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**THE USE OF MANAGEMENT DASHBOARD
IN MONITORING THE EFFICIENCY
OF THE INTERNET ADVERTISING CAMPAIGNS
ILLUSTRATED ON THE EXAMPLE
OF GOOGLE ANALYTICS**

Summary: The paper discusses the use of management dashboards in monitoring the efficiency of e-marketing campaigns. The authors outlined the role of e-marketing in a contemporary organization, provided a definition of management dashboard and the key performance indicators pertaining to e-marketing. The research section characterizes the Google Analytics information panels and presents a case study of an advertising campaign run with their use.

Keywords: dashboard, e-marketing, Google Analytics.

Introduction

The visual perception of the human mind facilitates broader assimilation of data in comparison to the same amount of information expressed verbally. The Egyptian alphabet dating back as far as ancient times was a hieroglyphic system which used symbols to inscribe information. Presently, there is also a dynamic movement towards the creation and transmission of information through the

graphical illustrations in both, the professional illustrations, i.e. infographics, as well as the ones created for amateur purposes like memes and video memes. E-marketing applies graphics equally successfully. The visualization of data facilitates an easy to read presentation of many metrics which typically pertain to the current status of a webpage.

The information panels in Google Analytics are a tool to review how a given webpage operates. They can be designed specifically to aid the thematic description of various areas of web analytics measured on the webpage. The web analytics enables the study of users' activity on the site and provides information on who the visitor is, which source of internet traffic they come from, what they did on the page and if they performed the tasks prepared by the web analytics administrator [1].

1. The role of e-marketing in a contemporary organization

Electronic marketing, called e-marketing, originated and advanced through the popularization of the internet. Making the internet widely accessible induced a shift in the understanding of marketing communication [2]. The organizations began to employ the new medium for the purpose of promotion, brand recognition, and communication with the customers. The use of the internet in marketing enables organizations to expand the consumer market of their products and/or services, as well as to provide the customers with additional information about their offer. Among the main benefits of the internet are the global broadcasting capability and reach, multimedia content and interactive mode of communication, the speed of data transfer and retrieval, limitless accessibility, and also relatively low operating cost [3]. Nevertheless, it should also be noted that the internet as the marketing channel has certain disadvantages, i.e. the internet services are not entirely safe for the users, the access to the web can be costly, and there is a risk of technical problems [4].

What should be emphasized is the fact that the basic marketing principles did not change along with the popularization of the internet. The customer trusts a good brand or a proven and reliable product. The companies compete with one another by using various tactics of the marketing mix. The implementation of the modern information technologies, however, developed new guidelines for business activity.

In the internet marketing the companies use the traditional tools of the marketing mix, i.e. the 4P. This concept was proposed by McCarthy and it consists of four elements:

- product,
- price,
- promotion,
- place.

In practice it is an attempt to answer four basic questions [5]:

- What does the organization want to offer to the client and how does it plan to make their offer stand out against the competitive ones?
- On what financial terms can a given product (and/or service) be purchased by the buyer?
- How does the organization plan to inform the customer about their offer and persuade him to buy their product?
- Where and when is the product going to be on offer and how will it be delivered there?

The internet permits to consolidate all the listed marketing mix elements. In an instant the customer can look at the product, learn about its properties, compare the prices, choose the most favorable offer, and, as it is in the case of e-products (e.g. eBooks, software) purchase them online [6].

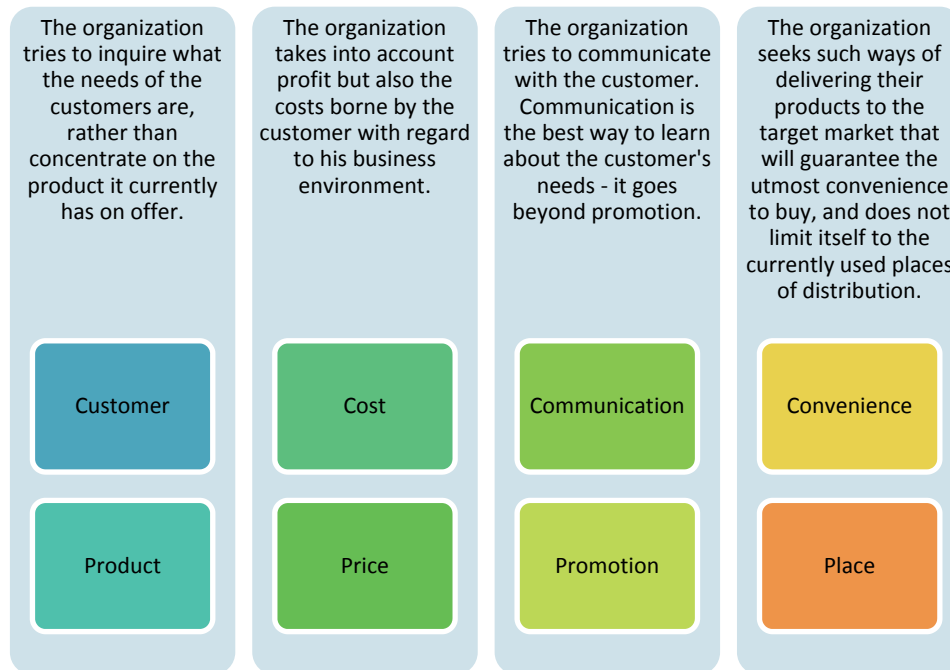
Another marketing classification is the concept of 4C, which is more consumer-oriented. The 4Cs concept consists of the following elements:

- customer,
- cost,
- communication,
- convenience.

This concept shows the role of the consumer in the buying decision process, as it is his decision whether to purchase a product or service [7].

Figure 1 shows the changes that have been introduced in the organizations following the popularization of the internet and e-marketing.

To sum up, the organization which uses e-marketing tools in its business activity can derive considerable benefit. E-marketing is valuable in expanding the present and seeking the prospective outlets, lowering the costs of customer service, as well as facilitating prompt reactions to the emerging customer needs. An effective implementation of the internet marketing tools by an organization generates profit and cuts operating costs [8].

Figure 1. Comparison of 4P and 4C concepts

Source: [6].

2. The definition of management dashboard and key performance indicators

E-marketing is most useful when applied together with the monitoring of the effectiveness of the implemented activities supported by the web analytics and comprehensible visualization of data. Well visualized data enhance the organizations' decision making [9]. What can be used in the decision making process in this area are the so-called management dashboards, sometimes referred to as management desktops [10]. Management dashboard thanks to an easy to read interface enables instantaneous and informed decisions and provides support for the decision makers on various management levels in the organization [11]. The term in itself refers to the desktops/cockpits/control panels/dashboards in cars/on the planes, housing instrumentation and controls for operation [12].

Management dashboard, according to Stephen Few, is a visualization of most valuable information consolidated on one page necessary to reach one or more goals [13]. It is worth mentioning that this solution is also applied to generate and supply the right information to the right person and at the right time,

which results in improved decision making [14]. The main feature of dashboards is the use of the simplified, easy to interpret graphical forms [15]. Dashboards adopt such techniques as: pie charts, line charts, column charts, controls, meters/speedometers, lighting controls, icons (e.g. pointers), conditional formatting, spark lines, bullet graphs, tables, diagrams [16], [17], [18]. Management dashboard allows to display data in a clear and intuitive manner, which, in turn, results in the measurable increase in the corporate value [19].

It needs to be emphasized that the purpose of management dashboard is to display the Key Performance Indicators, KPI [20]. In web analytics the KPI can be, for example [21]:

- average number of views per visit (the number of views/the number of visits) within a specified period of time,
- average number of visits per user (total number of visits/the total number of visitors),
- average income per user (generated income in total/ number of visitors),
- percentage of the new visitors (the number of visitors/the total number of visitors).

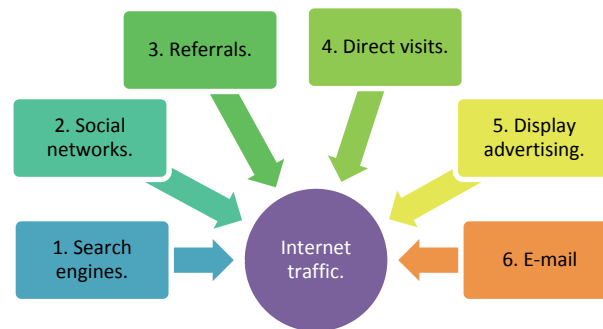
These indicators should have the following features [21]:

- comparability with regard to historical values with the use of the selector icons informing about a decrease or increase of a particular measure,
- application of the intuitive conditional formatting (red color – an alarming situation, green color – everything works as scheduled, yellow color – a warning),
- application of the percentage changes of the indicator with reference to the previous period,
- presentation of the KPIs effectiveness in terms of achieving a set goal.

It is worth adding that dashboards found use not only in monitoring the effectiveness of e-marketing, but also in many other areas, i.e. sale, finance, production, technical support systems and IT, human resources, e-health [22]. The selection of the right KPIs depends on the field of application.

3. Internet traffic sources

Every user visiting a webpage that tracks the activity of the visitors views the site coming from a certain source [23]. The sources of traffic are divided into six main channels from which the visitors viewing a web site come. The internet traffic channels are presented in Figure 2.

Figure 2. Internet channels acquisition

Typically, the largest volume of the internet traffic is delivered by the internet search engines. The web sites visitors use them in search of the desired web pages. The web analytics services have a list of hosts which they recognize as the traffic sources equal to search engines. Such a source, apart from the name of the host, has a specific parameter whose value is the keyword entered into search engine.

After entering the query into search engine, the presented results pages contain hyperlinks to target pages, however, following such a hyperlink is not counted as coming from another web site, but it will be indexed as using search engine. The choice of the listing from the result pages will be counted as the organic traffic. This means that the listings are retrieved by search engine's algorithm, in no way connected with the sponsored links. The choice of the link marked as sponsored or an advert link will be indexed as the sponsored/paid traffic. Thus, the source of network traffic from search engines is divided into two subcategories: organic and sponsored (paid) [24].

The traffic from the social networks describe the movement to an internet site from one of many popular social media sites. Similarly, like in the case of internet search engines, the web analytics services have integrated lists of host addresses which are categorized as the traffic from the social network source. The users of social networks spend a relatively long time on these pages and explore many hyperlinks that other users send in. Passing through such a hyperlink is indexed as the social network traffic.

The traffic from referrals is the traffic redirection from a domain other than the analyzed web site, and, at the same time, this movement does not originate in popular search engine or popular social network. The measurement which precisely defines the source of the traffic is the name of the internet domain.

The direct traffic means the movement on the web site which was initiated in a direct way, and was not proceeded by viewing any other site. The direct

impressions are delivered when the user enters a homepage address directly into the browser navigation bar, uses the bookmarks from the browser, uses the links from the history of web browsing, or uses an external software with an activated hyperlink and active browser toolbar. The external software may be the electronic mail clients like Microsoft Outlook or Thunderbird, text editors or spreadsheets, as well as software for viewing PDF files, e.g. Adobe Acrobat.

The traffic channel described as display advertising contains data on the volume of traffic on the site by selecting the advertisement banner presented in the graphic form. The display advertising is usually placed within the contents of the site, but it is not treated as the referral traffic because it is not technically a part of this site, as it is only viewed from the dedicated advertising server. The display advertising traffic is identified on the basis of the additional information about its source provided by the advertising servers. Display advertising can also be connected with remarketing, i.e. communicating the advertising content by means of the cookie files installed in the browser [25].

The e-mail traffic is a separate channel. When e-mails are sent via dedicated systems it is described as email marketing. Mails sent through such a system contain a header with the information on the basis of which the web analytics system is able to track the traffic down to reading the mail in the email client. Indexing the traffic in this channel is automatic and it does not matter if the mail was read and the hyperlink was clicked in the dedicated email program like Microsoft Outlook or Thunderbird, or in the email client like Gmail or Yahoo [26].

4. Google Analytics as a web analytics tool

The visualization of data in the form of management dashboards is offered by Google within their internet tool for the analysis of the WWW services statistics. It is called Google Analytics [27]. This tool has been available free of charge since 2005 and is one of the most popular tools of this kind. It is the On-site Web Analytics tool which uses cookies and collects information on how the visitors found the site and how they interacted with it. Additionally, Google Analytics offers a wide range of reports [23], [28].

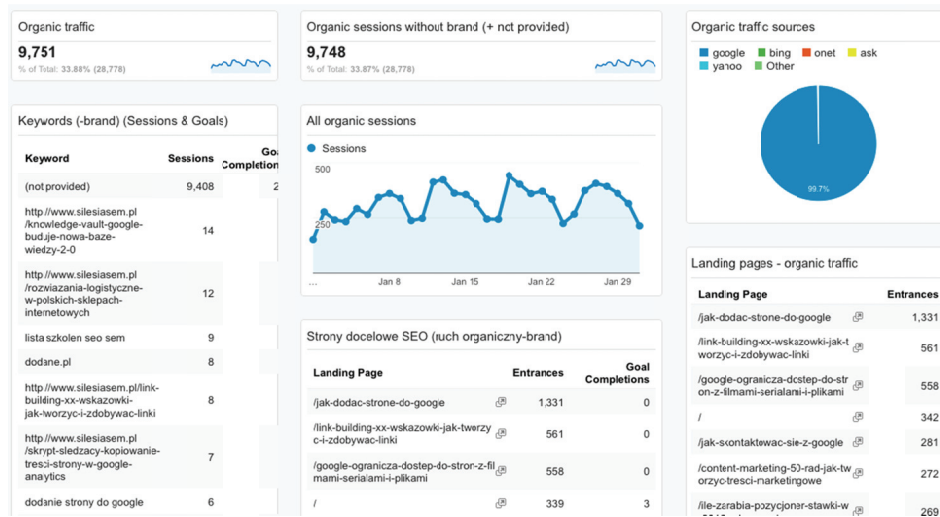
The purpose of Google Analytics dashboards is the presentation of indicators for the internet users' visits and their activity on the WWW site. The indicators can be analyzed separately, and the dashboard can also be customized to meet the specific needs of a particular organization [29].

The data made available by Google Analytics primarily concern conversion ratios or bounce ratios, time spent on the site, loading the web site, etc. Additionally, the number of registered clicks can be analyzed. The user can select from over 300 measurements divided into 9 categories [30]. The user of the Google Analytics panels can create up to 20 dashboards, and each of them is allowed 12 widgets, i.e. the dashboard elements. What is more, the user can choose the most suitable form of data presentation, i.e. numerical data, timeline, geomap, table, pie chart, bar chart. The Google Analytics data can be presented in a conventional way or real-time updates [31].

5. Dashboards in Google Analytics – overview

The first example of dashboard is a panel which displays information about the organic traffic, that is the users who found the site by means of search engine. This panel can contain the total number of sessions from the organic traffic excluding the keywords with brand names, a chart showing the main sources of the organic traffic, keywords data, as well as the statistics of landing pages viewed during the visits from search engine, and conversions. In one place this panel retrieves and stores information about the traffic from search engine, displays unexpected results and helps to understand the ever changing dynamics of the organic traffic.

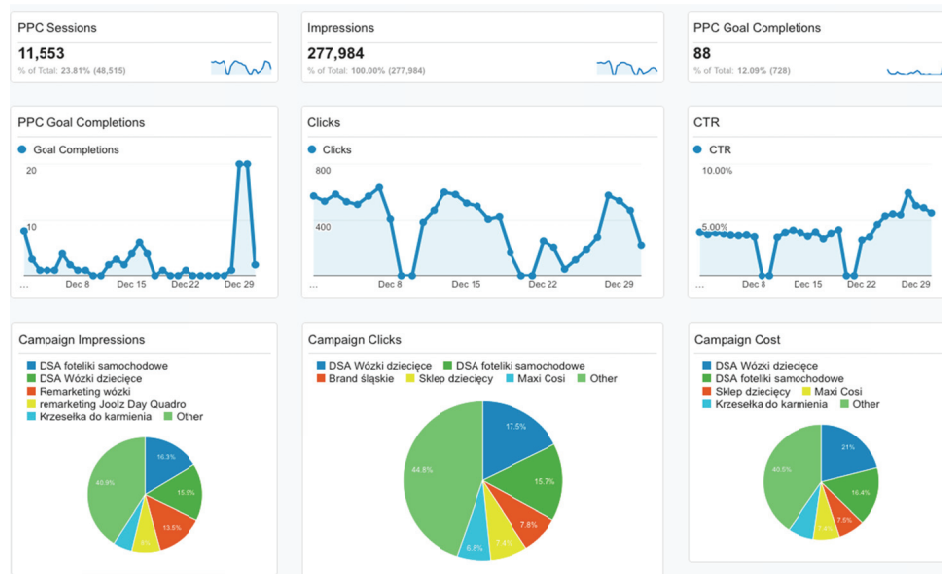
Figure 3. Dashboard – organic traffic



The majority of the organic traffic takes place in line with the HTTPS protocol and for that reason the information about the search keywords is not made available for Google Analytics. Such organic search keywords are listed as: (not provided). That is why the panel will show only a fraction of the real-time traffic coming from Google search engine. Other search engines available do not have such limitations but they are not competitive with Google.

Another example of dashboard which supplies information on the organic traffic delivered by search engine is a panel that collects data on paid traffic coming from search engine. Such panel can contain the total number of sessions coming from paid traffic, the number of sponsored links' viewings in search engine, the number of conversions that come from paid traffic on the site, the line charts that provide data about conversions, clicks and click through ratios, graphs of the site viewings, clicks and the cost of particular campaigns, as well as tables showing the volume of efficiency of paid keywords. The line charts display a situation which underwent a change during the advertising campaign, for example there was a significant decrease or increase in the volume of site viewings.

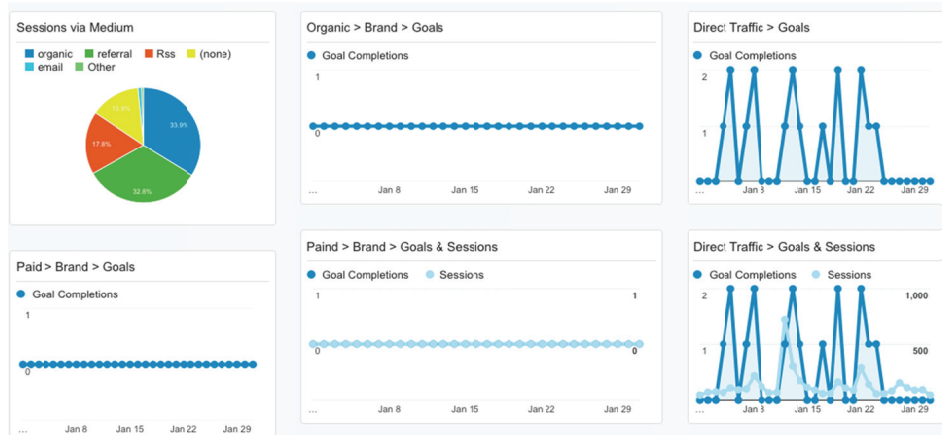
Figure 4. Dashboard – paid traffic



Yet another example of dashboards are panels which provide information about the brand. Brand monitoring is currently a gaining in popularity method of rapid learning about the web sites which bring up the subject of a particular brand in the internet. The information panel can be designed specifically to give update on the user's engagement. This panel can demonstrate data on whether

the paid and unpaid keywords used for the viewing of a site contained the name of the brand.

Figure 5. Dashboard – brand engagement



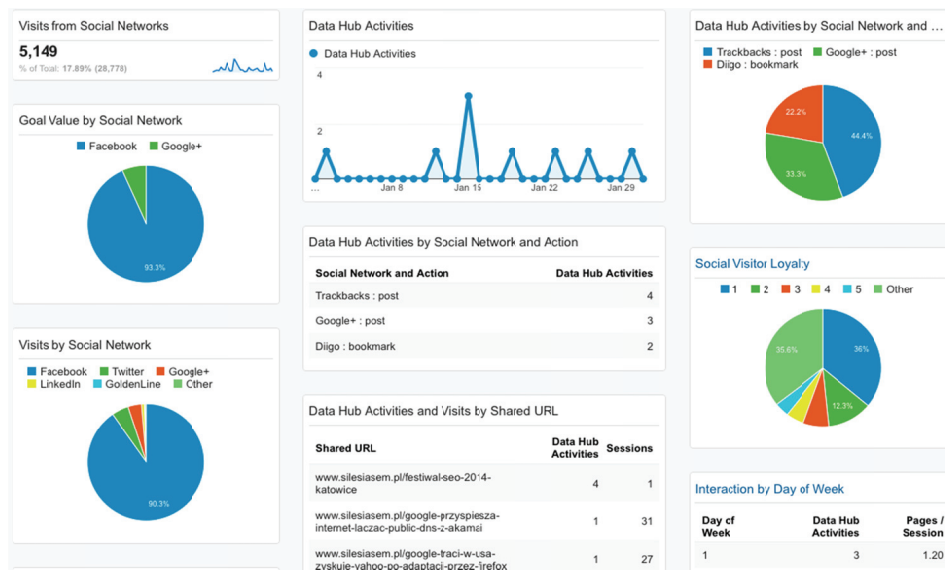
The panel for brand monitoring, apart from observing how recognizable a given brand is due to the organic traffic, should also present information on the social media traffic. Social networks constitute an equally significant traffic channel that delivers a large volume of traffic, like the amount of traffic from internet search engines.

Figure 6. Dashboard – brand monitoring



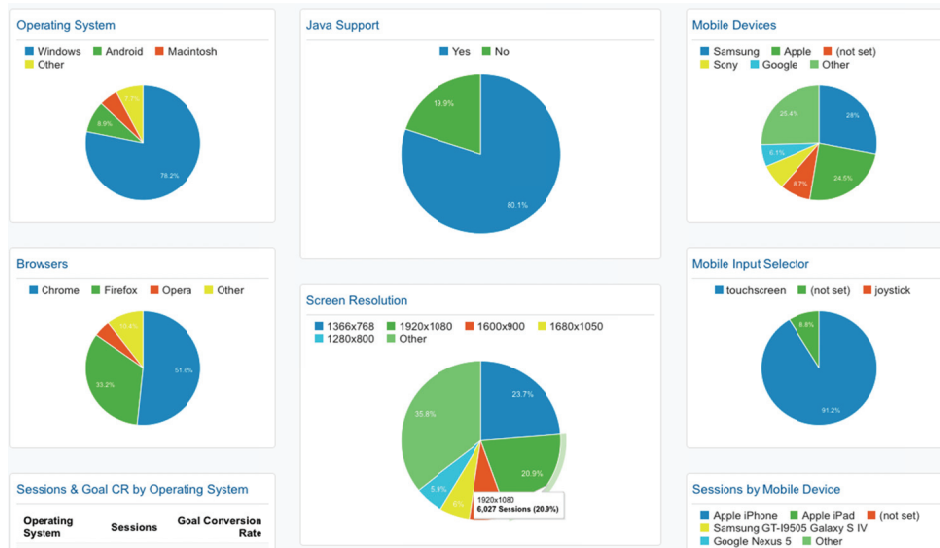
Dashboard dedicated to the aggregation of information from social networks facilitates the collection of data about the number of impressions delivered by social networks and the activity in the social data hub. The sessions can be illustrated with a graph broken down into the most popular sources of traffic. The social data hub imports data from the social networks which cooperate with the Google Analytics tool. Presently, the social data hub stores information from 14 social networks (Allvoices, Delicious, Diigo, Disqus, Echo, Google Groups, Google+, Hatena, Meetup, Pocket, Reddit, SodaHead, VKontakte, Yaplog).

Figure 7. Dashboard – social media



Another type of dashboards can be devoted to the gathering of information about the technical aspects of mobile devices and web browsers chosen by the internet site's viewers. Such set of data retains details about the type of operation system, the use of Java, the browser maker, the type of mobile device and screen resolution.

Figure 8. Dashboard – tech data



Conclusions

Management dashboards are now an integral part of the web analytics systems. Every dashboard which has been adapted can be made available and find applications in a different data environment.

Dashboards provide diverse knowledge and can be dedicated to different users. The authors characterized 6 panels available in the Google Analytics. Table 1 provides a summary of reviewed dashboards.

Table 1. Summary of reviewed Google Analytics dashboards

No.	Name of dashboard	Brief characteristic	Focused on	Dedicated to	Monitoring brand	Monitoring paid campaign
1	2	3	4	5	6	7
1	Dashboard – organic traffic	Supplying information about organic traffic coming from search engine	Traffic	Web traffic analyst	No	No
2	Dashboard – paid traffic	Supplying information about paid traffic coming from search engine	Traffic	Web traffic analyst	No	Yes, dedicated
3	Dashboard – brand engagement	Demonstrating whether paid and unpaid keywords used for the viewing of a site contained the name of the brand	Social media	Social media analyst	Yes, dedicated	Yes

Table 1 cont.

1	2	3	4	5	6	7
4	Dashboard – brand monitoring	Presenting social media traffic and observing how recognizable a given brand is due to the organic traffic	Social media	Social media analyst	Yes, dedicated	Yes, indirectly
5	Dashboard – social media	Delivering collection of data about the number of impressions delivered by social networks and the activity in the social data hub.	Social media	Social media analyst	Yes	Yes, indirectly
6	Dashboard – tech data	Showing information about the technical aspects of mobile devices and web browsers chosen by the internet site's viewers	Users' devices parameters	Developer	No	Not applicable

Apart from the dedicated dashboards that can be made ready in Google Analytics, these kinds of dashboards are employed in other SaaS solutions for the assessment of web traffic and visibility in search engines like, for example, SearchMetrics or Semrush. Management dashboard provides essential data which allow to monitor the effectiveness of the undertaken promotional activities that engage various channels of the internet traffic.

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KOKPIT MENEDŻERSKI W MONITOROWANIU SKUTECZNOŚCI KAMPANII REKLAMOWYCH NA PRZYKŁADZIE GOOGLE ANALYTICS

Streszczenie: Artykuł omawia temat użycia kokpitów menedżerskich w śledzeniu skuteczności kampanii e-marketingowych. Autorzy przedstawili rolę e-marketingu we współczesnej organizacji, zdefiniowali kokpit menedżerski i kluczowe wskaźniki wydajności w kontekście e-marketingu. W części praktycznej zostały przedstawione panele informacyjne Google Analytics oraz zaprezentowano studium przypadku kampanii reklamowej z ich wykorzystaniem.

Słowa kluczowe: kokpit menedżerski, e-marketing, Google Analytics.