

Tools for online consumer behaviour research as part of the data-based marketing

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Abstract— The main purpose of the article is to present two fundamental questions for the concept of data-based marketing. The first is related to the flow of online information through which consumer behavior can be studied. The second is aimed at the tools to obtain this information. The discussion of the second question is done through the prism of data obtained from means of communication. The most used in practice tools for analyzing consumer data are presented. On this basis, some future trends are outlined. These issues are key to implement data-based marketing in practice so to be able to deliver a higher level of personalization and customer satisfaction.

Keywords— *data-driven marketing, market information, online consumer behavior, market analysis tools*

I. INTRODUCTION

In the conditions of an information society in which developed countries live, information and information technologies occupy a key place. "Information society" is a broad term used to describe the social, economic, technological, and cultural changes associated with the rapid development and widespread use of information and communication technologies (ICTs) in modern nations societies [1]. These changes have led to a shift in the marketing concept as well, which now focuses on using new technologies and analyzing a large amount of data to reach higher consumer satisfaction.

Cambridge dictionary defines data as information, especially facts or numbers, collected to be examined and considered and used to help decision-making, or information in an electronic form that can be stored and used by a computer [2]. For the implementation of marketing activities, the importance of data is particularly important, because they are the basis for making management decisions, which in turn have a risky nature. Data is the means and prerequisite for successful marketing, because basing decisions on it reduces the risk. Market dynamics and consumer behavior, as well as a high level of competition, require timely provision of information to ensure the conditions for adaptability and flexibility of decisions taken.

These premises have led to the gradual differentiation of the philosophy of data-based marketing as the serious rise of digitization and e-commerce in recent years has increased its

importance. On the basis of this philosophy is the use of customer data to predict their needs, desires and future behaviors. On the one hand, it helps to develop personalized marketing strategies for the highest possible return on investment. On the other hand, it optimizes customer information to develop a marketing strategy. It involves using online and offline channels to collect complex data that is then analyzed to understand customers better [3]. For the article, online information channels are of interest.

A data-driven approach has three main benefits:

- Reach customers more effectively;
- Increase efficiency;
- Improve performance.

Following are the main stages in implementing data-driven marketing:

1. Collect data;
2. Find the right marketing channels;
3. Create personalized ads;
4. Develop a content strategy;
5. Refine your brand.

The article discusses two interrelated and basic questions for this philosophy:

- The flow of online information through which consumer behavior can be studied;
- The tools to obtain this information.

II. INFORMATION FLOW IN THE MARKET

Information of different type and importance is exchanged between the market participants. There are two options for the user:

In some cases, they communicate without realizing it and doing it directly. For example, when the consumer is buying a product, by this action he is telling the marketers – "*I trust you with my choice*".

In other cases, this act of communication is conscious and deliberate. The user has various options to contact the manufacturer so to obtain information. In an online environment, this can be done via e-mail, contact form on the organization's website, live chat (chatbot), social networks.

On the part of the manufacturer, the act of communication with the consumer is always deliberate and conscious. Sending messages to the consumer

the manufacturer says: "I would like you to be our customer and help you to be satisfied".

There is a continuous exchange of information between market participants. In the simplest and most general case, this process can be described as shown on Fig. 1.



Fig. 1. Flow of market information (own interpretation)

The reason for the exchange of information between the user and the manufacturer is the product, and the occasion is the will of the consumer to satisfy his need. The consumer turns to the market to find a solution to his problem, i.e., to satisfy his need. In this process, consumers need information when making a decision to purchase a product. The same decision-making logic applies to marketers—they need information to deliver the product the consumer wants. In order to be able to achieve this goal, the behavior of the user must be well known.

III. ONLINE CHANNELS FOR COLLECTING INFORMATION

Today's consumer is multi-screen, which allows him to use several and different smart devices at the same time, such as a smartphone, tablet, smart TV. This creates opportunities for marketers to study consumer behavior as they use different devices.

The channels that can be used to collect information can be classified into the following three groups

- ✓ Data from marketing research;
- ✓ Internal company sources;
- ✓ Data from means of communication.

A. Data from marketing research

The possibilities that the Internet provides for conducting online marketing research are significant. This can be accomplished through means such as:

- Online questionnaires;
- Online focus groups;
- Experiment in an online environment.

Online questionnaires

The online questionnaire can be defined as a method for registering primary information from respondents using the Internet. By its nature, the online questionnaire has the same characteristics as

its classical counterpart. The main difference is that it takes place in an online environment.

The principle of compiling the questionnaire is based on the "question-answer" method. Both open and closed questions can be included in the questionnaire. Different measurement scales such as nominal, ordinal, interval and rank are used to measure the answer given by the respondent in the closed type questions. Its preparation must correspond to the purpose of research. Hence the need to determine in advance the parameters that will be investigated.

Advantages of an online questionnaire:

- Low costs;
- 24-hour support;
- Speed of implementation;
- Possibility of visiting from a computer, laptop, mobile device, tablet through the Global Internet network;
- Flexible options for entering a question, type of response, facilitating the process of statistical processing;
- A wide range of respondents may be observed.

Disadvantages include:

- Not applicable to all age groups;
- The lack of direct control when conducting the survey [4].

In the online environment, there are many opportunities to create questionnaires. This can be done through various tools, such as:

- ❖ Social network;
- ❖ Messenger applications;
- ❖ E-mail;
- ❖ Existing site for other purposes;
- ❖ Creating a site;
- ❖ Apps;
- ❖ Chatbot.

Online focus groups

Online focus groups are a method of gathering primary information, where participants discuss and share opinions on a topic via the Internet. The main feature compared to its classical counterpart is the implementation channel, namely the Internet. In this case also the performance is live, but the presence is in an online environment. This allows participants from different locations to participate in the online hall, which is a limitation in the field study [5].

The advantages are:

- Lower cost for implementation;
- Overcoming geographical constraints;

- Less stress for participants.

The most important disadvantages are:

- Human interaction, dynamics and approach are not the same as face-to-face;
- Participants must have a camera and a stable Internet connection.

Experiment in an online environment

This method makes it possible to simulate various market situations in an online environment and to study the consumer reaction to them. This is very useful, for example, when testing a new product before launching it on the market.

B. Internal company sources

Information generated in the organization such as sales reports, customer information, etc. can serve as part of the analysis when building a marketing strategy.

C. Data from means of communication

This group includes data from:

- ❖ Website;
- ❖ Search engines;
- ❖ E-mail;
- ❖ Social media;
- ❖ Messengers;
- ❖ Apps.

Website

A website is a tool that gives the organization a place in the global internet network. The presence of a business on the Internet by building and maintaining a website brings a number of advantages and opportunities for:

- awareness of the business and its products;
- promotion of the business activity;
- business contact;
- e-commerce.

For a large part of the websites, it is possible to study and analyze what the behavior of the user is on the given website. This information includes the user path, time spent on a page, etc. This also applies to pages that are a blog, a vlog or a podcast.

Search engines

Search engines are a means by which a user can more easily find information or a product that interests him. This is done by setting search keywords. Based on this, the search engine provides answers to the user, presented in results pages SERP (Search Engine Results Page). According to Statista.com [6] search engines with the largest market share by July 2023 are Google (83.49%), Bing (9.19%), and Yahoo (2.72%). The websites that appear in the first places in the SERP are not just the most visited. Data shows that websites on pages after the first receive less than

1% of all visits. This is an incentive for the business to ensure its presence on the first page so that the user is more likely to visit it. In order to achieve this goal, help comes from the Search Engine Optimization (SEO) marketing.

SEO is the process of improving the visibility of websites in organic (algorithmic) search engine results. In this regard, it is about learning how search engines work and what people are searching for. Search can be divided into two main types - organic (natural) search and paid search, because Google displays paid ads in the first places in the SERP - the search results page. The importance of SEO stems from the fact that people are interested in information about the products and services they buy, but also in the opinions and ratings of those who have already bought the product.

Search engines are also a source of valuable business information for studying user intent and preferences. Information that can be obtained from this tool is:

- what the user is searching for online based on keywords entered by him in the search engines;
- statistics for the most search requests in a given topic.

E-mail

The e-mail is a means of communication enabling the sending and receiving of a letter through the Internet. In 2022, the number of global e-mail users amounted to 4.26 billion and is set to grow to 4.73 billion users in 2026, according to Statista.com [7]. This makes the e-mail a possible channel for marketing research and promotion. In the first case this could be done by sending a questionnaire or a link to complete a questionnaire to the respondents. In the second - to send offers, messages and other information to the user.

The information that can be obtained as a result of these actions is:

- ❖ if the content of the e-mail includes a link, whether the user clicked on it;
- ❖ how much traffic to the site comes from e-mail;
- ❖ e-mail is part of a user's online profile, which makes it a significant component in studying user behavior.

Social networks

Social networks are interactive technologies which allow us to connect in Internet and to create and share content. According to Statista.com [8] social media users are 4.89 billion in 2023 and according to forecasts by 2027 their number is expected to increase, as can be seen on Fig. 2. The most popular are Facebook, YouTube, WhatsApp, Instagram, as is shown of Fig. 3. This evidence of the wide range and usability of these applications makes them a powerful marketing tool for businesses. They may be used for various marketing purposes.

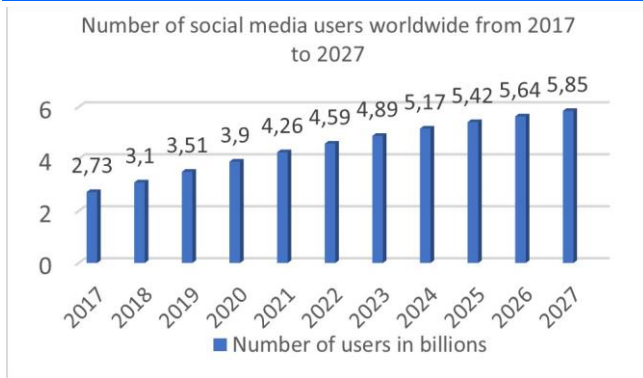


Fig. 2. Number of social media users worldwide (Source Statista.com)

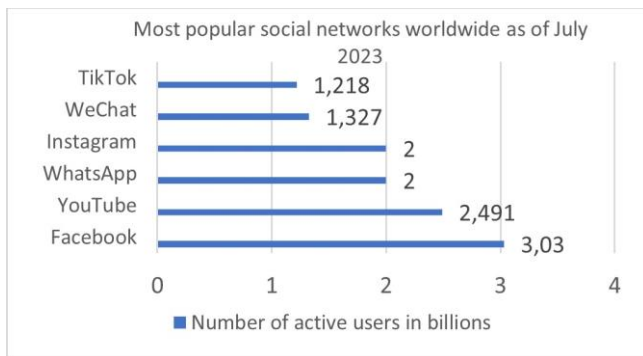


Fig. 3. Most popular social networks worldwide (Source Statista.com)

The possibilities of collecting and analyzing data about the user in social networks are significant. AI algorithms can analyze customer behavior on social media and recommend relevant content, products, or services based on their interests and preferences. Machine learning algorithm can scan text posts, photos, video and on this basis to:

- Discover current customers and understand more about their emotions in the process of making a purchase decision (if they were photographed in the store) or while using the product (photographed with it);
- Identify potential customers;
- Understand more about personality and behavioral characteristics of users.

Messenger applications

These platforms are designed to serve as a channel for communication between users in an online environment. Not only thoughts can be exchanged, but also files such as photos and videos. The opportunities they give users are to communicate, both by chatting in writing, and by making a call conversation and conducting a video conversation. The most frequently used apps based on the number of monthly active users in January 2023, according to Statista.com [9] are WhatsApp, WeChat, Messenger and Telegram, as can be seen on Fig. 4.

Artificial Intelligence (AI)-powered chatbots can provide quick and efficient customer support on social media platforms, such as Facebook Messenger. The information that can be obtained about the user is

similar to that obtained through e-mail. Along with it, we can analyze the questions that the user has asked through the chatbot, as well as determine whether the message is open.

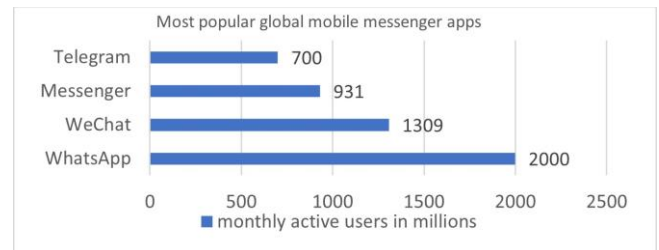


Fig. 4. Most popular global mobile messenger apps (Source Statista.com)

Apps

Many businesses provide their customers with the option to install an App on their mobile device. The main advantages are: easier ordering, bonuses such as free delivery, information about new products and promotions, etc. The information that the business can obtain in this way about its customers is valuable for building a user profile.

Part of the Apps are Recommendation systems. Their operating principle is based on self-learning, based on current information about user behavior. Based on the user's previous preferences, such as what they look at, recommendations are given that are considered to be the most appropriate for them.

The second question addressed in the article is related to the tools through which online information about consumer behavior can be acquired. The focus of consideration is data from means of communication.

IV. TOOLS TO OBTAIN ONLINE INFORMATION

Various tools are used to provide the information needed for data-driven marketing. Some of the most commonly used tools in practice will be presented based on the capabilities they offer.

Google Analytics

Google Analytics is a web analytics service that provides statistics and basic analytical tools for SEO and marketing purposes. The service is part of the Google Marketing Platform and is available for free to anyone with a Google account.

Google Analytics includes features that can help users identify trends and patterns in how visitors engage with their websites [10]. Features enable data collection, analysis, monitoring, visualization, reporting and integration with other applications. These features include [11]:

data visualization and monitoring tools, including dashboards, scorecards and motion charts that display changes in data over time;

- data filtering, manipulation and funnel analysis;
- data collection application program interfaces (APIs);

- predictive analytics, intelligence and anomaly detection;
- segmentation for analysis of subsets;
- custom reports for advertising, acquisition, audience behavior and conversion;
- email-based sharing and communication; and
- integration with other Google App products.

It can provide two types of user data – user acquisition and user behavior. The first type of data gives information on the way the consumer is referred to the website. Users may come from a variety of channels, such as paid/unpaid search engine results, social media or typing the URL address. This is very important for maximizing website traffic and for analyzing the behavior of the consumer. The second type of data gives an insight on how the user is engaging with the website and what is he doing on it. This includes how long they spend on each page, how many pages they visit, and if they engage with videos and graphics. This is useful for creating more relevant content and better user experience.

Google PageSpeed Insights

This tool is used for analyzing the performance of the pages of the website. It's very important each page of the website to be loaded as fast as possible on desktop as well on mobile devices. It offers suggestions for improving page performance, based on lab data to help debug performance issues and field data to capture real-world user experiences [12].

Google Search Console

The possibilities offered by Google Search Console are useful for measuring traffic and website efficiency in search engine, as well as to ensure excellent website performance in Google search results. The main features included in the tool are the following [13]:

Content optimization, using search analysis - uses information based on which user search queries point to the website, impression analysis, number of the clicks and the position in Google Search Results List.

Actualization of the website content – help to the search engine with link to the Sitemap and additional URL addresses, used for crawling and index coverage.

Receiving troubleshooting signals and website reparation – receiving e-mail, which notifies if Google has detected any problems with the website. The e-mail could contain which URL addresses are affected.

Check how Google Search engine interprets the webpage – detailed information is provided on search engine crawling and indexing the webpage by Google.

SEMrush

SEMrush is a Software as a Service (SaaS) platform for an online visibility management and content marketing. It provides variety of tools in the following areas of interests [14]:

- SEO:

Keyword Research – helps to find the best keywords to bring traffic to the website;

On-page SEO – useful for obtaining ideas how to improve the SEO performance;

Local SEO – getting more users by optimizing the website for local searches;

Rank Tracking – tracking of daily changes of the target keywords for the corresponding target location;

Competitor SEO Analysis- gives information for the keywords and the content in the strategy of the competitor.

- Content:

Content Marketing – helps to create an effective content strategy, based on data-driven solutions;

Content Creation and Distribution – motivate our target segment to visit our website by creating and sharing traffic-driving articles;

Content Optimization – optimizing the content with personalized recommendations to drive more traffic.

- Market Research:

Competitor Analysis – using the winning strategies by the competitors to increase our website traffic and improve performance;

Market Analysis – Analyze our and the competitors market position in a current or new market;

Paid Advertising – generates information for the paid keywords;

Competitor PR Monitoring – building brand reputation, using information for the competitor's online mentions and social media presence.

- Advertising:

PPC Keyword Research – helps to create a winning search campaign using a keyword research tool;

Website Monetization – gain profit by our audience with tools for bloggers, ad publishers and affiliate managers.

- Social Media:

Social Media Management – increase our brand awareness with social media posting and analytics platform.

HubSpot

HubSpot is a Customer Relationship Management (CRM) platform, which provides variety of tools and integrations for marketing, sales, and customer service purposes. The main features, offered by this platform are the following [15]:

- Provide demographic information pulled automatically from URLs and contact records immediately when they are added;

- Sending emails and making voice calls to contacts (in conjunction with Sales Hub) with logging and saving call information in contact records;

- Merge multiple contact lists from other sources;
- Publish email blasts directly from social media networks;
- Test multiple versions of an email marketing campaign.

Optimizely

Optimizely is an experimentation platform recommended by Google Cloud, which delivers behavior-based insights to help building of profiles for increasing customer loyalty. It has a fast and intuitive interface that facilitates data-driven decision-making. The audience targeting options include data export, preview mode, campaign schedule, stats engine, and behavioral targeting. The main features offered by Optimizely can be summarized as [16]:

- **Testing**

Provides feature flags, testing, and rollouts. It makes experiments related to the true impact of a feature, iterating on the feature, controlling a gradual release, and decoupling code deploys from full release. It performs multipage, A/B, and split URL testing of mobile sites, mobile apps, and websites. Based on machine learning algorithms it helps quickly to identify valuable audiences. As a result, it enables to deliver targeted messaging, personalized offers, and recommend the most relevant content for your users.

- **Tagging**

Machine-learning algorithms automatically apply tags to uploaded images, making it easy to filter, discover, and reuse assets. It provides intelligent algorithm that identifies the best-performing variation on an hourly basis, which helps capitalize to drive more conversions.

- **Fast stats**

It can examine experiment status live without incurring a peeking error to reach statistical significance within hours.

- **Content**

It provides Generative AI-driven predictive insights to give real-time suggestions on the types of content that will convert and drive revenue.

- **Recommendation**

Natural language processing and machine learning helps profile the real-time interests of each visitor on the website, and serve up more relevant content, automatically.

- **Personalization**

Provide the possibility to give AI-driven recommendations to target specific shopping cohorts on a website with personalized offers to maximize engagement, increase average order value, and drive conversions.

BuzzSumo

The tool analyzes the most popular online content related to specific keywords, such as brands,

technologies, etc [17]. The core parts of the platform are separated in the following sections: discovery, content, influencers, monitoring and projects. Each section contains features designed to tackle specific tasks.

The discovery section is designed for brainstorming to provide many content ideas. The trending tool gives information what is shared over the Internet in real time. If the story is becoming popular then trending will spot it before it goes viral. The discovery topics tool is used for generating many ideas for corresponding subject in form of synonyms, keywords and sample questions. It can also search for examples of top performing content in each subcategory. This ensures that the content is addressing the audiences key challenges.

The content section is designed for research and analysis. It performs search in billions of articles and social posts by topic page or domain to see what has performed best by any metric. It provides possibility to compare topics track trends and find the best time to publish. Content is also used to find where the most valuable links are coming from and use that information to improve the SEO.

Influencers section provides millions of social profiles and authors to help to find the right person or company for promotion of content.

The monitoring section is a web text analysis tool designed to find matches for any keywords published in online media. It can track mentions of the company, products or any other term critical to marketing.

Projects section provide storage of data, which contain article posts or influencer that can be saved into a project for quick reference.

Crazy Egg

This tool creates two-dimensional representations of data. It represents data using different colors that illustrate the way customers interact with a website. Crazy Egg calculates page views, the tabs and links visitors click, and other actions to give marketers insight into which elements attract users' attention and which don't [18].

Crazy Egg offers: an A/B test for comparing different versions of pages; page editing tools for modifying elements on the fly; and a complete analysis of sites that indicates where site visitors come from, how they navigate the site, and where they're running into roadblocks.

The discussion of the two questions for consideration in the article can outline the following trends in the development of data-based marketing:

- ❖ Deepening integration with new generation technologies such as Artificial Intelligence, machine learning, cloud computing and data analytics;
- ❖ Accent on content, personalization and experience for the customer;
- ❖ Fast and Real-time Analytics;

- ❖ Analytics of data from different type of device and information channels;
- ❖ Ease to use and ease to access.

CONCLUSION

In a digital era, the key to success lies in data and Data-Driven Marketing. Businesses can use data to understand customer preferences and behavior patterns. This gives marketers the possibility to develop targeted campaigns, personalized content and offers based on the needs of the consumer. To collect data, it is important for businesses to know the possibilities offered by the tools developed for these purposes. The purpose of presenting some of the most used tools for collecting information in practice, is to outline the possibilities for the business to implement data-driven marketing through their application and integration. This will create the prerequisites for analyzing and making informed decisions based on facts.

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