



## Advertising Strategy Management in Internet Marketing

**Iryna Voronenko\***

\*Corresponding Author, Department of Information Technologies, National University of Life and Environmental Science of Ukraine, Kyiv, Ukraine. E-Mail: voronenkoiryyna@gmail.com, ORCID 0000-0002-1839-7275

**Maryna Nehrey**

Department of Economic Cybernetics, National University of Life and Environmental Science of Ukraine, Kyiv, Ukraine. E-Mail: marina.nehrey@gmail.com, ORCID 0000-0001-9243-1534

**Serhiy Kostenko**

Department of Information Technologies, National University of Life and Environmental Science of Ukraine, Kyiv, Ukraine. E-Mail: kostenkos132@gmail.com, ORCID 0000-0002-8196-498

**Iryna Lashchyk**

Department of Finance, Lviv Polytechnic National University, Lviv, Ukraine. E-Mail: iryna.i.topii@lpnu.ua, ORCID 0000-0001-5912-4276

**Viktoria Niziaieva**

Department of Regulatory Policy Problems and Entrepreneurship Development, Institute of Industrial Economics of the National Academy of Sciences in Ukraine, Kiev, Ukraine. E-Mail: viktoriyanizjaeva@gmail.com, ORCID 0000-0002-2042-683X

## Abstract

Information technology is becoming a basic tool for many industries, as well as creating an opportunity for direct active communication of all market participants, which significantly increases competition. As a result, customers have a very large selection of goods and services, fairly easy access to them, and significant price diversification. All this leads to new requirements for modern marketing. Modern marketing significantly changes not only the functions but also the approaches to business processes. A highly competitive environment requires companies to use a system of interconnected marketing tools using an integrated

marketing approach. The paper is devoted to investigating advertising prices and advertising strategies of Google. The list of major Google products is analyzed. The relevance of advertising strategies to goals, ad placement, message creation, budget constraints, and ad delivery is determined. The difference in advertising prices in different countries has been studied. The cost per click analysis of European countries is carried out. Using the DEA model analyzed advertisement efficiency by VRS technology and input-oriented efficiency for European countries.

**Keywords:** Advertising, Data Envelopment Analysis, Google, information management, Internet marketing, price, strategy.

## Introduction

Nowadays world is characterized by very rapid changes, active technological development, and a high level of uncertainty. Information technology is becoming a basic tool for many industries, as well as creating an opportunity for direct active communication of all market participants, which significantly increases competition. As a result, customers have a very large selection of goods and services, fairly easy access to them, and significant price diversification. All this leads to new requirements for modern marketing. Modern marketing significantly changes not only the functions but also the approaches to business processes. A highly competitive environment requires companies to use a system of interconnected marketing tools using an integrated marketing approach.

The history of advertising began in the ancient world. Over its millennial history, it has evolved qualitatively, going from informing to persuasion, from persuasion - to the production of a conditioned reflex, from the production of a reflex - to the subconscious suggestion, from the subconscious suggestion - to the design of a symbolic image (Khaminich. & Horbatko., 2015).

It should be noted that at the legislative level, advertising in the United States has been enshrined for over 100 years, starting with The Federal Trade Commission Act of 1914. In 1984, the European Economic Community passed the Council Directive 84/450 / EEC which aims to protect consumers, persons carrying on a trade or business or practicing a craft or profession, and the interests of the public in general against misleading advertising and the unfair consequences thereof (1984). The Directive also defines advertising, which means the making of a representation in any form in connection with a trade, business, craft, or profession in order to promote the supply of goods or services, including immovable property, rights, and obligations.

According to the International Telecommunication Union, in 2019 the number of individuals using the Internet was 51% of the world's population. It should be emphasized that this figure varies significantly by region of the world, for example, North America - 88%, Central Europe and the Baltics - 80%, East Asia & Pacific - 56% (2019). At the same time, it should be noted that the dynamic development of the Internet has led to the dynamic growth of Internet advertising. As a result, the structure of the advertising market has changed radically in most countries of the world. Moreover, today more than half of the world's advertising spending is focused on online advertising, and the share of spending on both television and newspaper advertising has decreased significantly.

## **Methodology**

In recent years, the increase in digitalization and the active transition of many processes online in connection with the pandemic COVID-19 has led to an increase in the supply of the Internet and changes in advertising. However, there are significant differences in the effectiveness of advertising in different countries. We will evaluate its effectiveness in different countries using Data Analysis.

An important stage in the evolution of approaches to measuring productivity was the study on the concept of economic efficiency, the essence of which is the ratio of actual productivity to the maximum possible (Farrell, 1957).

According to this interpretation, each set of market inputs is characterized by a maximum of output, and the actual values of market outputs represent the degree of achievement of this maximum. Productions that provide the maximum market output per unit of market input, acquire the status of "standard" and form the "limit of productivity". The task of the analysis is to compare countries in terms of efficiency of their resource base and determine the distance between the enterprise and the "productivity limit". To do this, the following methods are used:

- parametric - provide for the formation of the production function for production-standards by methods of mathematical statistics (construction of the stochastic limit of production capacity; adjusted least squares);
- non-parametric - determine the limits of production capacity (maximum market yields) for any combination of resources (Data Envelopment Analysis - DEA).

Data Envelopment Analysis (DEA) model was developed by Michael Farrell in 1957. In his study (Farrell, 1957), M. Farrell evaluated the effectiveness of one unit of the final product with one input and one output.

Data Envelopment Analysis is based on the use of a linear programming apparatus. This method eliminates the influence of the performer on determining the level of weight of each

market entry and exit, which eliminates the risk of subjectivity in the assessment. The efficiency criteria in the DEA methodology is the achievement of Pareto's optimum, which is determined by the maximum possible volume of production at the existing technological level and resource provision. The DEA method allows: to determine the aggregate indicator for each studied object in the framework of the use of market inputs to market outputs; take into account environmental factors; not be limited to the functional form of dependence between inputs and outputs; identify priority areas for productivity growth; assess the necessary changes in market inputs / outputs that would allow bringing the object to the efficiency limit.

Formally, this algorithm involves solving the optimization problem (1):

$$\begin{aligned}
 e_0 &= \frac{\sum_{j=1}^s u_j y_{j0}}{\sum_{i=1}^r v_i x_{i0}} \rightarrow \max \\
 \frac{\sum_{j=1}^s u_j y_{jm}}{\sum_{i=1}^r v_i x_{im}} &\leq 1, \quad m = \overline{1, n} \\
 u_j &\geq 0, \quad j = 1, 2, \dots, s, \\
 v_i &\geq 0, \quad i = 1, 2, \dots, r,
 \end{aligned} \tag{1}$$

where  $e_0$  is the efficiency of the researched enterprise;  $n$  is the number of studied objects;  $r$  is the number of objects included in the comparison range;  $s$  is the number of objects that were selected for the latter after comparison;  $x_{i0}$  - the value of the  $i$ -th market range of the studied object;  $y_{j0}$  - the  $j$ -th market type of the studied object;  $x_{im}$  - the  $i$ -th input factor of the  $m$ -th object;  $y_{jm}$  - the  $j$ -th output of the  $m$ -th object;  $v_i$  is the value of the range of different objects;  $u_j$  is a significant number of analyzed objects  $j$ .

In the model, the target function is aimed at proportionally increasing the market outputs of the studied enterprise to the limits of efficiency, a variant of this model is called the output-oriented model. The application of DEA results in dynamics allows us to investigate the movement of the efficiency limit in time and to draw a conclusion about the trajectory of development of objects (industry as a whole): progressive or regressive. This method allows us to determine the reasons for changes in performance: improving the quality of management, optimizing the scale of the object, improving technology, and so on.

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## Results and Discussion

Digital technologies are significantly changing approaches to doing business, developing company strategies and business processes. Research on modern approaches to online marketing has been conducted in many papers. Systematic review of different types of online marketing methods, such as email marketing, social network marketing, in-game marketing and augmented reality marketing, and so on (Hajarian et al., 2021). Analyses online relationship marketing in terms of its conceptual foundations, evolution in business practice, and empirical insights from academic research (Steinhoff et al., 2019). New business models and digital marketing techniques applied to them (Saura et al., 2019). The effectiveness of technology-based marketing strategies is measured (Fullerton et al., 2019). Differences between the Outbound Marketing strategy and the Inbound Marketing strategy are explained (Dakouan et al., 2019). Destination Management Organizations are effectively exploiting the potential of the digital world and are considering online information in the management model of tourism destinations (Dinis et al., 2020). Key trends relevant to digital advertising, such as a move towards data-driven marketing communication, the impact of artificial intelligence on advertisement production, and the effect of big data on advertisement execution are identified (Lee et al., 2020). He presents six propositions that are posited concerning the management of future digital advertising and the methods and systems for delivering targeted advertisements to consumers.

The main purpose of modern methods of online advertising is to increase the effectiveness of advertising, which will ultimately increase the profitability of the company. Many researchers have studied various techniques of online advertising in terms of their effectiveness. A comprehensive study of online advertising is presented (Liu-Thompkins, 2019). Return on investment (ROI) as the most appropriate metric applicable in the evaluation of the effectiveness of online communication tools is proposed (Krivanova et al., 2019). The inefficiencies created by externalities and uncertainty when information is symmetric between advertisers and publishers (Berman, 2018). Targeting precision of Internet-based targeted advertising investigated (Jiang et al., 2020). Comparison of the classic banner ads, and 2D ads placed in a 3D virtual world is shown (Berki, 2018). The threats and potential privacy attackers in this scenario of online advertising analyzed (Estrada-Jiménez et al., 2018, Malyarets et al., 2021). Some cases of using machine learning methods for advertising efficiency assessment are presented (Babenko et al., 2020, 2021). The significance of online advertising effectiveness in terms of attitude towards ads, ability to recall ads, and frequency of clicking ads in explaining purchase decision discussed (Nizam et al., 2018).

Researchers have also studied the phenomenon of the dominant company in the online advertising market - Google. Graham describes how Google's model of advertising reflects and encourages wider changes in capitalism by contemporary Post-Fordist arrangements of labor (Graham, 2017). How problems related to speed and data can distort competition in other

electronic trading markets, how lawmakers have monitored these markets for conduct they frown upon in equities trading, but how advertising has largely remained off the same radar have discussed (Srinivasan, 2020). The economic theory behind multi-sided platforms of online advertising and found a relation between Google and other firms in the sector has analyzed (Milosevic). Paper examines Google's role in the digital advertising market (Morton et al., 2020). Justification of the choice of the tariffs determination method is presented (Granaturov et al., 2015, 2016).

According to the average Alexa rank, the most popular site in the world is Google Search, where the user spends an average of 15 minutes 49 seconds a day and opens 17.14 unique pages. For clarity in Fig. 1 lists the most popular sites in the world as of January 2021.

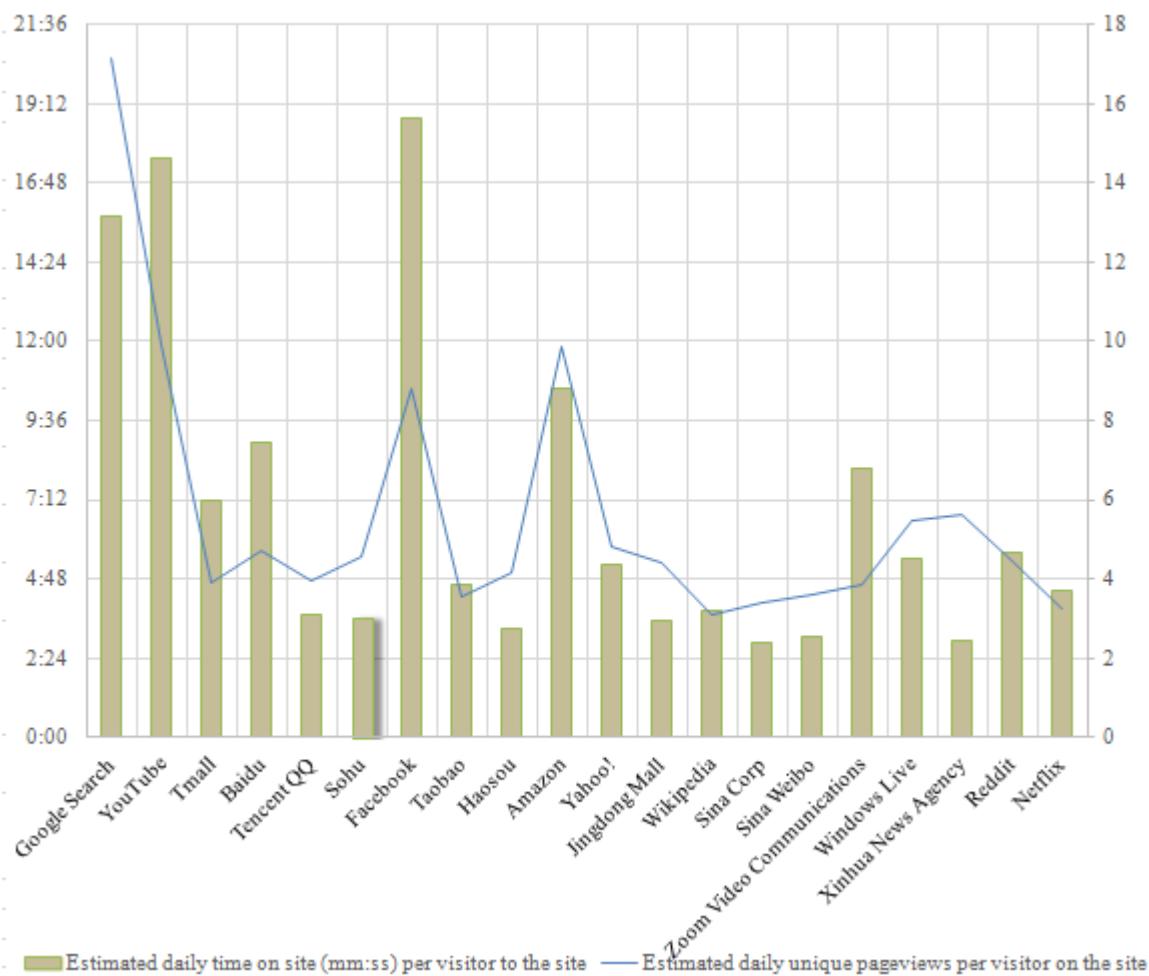


Fig. 1. The most popular sites in the world

The leader of the most popular sites Google was founded in 1998. The company has set the goal of organizing the world's information and making it universally accessible and useful (2021). In total, Google provides its users more than 110 products, the main of which are

grouped into 8 areas “Search and Explore”, “Watch & Play”, “Devices made by Google”, “Use everywhere”, “Talk & Text”, “Stay organized”, “Work smarter”, “Grow your business” (Fig. 2).

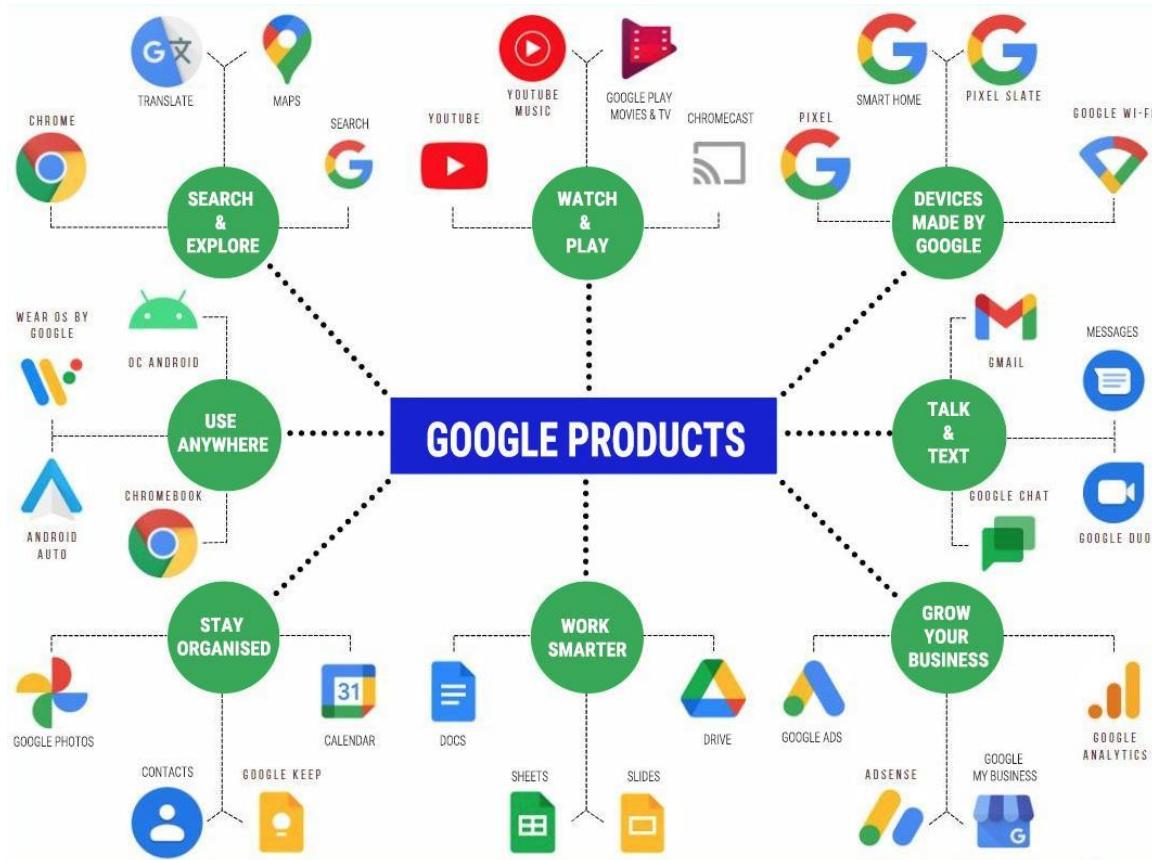


Fig. 2. Google Main Products List

In addition to the main products, Google also offers users the following: Android TV, Cardboard, Chrome Enterprise, Connected Home, Drawings, Earth, Finance, Forms, Gboard, Google Alerts, Google Assistant, Google Cast, Google Classroom, Google Cloud, Google Expeditions, Google Express, Google Fit, Google Flights, Google Fonts, Google Groups, Google Meet, Google One, Google Pay, Google Play, Google Play Books, Google Play Games, Google Shopping, Google Store, Google Street View, Google TV, Print, Hangouts, News, Pixelbook Go, Play Protect, Podcasts, Scholar, Sites, Stadia, Tilt Brush, Travel, Voice, Waze, YouTube Kids, YouTube TV. Special proposals for business are AdMob, Blogger, Business Messages, Chrome Enterprise, Data Studio, Google Assistant, Google Cloud, Google Digital Garage, Google Domains, Google Enterprise Search, Google Manufacturer Center, Google Marketing Platform, Google Merchant Center, Google Podcasts Manager, Google Shopping, Campaigns, Google Trends, Google Web Designer, Google Workspace, Local Inventory Ads, Optimize, Pixel for Business, Search Console, Surveys, Tag Manager, Waze Local. Special proposals for developers

are App Testing, Cloud Computing, Devices, Engagement, Game Services, Growth, Maps + Location, Messaging + Notifications, Monetisation, Monitoring, Payments, Sign in + Identity, Storage + Sync.

In addition to a large number of products, Google has also developed a strategy for placement and promotion and advertising depending on goal setting, ad placement, message creation, budget limits, and ad delivery. The goal of advertising may be to increase the number of calls, visits or attract customers to the website.

As for the advertising strategy, depending on the available goals, Google offers to choose one of the five strategies:

- A. If a company wants customers to take direct action on its site, and it is using conversion tracking, then it may be best to focus on conversions – “Focus on conversions with Smart Bidding”.
- B. If a company wants to generate traffic to its website, focusing on clicks could be ideal for it. Cost-per-click (CPC) bidding may be right for its campaign – “Focus on clicks with CPC bidding”.
- C. If a company runs video ads and wants to increase views or interactions with its ads, it can use cost-per-view (CPV) or cost-per-thousand-impressions (CPM) bidding – “Focus on visibility”.
- D. If it is important for a company to increase the number of views of video ads or the number of interactions with them - “CPV or CPM”.
- E. If it is important for the company to increase the awareness of the product or brand - “Price per view”.

A comparative analysis of which is given in table 1 (2021).

Table1. Google advertising strategy

Focus	Goal achievement	Strategy	Strategy description
Focus on conversions with Smart Bidding	Increase Conversions: Smart Bidding	Target CPA	Allows you to increase the number of conversions for an established price
		Target advertising ROI	Helps increase conversion value for an established advertising ROI
		Maximum conversions	It is advisable to use if the company want to get the maximum conversions within the budget and at the same time not indicate the price per conversion yourself
		Maximum conversion value	The strategy with which it is possible to get the maximum conversion value within the budget without specifying the ROI on the ad
		Optimized CPC	The system will automatically adjust bids to ensure the highest possible number of conversions. This strategy can be used in addition to manual bidding.

Focus on clicks with CPC bidding	Increase the number of clicks: bidding CPC	Maximum clicks	Strategy with automatic bidding per click. Allows the company to select bids that will maximize the number of clicks without overspending within a given average daily budget
		Manual CPC	Allows the company to set its own maximum CPC, including setting different bids for each ad group in a campaign, as well as for individual keywords and placements
Focus on visibility	Increased visibility	Target Impression Percentage	Bids are automatically set so that ads appear at the top-most position, at the top, or elsewhere on the Google search results page.
		Target CPM	Allows you to maintain the average CPM for a campaign above or below a given target (while the cost per impression may vary).
		Visible CPM	This strategy involves manual bidding. It is advisable to use it to increase brand awareness.
Focus on number of views of video ads	Increased visibility	CPM	This strategy pays for ad impressions on YouTube or Display Network.
Focus on views or interactions (for video ads only)	Increase in views or interactions	Cost Per View	Payment is made by the specified maximum amount only if the user watches the commercial or interacts with it, for example, clicks on the overlay

Note that the price for Google advertising varies greatly from country to country and region to region. The average paid search advertising based on the average local cost per click (CPC) in 2019 for 101 countries was 1.04 USD, the average CPC (Display network) - 0.24 USD. Similar figures for 35 countries in Europe were \$ 1.09 and \$ 0.26, accordingly, of which CPCs were over \$ 2 in Austria, the United Kingdom, Switzerland, and Italy. At the same time, in 9 countries of the Europe region (Serbia, Ukraine, Slovenia, Moldova, Latvia, Montenegro, Lithuania, Russian Federation, Luxembourg) the CPC was less than 0.5 USD. Among all countries in the world, the highest CPC was in the United Arab Emirates (2.9052 USD), the lowest in Serbia (0.1345 USD). CPC and CPC (Display network) for the world as a whole and the region of Europe are shown in Fig. 3 and Fig. 4.

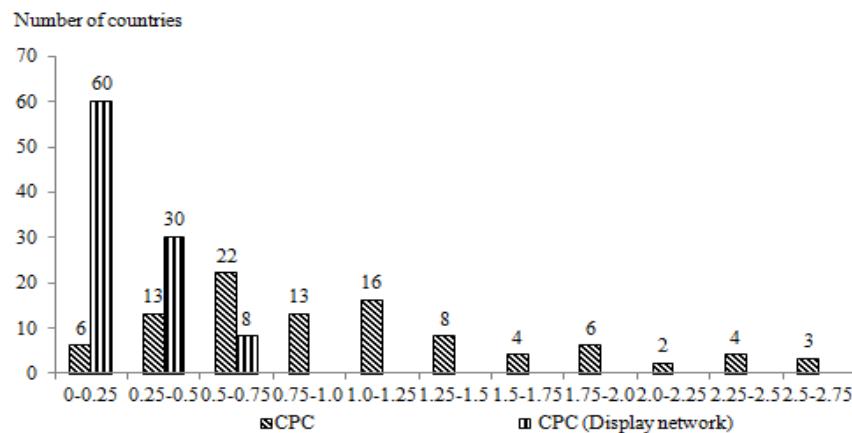


Fig. 3. World CPC and CPC (Display network)

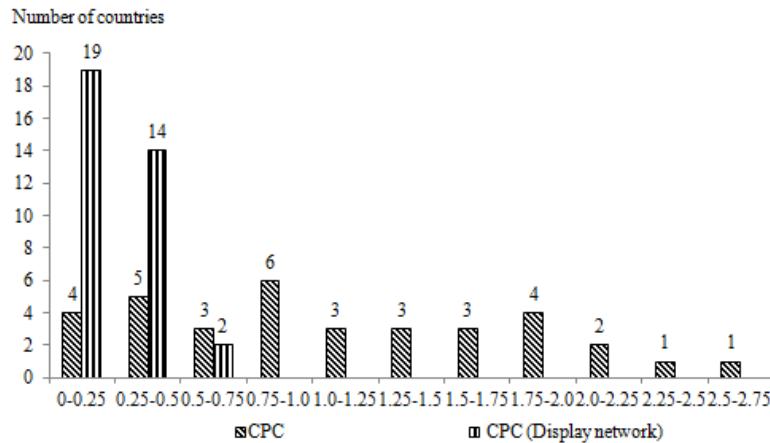


Fig. 4. European CPC and CPC (Display network)

In addition to the difference in CPC and CPC (Display network) by country, there is a significant difference in industry (Berry, 2019). Thus, CPC is the most expensive for the category "Legal" (6.75 USD) and "Consumer Services" (6.4 USD), and the cheapest for "Ecommerce" (1.16 USD). For CPC (Display network), the most expensive category is "Dating and Personals" (\$ 1.49), the cheapest is "Travel and Hospitality" (\$ 0.44) (Fig. 5).

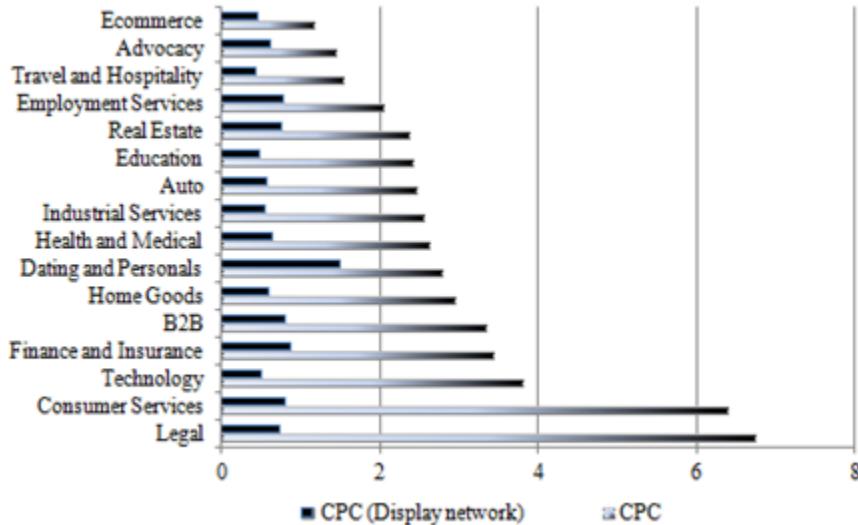


Fig. 5. World CPC and CPC (Display network) by industry

## Data Envelopment Analysis

DEA model that analyzes advertisement efficiency using VRS technology and input-oriented efficiency for European countries. Inputs of model are GDP per capita 2019, Global Competitiveness Index 2019, Network Readiness Index 2019, Individuals using the Internet (% of population), Fixed broadband subscriptions (per 100 people). Output of model is average CPC 2019 (Search network). The results of the simulation are shown in Table 2.

Table 2. Data Envelopment Analysis results

Eff range	Number	%	Countries
$0.7 \leq E < 0.8$	8	25,0%	Denmark, Netherlands, Luxembourg, Sweden, Belgium, France, Norway, Spain
$0.8 \leq E < 0.9$	12	37,5%	Finland, Iceland, Slovenia, Germany, Poland, Lithuania, Switzerland, Ireland, Latvia, Russian Federation, Hungary, United Kingdom
$0.9 \leq E < 1$	6	18,8%	Romania, Portugal, Serbia, Bulgaria, Croatia, Greece
$E = 1$	6	18,8%	Ukraine, Moldova, Albania, Turkey, Italy, Austria

The simulation results showed that the efficiency of the advertisement has range from 0.73 (for Denmark) to 1 for Ukraine, Moldova, Albania, Turkey, Italy, Austria. 6 countries of Europe have the efficiency of 0,9 and more (Romania, Portugal, Serbia, Bulgaria, Croatia, Greece).

The results of the efficiency evaluation allow us to conclude that many countries have significant potential for improving advertisement efficiency

## Conclusion

The paper presents a generalized analysis of the list of products and advertising strategies for Google Search. According to Alexa rank, this is the most popular site in the world. It is emphasized that on this site, on average, the user spends an average of 15 minutes 49 seconds a day and opens 17.14 unique pages, which creates a huge platform for advertising services. In total, Google provides its users more than 110 products and offers five advertising strategies depending on goal setting, ad placement, message creation, budget limits, and ad delivery, which focus on: conversions with Smart Bidding; clicks with CPC bidding; visibility; the number of views of video ads or the number of interactions with them - "CPV or CPM"; the awareness of the product or brand - "Price per view". It is determined that Google advertising varies greatly from country to country and region to region, the average local cost per click (CPC) in 2019 for 101 countries was 1.04 USD. Among all countries in the world, the highest CPC was in the United Arab Emirates (2.9052 USD), the lowest in Serbia (0.1345 USD). In addition to the difference in CPC and CPC (Display network) by country, there is a significant difference in the industry.

Further research, in our opinion, should focus on the formation of detailed step-by-step recommendations for choosing the optimal Google advertising strategy for the user depending on goal setting, ad placement, message creation, budget limits, and ad delivery. Besides, it will be useful to summarize the advertising strategies and advertising prices offered by other websites that are leaders in the number of time users spend on it and compare them with each other.

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