large to fit in the database and too large to be processed with traditional techniques. Studies show that it will be inevitable that the amount of data produced will increase to higher levels every year (Ohlhorst, 2013, p. 46). As the amount of data produced increased, the trend towards storage increased and institutions and organizations in this sector turned to initiatives in the field of storage. Investment ideas in this area have increased (Dülger, 2016, p. 506).

Veracity

Veracity in big data applications relates to enhancing data quality (Zhang, et al., 2017, p. 1-12), and is related to the reliability or accuracy of the data. Most times, the data will be inaccurate, therefore filtering and choosing the data which is really needed is a cumbersome task. Various analytical processes should be done for data cleansing, data selection, and decision making (Kune, et al., 2016, p. 79-105). Sometimes, along with the increasing amount of datasets, the uncertainty of data usually changes, which makes the traditional processing mechanisms unavailable (Wang & He, 2016, p. 26-31). The concept of veracity is very critical for providing quality data and valid models that are gained from big data because the accuracy and reliability of the data can be evaluated with veracity (Cyganek et al., 2016, p. 499).

Value

For the purpose of interpreting the data generated, institutions and enterprises invest significantly in the solution and storage stages.

Data is produced both structured and unstructured. Institutions and businesses make significant investments in solutions and storage stages for the purpose of interpreting the data produced and put them into a function (Doğan & Arslantekin, 2016, p. 18-19). The reason why big data is valued and invested by institutions and businesses is to obtain the data they want to receive in a healthy way and to obtain the results they want in a more usable way. The concept of value is of great importance at this point (Desjardins, 2015, p. 11). It is not always possible to reach useful information from so many data. The point that determines the value concept of the data is not the velocity, volume, or variety, but a situation that is related to the correct analysis of the data that will benefit the business or institution that will use the data (Şener, 2017, p. 3-5). The phenomenon of big data, which is a guide for the new business to be opened, has provided great benefits for businesses, acting accordingly in the business that will be opened depending on the knowledge of the types of goods and services offered by the consumer (Davenport, 2018, p. 30). For example, banks or insurance companies will make a profit with the suggestions they will make in line with the needs of the person. In the same way, it increases the purchasing rate with the campaigns they offer in other brands, and increases the profit in the same direction (Dülger, 2016, p. 506).

## 1.3. Behavioral Monitoring and Targeting

Brands need to engage in research in order to get an idea of the service or goods they will offer to consumers. According to the wishes and demands of the consumers, goods and services are provided by the brands. Along with behavioral monitoring and targeting, brands create their target audiences according to the personal characteristics and preferences of consumers. It now aims to achieve this in shorter ways, based on the data of consumers on the internet.

Online Targeting

The importance that businesses and institutions attach to the subject of targeting is great, the fact that the subject of targeting is so important is that the business or institution is indicative of what it will offer to the consumer. The institution understands which customers are a public speaking audience and changes, develops, and shapes itself accordingly (Kurtbaş, 2016, p. 84). After this stage, businesses look for ways to reach the audience they will address and decide which means of communication to use (Demirağ, 2017, p. 450). Businesses cannot appeal to all consumers because each product has a specific target audience. The behavioral targeting method is used to determine this target audience. Depending on the traditional understanding of advertising in behavioral targeting, targeting is made with more general information such as gender, age, language, and culture, while there are more specific targets in online advertising (Taşdelen & Şentürk, 2018, p. 175-190).

In behavioral targeting, the movements of users are followed and saved over the internet. By viewing the websites entered by users, the number of access to the site, the data at which time they enter the site are compound with data such as language and location, and advertising messages are designed for the target audience (Nill & Aalberts, 2014, p. 129). Contrary to traditional advertising, the distinctive point of online advertising has been to make advertisements in line with the goals. The method used here is to create similar advertisements in front of the user in connection with the words searched by the users in the browser (Berber, 2014 p. 19). In behavioral targeting, advertising is designed specifically for the individual (Boerman et al., 2017, p. 364).

Behavioral targeting has emerged new technologies to analyze these movements, in order to monitor every movement of the consumer and work accordingly.

Online Tracking

While users are online on the internet, they are followed by businesses. Online beacons such as location, super cookies, browser fingerprints, and browser cookies are used to collect user data (Office of the Privacy Commissioner of Canada, 2011, p. 12). Users are constantly followed by businesses online. Consumer's economic situation, religion, sexual orientation, consumer's health, and so on. Things are tracked online by businesses and based on this data, advertisements are placed in front of the user for their needs (Electronic Fronter Foundation et al., 2009, p. 3).

Browser Cookies

Thanks to the cookies placed on the users' system, information about the users is collected. Cookies are divided into two groups. The first group of cookies is cookies placed in the address bar. These cookies are placed on the site where users use information such as profile information and account name they use in the browser (Chan, 2004, p. 1694-1695). The other type of cookies is functionally used cookies. These cookies create a profile about the users who log in to the site, examine the movements of the users, determine the user target with the analysis they make, and start to create user-targeted advertisements accordingly. This type of cookie is used frequently by advertisers (Tirtea et al., 2011, p. 3).

Super Cookies

Super cookies have been created when the cookies that are currently in use are starting to be blocked by the users. Unlike other cookies, this type of cookie is placed on user browsers and cannot be blocked by users. These cookies, which are permanently placed in user browsers without permission, create anxiety for the user (Syverson & Traudt, 2018, p. 1). They are not considered as normal cookies and are stored in different areas, which makes it difficult for users to find and delete cookies (Angwin, 2011, p. 2). "Flash cookies", one of the widely used types of super cookies, are placed on websites and create a detailed consumer profile using different resources. Non-deleted cookies are formed by the renewal of existing cookies. This type of cookie is an effective Super cookie type that can easily transfer itself to a different browser used on the computer (Bujlow et al., 2015, p. 13).

JavaScript Files

It is a language programming application that works with the user’s permission. JavaScript transfers information to servers by recovering deleted folders and reactivating them. Although they can collect information in a certain area, they can access the browser's cache and search history. When you work with cookies, you can access very important and private information (Castelluccia & Narayanan, 2012, p. 6).

Browser Fingerprints

Cookies are important for users to receive data from browsers and to use this data in a compatible manner with other tools. Super cookies have emerged as a result of users' blocking of cookies, and are more difficult to block than normal cookies. A new method has been developed to replace super cookies that are legally restricted due to the disturbance of users, and a new method has been developed with the name of browser fingerprinting (Eckersley, 2014, p. 3). This new method consists directly of hardware and software information of the users' devices. By accessing interfaces, it is able to access private information that previously used cookies cannot reach (Laperdrix, 2019, p. 1-2).

Location Tracking

The location information of the users can be accessed through the various browsers used by the users through the software. Access to this information takes place with the consent of the user. Not only the location is accessed, but also the user's IP address and device information. Thanks to this location, the target can be geographic in advertisements to be shown to users (Berber, 2014, p. 25). This location method is also embedded in smart devices

we do not drop by our hands, via GPS. Thanks to this location feature on our smart devices, advertising has been started based on location. Advertisements are placed in front of the users according to their location. Position information, which has an important place in the advertising sector, has started to operate as an advertisement type and has been brought to the sector under the name of this type of location advertising (Bauer & Strauss, 2016, p. 160).

## 2. Methodology

### 2.1. Purpose and Importance of the Study

The purpose of the study is to explain how big data is used in the analysis of consumer behavior and to show its advantages. In addition to this, it is also aimed to observe the practitioners' attitudes on how big data determines consumer behavior. Consumer behavior has long been the focus of marketing literature, however, particularly in Turkey; this focus has not yet been adequately investigated in relation to big data. Given that the usage of big data is now inevitable, it is important to consider how companies use this technology to study consumer behavior.

### 2.2. Data Collection Tools and Analysis

It was decided to prepare the interview form in order to obtain the data in line with the purpose determined within the scope of the study. In this context, the interview form, which is a qualitative technique, was chosen because it is suitable for the purpose of the study and will help to obtain reliable results.

Among the characteristics of the studies conducted in a qualitative context is accessing information about the subject of the study within the process. Participants' views and perceptions on the subject are collected with the most appropriate qualitative research technique. These techniques include interviews, observation, and examination of written documents. In the selected interview technique, the process of preparing the questions takes place according to the participants and the subject of the research. In this context, the questions are prepared in an open-ended or semi-structured manner, in order to reveal the opinions, thoughts, and experiences of the participants on the subject (Simsek & Yildirim, 2000, p. 19-32).

The use of big data in the marketing strategy of companies is an emerging phenomenon in Turkey and is mostly used in larger companies, so it was possible to find such companies in a metropolis like Istanbul. Therefore, the province of Istanbul and 10 senior managers of large companies that use big data were determined as the statistical population of the research. Among the 10 participants, 2 had a doctorate degree, 5 had a master's degree, and 3 had a bachelor's degree, 2 were female and 8 were male. By conducting in-depth interviews with senior managers of companies and taking their views, the thematic analysis method has been used, which is considered one of the efficient and flexible methods. According to (Braun & Clarke, 2006, p. 77-101) thematic analysis is a method for recognizing, analyzing, and reporting patterns in qualitative data and a process for analyzing textual data that transforms scattered and diverse data into rich and detailed data. The concept of thematic has multiple meanings and shows important information about data and research questions, and to some

extent it shows the meaning and concept of the pattern in a set of data. The results of data analysis using the qualitative method of thematic analysis and with the help of NVIVO software are presented in the form of main themes, sub-themes and concepts. Based on the approach of Braun and Clarke, the process used in this research for theme analysis has been carried out through six phases of getting to know the data, creating initial codes, searching for themes, revising themes, defining and naming themes, and finally preparing a report (Clarke & Braun, 2006, p. 77-101). In the first stage, the data was studied and reviewed several times, notes were taken and ideas were highlighted, a list of written data was created, and their deep investigation was done. In the second phase, after analyzing and organizing the data into meaningful groups, initial codes have been created, and in the third phase, with focusing on the analysis at a larger level, after ensuring that the themes are sufficiently specific and non-repetitive; different codes have been arranged and analyzed in the form of themes. The fourth phase includes refining the themes. Therefore, in this research, all the coded data under each theme were read, and it was ensured that they form a coherent pattern. And finally, the obtained themes were classified into similar and coherent groups based on the content and considering the theoretical foundations of the research, and the final title of each topic was specified in order to provide the reader with a correct understanding of what the topic is about. The final stage means preparing the report; It is a concise, coherent, logical, and non-repetitive narrative that expresses the data under each theme and among themes (Clarke & Braun, 2006, p. 77-101). In this study, the validity of the interviews was examined from the perspective of content validity and construct validity, and to calculate the reliability, Cohen's kappa method (Tracy, 2013), and Holsti's method were used as a method to determine the reliability of the coding (Ghoreishi et al., 2017). The analysis's results demonstrate the high reliability of the study's findings.

## 2.3. Interview Questions Used in the Study

The study's goal is to discuss how big data is applied to the analysis of consumer behavior and to reveal its advantages. In addition to this, it is also aimed to observe the practitioners' views on how big data determines consumer behavior. In this context, the following 6 questions have been directed to obtain the experiences of the people working in the field. The interview questions were prepared based on the information obtained from the literature review and expert opinion. In this context, the research interview questions were based on, but not limited to, the studies of Ertemel, 2015, p. 45-51; Hofacker et al., 2016, p. 89-9; and Gunday et al., 2011, p. 662-676. Analysis of the literature led to the recognition of certain topics that have been employed to develop questions. These include the role of using big data in company digitalization, conducting marketing research, managing digital marketing strategies, choosing the target audience, evaluating the effectiveness of digital marketing activities, responding to the latest developments in digital marketing, acquiring information about consumers, and developing advertising strategies. The interview questions were finalized with the assistance of four academicians with backgrounds in qualitative research, and three senior managers, in terms of content validity and comprehensibility.

The number of questions asked in the interviews was determined as 6. However, it was determined as open-ended, and it was aimed to take the opinions of the participants on the subject clearly. For this purpose, the duration of the interviews varied according to the participant's willingness to be involved. The answers received during the interviews were noted. In this way, the analysis of the research data could be carried out.

1. How is the company's digitalization plan performing? What role does big data play in company digitalization?

2. What factors are crucial for your company while conducting marketing research? How do you use big data in this process?

3. How is the administration of your digital marketing approach going?

4. How do you choose your target audience for digital marketing, and what function does big data serve by being defined?

5. How do you evaluate the effectiveness of your digital marketing activities, and how do you include big data in this process?

6. Which approach do you employ to get your company ready to respond to the latest developments in digital marketing?

## 3. Findings

### 3.1. Findings Regarding the First Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and solutions, 3 themes emerged. These themes are examined under the headings of having a large data platform, digitizing systems, and digitizing the way they work.

Table 2. Distributions Regarding How the Company's Digitalization Plan is Performing, and the Role of Big Data in Company Digitalization?

| How is the company's digitalization plan performing? What role does big data play in company digitalization? | The number of repetitions |
|---|---|
| Having a large data platform | 7 |
| Digitizing systems | 4 |
| Digitizing the way it works | 3 |

Looking at the table, it is seen that the digitalization strategies of companies are to digitalize the systems and digitalize the way they work. The majority of respondents say that their

contribution to the digitalization strategy of companies is having a big data platform. Participants emphasized that big data has a positive impact on their companies.

In order to leverage digital systems and provide digital products to our clients, our goal is to digitize systems and products. (Interview Record: K1).

Our main goal is to digitize our entire company and how we interact with all of our stakeholders, including our clients. (Interview Record: P5).

## 3.2. Findings Regarding the Second Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and solutions, 7 themes emerged. These themes are big data search metrics, social media comments, feedback, etc. Helping to gather more information about customers, segmenting customers, the company's web page, distinguishing products based on client demands and preferences, focusing on the right questions to ask customers, applying surveys to customers, and presenting various campaigns to collect customers' choices and preferences.

Table 3. Distributions Regarding What Factors Are Crucial for Company While Conducting Marketing Research, And How Big Data Is Used In This Process?

| What factors are crucial for your company while conducting marketing research? How do you use big data in this process? | The number of repetitions |
|---|---|
| Big data search metrics, social media comments, feedback, etc. help gather more information about customers | 6 |
| Segment customers | 4 |
| Company web page | 4 |
| To distinguish products based on client demands and preferences | 3 |
| Focusing on the right questions to ask customers | 2 |
| Surveying customers | 2 |
| Presenting various campaigns to collect customers' choices and preferences | 1 |

Looking at the table, 6 of them collect more information about customers with big data, 4 of them segment customers, 4 of them use big data in the company's web page, 3 of them distinguish products according to customer needs and desires, 2 of them focus on the right questions to ask customers, 2 of them surveying customers, and 1 of them find the presentation of various campaigns to collect customer choices and preferences important for their companies while conducting marketing research.

Our strongest channel is our company website (Interview Record: K8).

Big data to us is the information we get from our customers. More specifically, big data includes user behavior on our website, comments and feedback on social media, our surveys and mailings, etc. More data about our consumers is gathered when they sign up on our website (Interview Recording: K3).

## 3.3. Findings Regarding the Third Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and their solutions, 5 themes emerged. These themes are websites, cookies, Google Analytics, social media, search engine, survey, etc. Trying to use all platforms in the field of digital marketing, directing customers to the website, using social media effectively, reaching customers through the right channels, and enabling cookies to gather information about web interactions and consumer journeys are examined under the headings.

Table 4. Distributions Regarding How the Administration of Digital Marketing Approach is Going

| How is the administration of your digital marketing approach going? | The number of repetitions |
|---|---|
| Websites, cookies, Google analytics, social media, search engine, survey, etc. Trying to use all platforms in the field of digital marketing | 6 |
| Directing customers to the website | 5 |
| Using social media effectively | 4 |
| Reaching customers through the right channels | 2 |
| Cookies allow for gathering information about the web interactions and consumer journeys | 1 |

Looking at the table, the majority of the participants are using websites, Google Analytics, social media, search engine, survey, etc. It tries to use all platforms in the field of digital marketing. While 5 of the participants direct their customers to their websites, 2 of them try to reach customers through the right channels.

Our main goal is to attract customers to our website. For this reason, social media is very effective (Interview Record: K6).

Cookies make it possible to gather information about customer behavior and website usage (Conversation Record: K4).

## 3.4. Findings Regarding the Fourth Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and solutions, 4 themes emerged. These theme systems collect data from customers through channels such as websites, social media, e-mails, views on a webpage, past purchases, and benefits of utilized products, etc. The behavioral segmentation criteria they use are analyzed under the headings of segmenting according to the needs of customers and then communicating with their needs and interests, and finding a need in the market.

Table 5. Distributions Regarding How They Choose Their Target Audience for Digital Marketing, And What Function Does Big Data Serve by Being Defined?

| How do you choose your target audience for digital marketing, and what function does big data serve by being defined? | The number of repetitions |
|---|---|
| Collecting data from customers through channels such as websites, social media, e-mails | 6 |
| Views on webpage, past purchases, and benefits of utilized products, etc. are the behavioral segmentation criteria they use | 4 |
| Segmenting according to customers' needs and then communicating with their interests | 4 |
| Finding a need in the market | 2 |

Looking at the table, the majority of the participants collect data from customers through channels such as websites, social media, and e-mails for digital marketing, and some

participants use page views, previous purchases, used product advantages, purchased product features, etc. as a behavioral segmentation criteria. 4 of the participants stated that they should segment customers according to their needs.

We gather information from our clients from a wide range of sources, such as webpages, social media, and e-mails, so that we can segment them based on their requirements (Interview Recording: K9).

We are able to interact with client's demands and preferences (Interview Record: K4).

## 3.5. Findings Regarding the Fifth Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and solutions, 4 themes emerged. These themes include using apps to get campaign reports, click-through rate, how many customers have joined, how many are new customers, etc.

Table 6. Distributions Regarding How They Evaluate the Effectiveness of Their Digital Marketing Activities, And How They Include Big Data in This Process

| How do you evaluate the effectiveness of your digital marketing activities, and how do you include big data into this process? | The number of repetitions |
|---|---|
| Using apps to get campaign reports | 4 |
| Click-through rate, how many customers have joined, how many are new customers, etc. Defining KpI | 3 |
| To see if communication is going well after report | 2 |
| Focusing on the report comparing customer acquisition expenditures with advertising expenditures | 2 |

Looking at the table, the applications are used to get the performance results of the digital campaigns of the participants. In this activity, big data is looking at whether the communication is going well, while some participants focus on the report's comparison of customer acquisition expenditures with advertising expenditures.

Our company primarily concentrates on the report comparing client acquisition expenditures with advertising expenditures (Interview Record: P6).

After following customer's patterns and their digital traces on our online platforms, we decide whether our communication is going well (Interview Recording: K8).

## 3.6. Findings Regarding the Sixth Sub-Problem

The codes and categories, which were created through the data obtained from the participants, were separated and themes are given below. With the interviews and solutions, 7 themes emerged. These themes are examined under the headings of collecting more data about the customer, using more artificial intelligence to predict customers' behavior, enabling employees to use digital media, segmenting, being open-minded, having teamwork, and realizing the personal development of employees.

Table 7. Distributions Regarding Which Approach Are Employed to Get Their Company Ready to Respond to The Latest Developments in Digital Marketing?

| Which approach do you employ to get your company ready to respond to the latest developments in digital marketing? | The number of repetitions |
|---|---|
| Collecting more data about the customer | 6 |
| Using more AI to predict customer behavior | 4 |
| Enabling employees to use digital media | 4 |
| Segmentation | 3 |
| Having an open mind | 3 |
| Having teamwork | 2 |
| Employees' personal development | 1 |

Looking at the table, the majority of the participants stated that collecting more data about the customer and using artificial intelligence to predict customers' behavior will help their businesses in adjusting to emerging developments in digital marketing. Some of them think that enabling employees to use digital media will adapt them to new trends.

We need to take action by using more artificial intelligence to predict customers' behavior (Interview Record: K7).

Trend-setting, teamwork and open-mindedness are our keywords (Interview Record: K3).

## 4. Conclusion

Technology is advancing rapidly, and new concepts are being added to technology every day. These newly added concepts increase the amount and scope of data obtained. The phrase 'Big Data' is used to perform the collection of large amounts of data, that is difficult to process by using traditional database management tools (Pesenson, Pesenson, & McCollum, 2010, p. 1-16).

Previous studies (for example, Zhang & Tan, 2020, p. 012165; Fang & Li, 2014, p. 45-50), have focused on the impact of big data on customer behavior, and there have been few studies on big data from a company perspective and its impact on digitalization and market segmentation strategies. The aim of this research; based on current research, has been determined to investigate how big data, analyzes consumer behavior and to discuss the advantages of analyzing consumer behavior with big data. Also observes the practitioners' views on how big data determines consumer behavior.

In line with the purpose of the study, it was planned to obtain the data through interviews by interviewing the top managers of 10 different companies that use big data and are located in Istanbul city. The data gathered was shared in the previous section. By analyzing the information collected, the following results were obtained;

It has been observed that with big data, companies have acquired extensive and detailed information about consumers through social media, websites, cookies, and search engines. In line with collected information, companies are able to predict customers' behavior and produce their products completely according to their supply and demand.

It was emphasized that companies can carry out their digitalization activities more efficiently thanks to the platform provided by big data.

It has been noted that collecting more customer data by using artificial intelligence, and enabling company employees to use digital media will help companies adapt to new trends in digital marketing.

It was demonstrated that companies can segment their target audiences based on their wishes and needs, in line with the feedback they receive from customers through big data. All company managers agreed that this type of segmentation would help them provide better services to customers.

It has been noticed that the phenomenon of big data has also led to developments and changes in the advertising strategies of the researched companies. Using big data enabled companies to develop data-based consumer-specific advertisements.

According to the above results, the importance of conducting big data-oriented studies in the field of marketing becomes evident. Technology is improving every day, and the world continues to digitalize with the developing technology. Big data serves most areas in the digital world. Nowadays, companies, institutions, and brands have tried to improve the service quality in line with the consumer information collected through big data. In this research, the determination of consumers' behaviors with big data is presented as an

inspiring study for companies and brands in the next process. In this study, in order to determine the effect of big data on analyzing consumer behavior, qualitative data analysis was carried out, and the senior managers of 10 different companies -without sector segmentation- were interviewed. It is recommended that in future studies, this subject be tested via quantitative research, and companies be divided by sector to show whether there is variation between analysis methods as well as companies by sector.

## Ethical Statement Information of the Article Titled As "Using Big Data in Analysis of Consumer Behavior: A Qualitative Study"

| | |
|---|---|
| | This study has been prepared in accordance with the values of "Research and Publication Ethics" and checked in a plagiarism control software. All responsibility of the article belongs to the author(s). |
| Acknowledgement | "Using Big Data in Analysis of Consumer Behavior: A Qualitative Study" was not re-produced from any papers or thesis. |
| Conflict of Interest Statement | There is no conflict of interest in the study titled as "Using Big Data in Analysis of Consumer Behavior: A Qualitative Study" |
| Author Contributions | We declare that the author named H. Anıl DEĞERMEN contributed 50% by conducting literature review and interview interviews, and the author named Maryam MOHAMMADABBASI contributed 50% by conducting data analysis and literature studies. |
| Support | Not any. |
| Ethics Committee Certificate Of Approval | Permission No. 847616 was obtained on 11.04.2022 from the Social and Human Sciences Research Ethics Committee. |
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**T.C.**
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Bilgilerinizi rica ederim.

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