jamk.fi

Main Demand Side Platforms: descriptions and analyses

Evgenia Afanasyeva

Bachelor's thesis
March 2017
International Business
Degree Programme in Business Administration

Jyväskylän ammattikorkeakoulu
JAMK University of Applied Sciences

jamk.fi

Description

Author(s)	Type of publication	Date
Afanasyeva, Evgenia	Bachelor's thesis	March 2017
		Language of publication: English
	Number of pages: 40	Permission for web publication: x

Title of publication
Main Demand Side Platforms: descriptions and analyses

Degree programme
International Business

Supervisor(s)
Kujala, Irene

Assigned by
Pixelads Media

Abstract

The objective of the thesis is to suggest the most suitable demand-side-platform partners for the case company, Pixelads Media. The research task is to analyze the key features of demand-side-platforms: their interfaces, reporting, optimization capabilities, support teams' efficiency and integration possibilities. In addition, short descriptions of the demand-side-platforms are provided.

Desk research is implemented and secondary data is collected from reliable sources. This method is chosen as it is considered the only way to obtain reliable information about the topic before dealing with the companies. Feedback reviews are analyzed, and information concerning the needed features is extracted and transformed in a convenient form in order to see their strong and weak aspects. After this, a quantitative approach, descriptive statistics, is used in order to calculate the results in such a numerical way that would clearly present the outcome.

The results show which demand-side-platforms have the largest set of features that were reviewed in a positive way. In addition, the results are summarized in a table presenting the strong and weak components of the platforms. The information collected in the study can be used when Pixelads Media wants choose which demand-side-platform they would like to cooperate with.

Keywords/tags (subjects)
dsp, advertising, targeting, online services, internet, real time bidding, rtb

Miscellaneous

Contents

1 Advertising on the Internet

Advertising is a marketing tool used in order to attract potential customers to purchase a particular product. Moreover, it is also an instrument helping a company to establish a brand image through permanent or temporary presence in the various kinds of media: television, radio, newspapers, magazines and many others. (Yuan 2012, 4.)

The Internet takes one of the most important roles in business nowadays. Internet users surf the internet for the any possible kind of information, products and services and have online purchasing possibilities. Many more businesses have their representations on the internet in the form of a website because it is an effective way to be connected with the customers and to find new ones with the help of internet advertising. The internet gives an excellent opportunity to reach potential customers among the internet users.

Beyond any doubt, each company wants to establish as effective an advertising campaign as possible and reach the targeted audience. As a result, online advertising has been developing widely. The example of that fact can be the Real Time Bidding Systems (RTB from here on) technology. The RTB is the most modern advertisement system which is basically an auction in real time for a display opportunity. (Fernandez-Tapia 2015, 1-2.)RTB is focused directly on the shows to target visitors, not planning to reserve advertising space on certain sites. Each show is redeemed for less than a second (at the time the page is loaded), and the RTB system immediately conducts an auction. As a result, the best deal by advertisers appears on the user's display, which is the most interesting for them.(Real Time Bidding 2016)

1.1 Real Time Bidding: Demand Side Platforms working principles

The RTB is a technology used in internet display advertising where advertisers have a possibility to target users extremely fast and accurately according to their browser search history as well as information they have on the Internet. The targeting, in case of RTB, is behavioral and focuses on the user data rather than contextual. (Fernandez-Tapia 2015, 1-2.) Contextual advertising is a type of Internet advertising based on

the content of a website that users visit. The contextual ad system scans a website and chooses an advertisement matching the website's text key words and then displays it. (Bagherjeiran et al. 2015.)

The RTB system is an exchange platform where three parties meet: the advertiser, publisher and user. The advertisers decide how much they are ready to pay for having their advertisement shown to a particular user. The publishers sell their websites' free spaces for showing the advertisement in the form of real time auction. The users are objects of the bidding, and those who see the advertisement.

The principle of an RTB process is the following: a user is surfing through the internet and visiting a web page which has a special space for advertisement - a banner mostly. This particular moment triggers the RTB technology. The exchange has preliminary data about users based on their cookies, and there is always a possibility to buy information from the Data Management Platform (DMP from here on) - a technological platform with collected and structured users' data. The auction starts, based on these items of knowledge and bids, and lasts for a few milliseconds. The key moment is that the system already knows the user by tracking his internet history with the help of special tools (browser and social network data, cookies). This is the job of the Demand Side Platform (DSP from here on) that is "the brain" of the RTB system collecting information about the users and analyzing their behavior and making predictions based on the bought users' data. These users are the target audience of the auction. (Real Time Bidding 2016.)

Advertisers should use a Demand Side Platform in order to participate in an RTB technology auction. The DSP is advertisers' campaign management online service where advertisers are provided with special features for buying advertisement spaces in real time. DSP companies have a particular computer-based technology for media buying automation across different sources. With the help of DSP, advertisers can buy ad placements as well as target the audience they need in real time. All this process takes a few seconds while the potential customers use their browsers and visit websites. DSP can target audience across various channels, such as mobile, display, video, social and search.

The main purpose of DSP is to buy ad placements at the minimum price and to show advertisements to those users who have as perfect a match as possible with the advertiser's requests. (Demand Side Platform 2016.) DSPs work with the Supply/Sell Platforms (SSP from here on) within the RTB technology. SSPs offer the sale of an advertising inventory via the RTB. The purpose of the SSP is to sell more of the expensive ad places that publishers have on their websites. The SSP and DSP have an information exchange where the SSP receives the targeted audience requirements and the advertisers' rates. The SSP, in its turn, announces the winner and sends its advertisement to the ad network. Thus it becomes possible to orientate the media planning directly to the target audience. (Sell-Side Platform (Supply-Side Platform) 2016.)

1.2 Case company Introduction

Pixelads Media, based in London, is an affiliate network with a global coverage that serves publishers and advertisers. Advertisers place their marketing tools to promote on Pixelads Media website, and publishers, in their turn, take these marketing tools to promote with the help of their inventories. They provide global coverage, high-quality advertisement, timely payments, detailed real-time reports, personal account manager for publishers as well as different campaign payment models, smart targeting solutions, auto-optimization, security from frauds and detailed real-time reporting for advertisers. (Pixelads media 2017.) The main process taking place in the network is that the publishers choose what they want to advertise and the advertisers accept/decline their requests depending on the publisher's characteristics.

They have also recently started functioning as an SSP, which means that they help publishers to manage and sell their inventories effectively in auctions. Pixelads helps publishers to participate in the bidding process on the DSP. Pixelads serves now only display inventories on desktops and mobiles but they are planning to run video content as well. (Bigdeal platform 2016.)

1.3 Research problem and objectives

The research process starts from the management-decision problem defining that helps to understand the context where the problem came from. The management-decision problem is action-oriented and usually asks what the decision-maker needs to do. (Malhotra & Peterson 2006, 45-46.)

Pixelads Media has been expanding their capabilities and builds themselves as a strong SSP. In order to succeed in the business, they need to work with reliable DSP companies where they can run bidding on. Pixelads need the research because they were interested in the collecting information about DSPs in business in order to make a decision of cooperation with some of them.

After defining the management-decision problem, the marketing research problem can be presented. The marketing research problem has an information oriented core: it asks what information is needed and how it can be obtained. (ibid., 45-47.) The marketing research problem of the study is to obtain information of service quality of the main DSP companies with the help of users' reviews analysis and utilize them to evaluate service quality of DSP companies.

Researh Objective and Questions

The research objective is to analyze and suggest most potential DSP partners for the case company which have high-quality features they provide. The aim is to understand how taking advantage of users' reviews helps the case company in finding suitable partners. By doing that I have to find and describe most reliable, effective and popular DSP companies. In this thesis research was implemented to build biggest DSPs' companies portfolios as well as analyzing feedbacks in order to see strong and weak parts of them. The study expanded my knowledge of the RTB technology field – DSP area especially. This particular subject is applicable in the future as I consider myself working in the internet advertising business.

The conducted research should answer following questions:

1. What are the main characteristics of the main DSP companies?
2. How do users of DSPs assess the main DSP platform features

3. How can the case company evaluate and select suit able DSP partners based on users review?

Question number one requires finding out basic information about the DSP companies taken from their official websites. The answer familiarizes the reader with the main DSPs. Question number two requires revealing how the users of DSPs assess the platform's features. Finally, question number three comes from the outcome of question number two where the recommendations are based on the analysis result. The descriptive statistics analysis method is used, retrieving quantitative information from secondary data collected, in order to answer the questions in Chapter three. Chapter four represents results that were obtained and they are discussed in Chapter five.

In the chapter 2 the theoretical framework is presented where establishment of the internet services, new business models, new revenue models, segmenting and targeting are discussed. Topics are related to DSP companies as those businesses provide services on the internet using new business and revenue models helping clients to achieve target audience. In the chapter three, the descriptive statistics methodology choice is explained which is followed by research results and discussion chapters. The results are represented in figures and tables for the convenience.

2 ESSENTIALS OF THE SERVICES ON THE INTERNET

2.1 Services on the Internet: establishment

The Internet is an incredible invention which helps people to gain access to enormous amounts of information and knowledge. Nowadays, the internet is also a greater global marketplace than it has ever been before for individuals as well as for businesses. Beyond any doubt, the Internet has changed the way how people do business now. Internet is something that people use daily and spend a great deal of time on. Therefore, it has eventually become a place where businesses of all sizes try to boost their sales with the help of different types of advertisement.

The Internet was invented in the 90's by Tim Berners Lee according to Kleinrock (2008). First, e-commerce was forbidden on the internet because it had other purposes of existing, in other words, people could not use the internet for commercial purposes, and, finally, it was allowed only in 1991 by the National Science Foundation (NFC), which brought the growth of the internet and ecommerce. The NFC controlled the Internet and charged a domain name registration fee until 1995. The number of domain names grew from 120,000 to 2,000,000 within 3 years, and from that point the NFC stopped controlling the Internet. (Kleinrock 2008, 8.)

From the very beginning of the Internet era, there were already concerns regarding online shopping. Netscape, a computer services company and a browser itself, created a security protocol (SSL – Security Socket Layers) which helps to protect private information on the Internet. It meant that a browser was able to detect if a website had an SSL protocol, in other words, if it was reliable and secured or not. The SSL security protocol is still the most reliable encryption on the Internet nowadays. (Leiner 1999, 58.)

After some time, the “dotcom bubble” took place in the Internet history in the late 1990s. Dotcom is a term that has been used and is used today in relation to companies whose business model is based entirely on the Internet. The “dotcom bubble” phenomenon characterized the fast increase in the investment in internet-based companies fueled by the equity market. It created a huge bubble in the stock market. The reason was that companies were fascinated by a novelty that did not take reasonable business strategies under consideration. They spent huge amounts of money on involving new users as potential customers, which did not bring good results in the end. As a result, many people became bankrupt in the beginning of the 2000s. (Investopedia. Dotcom bubble 2016.)

The modern e-commerce has been growing fast since 1995, and it pushed technology to make Internet more accessible and convenient for people to use. Nowadays, we can see that basically all possible industries represent themselves on the internet. People can buy almost anything online and it works both for business-to-customers (B2C) and in the business-to-business (B2B) areas of business. More and more businesses implement their operations online, and companies are created to work particularly on the Internet. (Kleinrock 2008, 9.)

There is a wide use of mobile phones, web apps and social media among people, which brings various opportunities for tech start-ups nowadays. Small start-ups literally became a new era of business of the Internet – very small companies could earn billions of dollars if their product had success on the web market. As all the jobs in these companies are based on Internet technologies, the employees/team members can live far away from each other and never meet in reality either. These successful start-up companies are often sold for millions of dollars with the help of website brokers. Some business people are anxious that it can lead to a next "bubble" but as long as the ROI is substantial, it is not going to be stopped. (Kleinrock 2010, 30.)

2.2 New Business Models

DSP companies provide B2B services on the Internet for advertisers and SSPs companies as Pixelads Media does. Every organization has a theoretical design that describes how it earns money on a sustainable basis – a business model. A business model is used by physical organisation with zero digitalization (Curtis 2008, 208). The internet brought a new business model in use that is defined as a descriptive representation of the fundamental components of an organisation that operates on the internet. (Canzer 2005, 93.)The world of digital business is a complex and dynamic area that uses traditional business models and new ones simultaneously.

Internet technologies offer new ways of doing business, such as e-commerce. There is a connection between a new business model and technological development as technologies can facilitate new business models. The Google search engine created in 2003 was not only a technological invention but also a new business model leap. Google used the Adwords software to earn money from advertisers.(Al-Debei 2008, 1.)Major e-commerce business models can be:

Online retail is the business model where a company sells products on the internet: this kind of business can be a combination of traditional and electronic models as payments are usually done online, but the delivery service is a traditional opration.(Curtis 2008, 208-210.)

Brokerage model is the model where a digital brokerage company brings buyers and sellers together for goods and services exchange. Businesses generate revenue from

commission charges depending on the products sold and bought as well as from membership fees and selling advertising spaces. (Funk 2009, 57.)

Service provider model is the model where a company provides services online in the form of video or photo sharing or user-generated content. Google's applications, such as Maps and Docs are examples of the service provider model. Businesses gain profit from membership fees, subscriptions and advertising as well as from collecting personal data that can be used in direct marketing. (Laudon 2009, 23.)

Infomediary model is a model where collected information about internet users is sold for targeting purposes. The information is valuable for advertisers that seek for the potential customers. (Bhasker 2006, 59.)

Community provider model is a model where websites provide a digital environment for people to find other people with similar interests, share something with their friends, express opinions and interact socially. Social networks are the typical examples of this model. Businesses earn money from affiliate programs and advertising. (Funk 2009, chapter 5)

Content providers model is the model where information content (video, photos, music, articles, art) is distributed over the internet. Business makes money from subscription fees, membership fees or charging for single views. (Funk 2009, chapter 5)

E-procurement, or supplier exchange is a b2b form of buying and selling supplies and services on the internet. This is a system of connecting organizations and their business operations directly with suppliers. E-procurement is usually managed by special software for both parts' convenience. (Laudon 2009, 26.)

Distribution Channel Member Model is a model that helps to reduce wholesalers', retailers' and manufactures' costs. It can be implemented through close relations with customers and manufactures with the help of internet. (Funk 2009, chapter 5)

Portal Model is a model where websites are the providers of great amounts of information from the internet. Search engines are examples of this model, and they generate money through advertising and redirecting fees. (Canzer 2005, 94.)

Affiliation Model is a model where a person generates revenue by placing an advertising tool, a picture description or a video on the website. There can be direct rela-

tionship between the advertiser and publisher or they can work with the help of an affiliate network. (Funk 2009, chapter 5)

2.3 New Revenue Models used in the DSP Environment

Companies that decide to implement their business online should be aware of and explore new business revenue models in order to gain more profit and be strong competitors. This topic is especially relevant for companies using new business models delivering digital products and services such as DSP companies. According to Funk (2009), there are main models that are related to the previous chapter about new business models that can be used when a company provides services online:

Revenue from subscribing access to content, which means that revenue can be obtained from subscribers who have paid for the content access. It can be text information, music, video and other subjects that are interesting to people. The subscription period can vary from a month to a year depending on the website owner.

Revenue from Sponsorship of site sections or content types that usually have a fixed fee for a period during which a company wants to advertise a website channel or a section and pays for this.

Subscriber data access for e-mail marketing. As the website's owner might have a collection of email addresses of customers, it is possible to sell email space for advertising other products. Advertisers can pay for their product to be in the email. The email can be in a form of a newsletter or it can be a separate letter on behalf of the advertisement.

The following revenue sources come from pricing online media according to the research of Sharma (2015):

Revenue from ***pay-per-view*** access to a document, which means that a user pays for a single access to using a product. It can be music, a video or a document with a possibility to download it. The data can be protected with Digital Rights Management in order to prevent the distribution of the product.

Revenue from ***cost-per-mille*** (CPM where mille = thousands) means that a website can earn money from the number of visitors who have watched the advertisement. A website can generate revenue from displaying advertisements in the form of banners. Alternatively, advertisements can be served by a website owner himself or with the help of a third-party website – an ad network service.

Revenue from ***cost-per-click*** (CPC) means advertising on site, which indicates that the website owner earns money not just on the number of views but on how many times clicks are made. This advertising is usually delivered with the help of a third party website. Cost per click can vary from very low to rather high; everything depends on the advertiser's offer.

Revenue gained with ***cost-per-action*** (CPA) where the website owner gains profit for an item that is sold with the help of his advertising (cost-per-sale - CPS) or for a user's registration (cost-per-lead - CPL). The model fully depends on the advertiser's conditions.

Flat rate fee that is charged for the time that the advertisement is shown. The rate depends on the ad size and time of the day.

The represented revenue generating models are used by advertisers within a DSP. Advertisers are free to use a revenue method, but usually the advertising format influences the revenue method.According to the Interactive Advertising Bureau's (IAB) Advertising Revenue Report (2012), there are 9 online advertising formats available today:

Search where advertisers pay for linking their product to a specific search word/phrase. The best revenue methods are CPC, CPM and CPA.

Display/banner where advertisers pay for a space on the publisher's website to place a banner. The best revenue methods are CPM, CPC and CPA.

Classifieds is where advertisers pay for listing their services for sale. The best revenue method is the flat fee rate.

Digital video is where an advertisement appears at a particular moment in the video (before, after or during). The best revenue methods are CPM and CPC.

Lead generation where advertisers pay for a potential customer's data gathered by online companies via applications, surveys or registrations. The best revenue method is a price that was set by the company itself.

Rich media where advertisers pay for a display ad that allows users to interact with it. The best revenue methods are CPM, CPA, CPC and the flat fee rate.

Sponsorship is where advertisers pay for customable advertisements that can be banners, videos or rich media. The best revenue method is the flat fee rate.

Email where advertisers pay for spreading advertisements on the emails of potential customers in the form of banners, videos and links. The best revenue methods are: CPM, CPA, CPC and the flat fee rate.

Mobile where advertisers pay for advertisements shown on the smartphones in different forms, such as display ads, rich media, text messages, videos or searches. The best revenue methods are CPM, CPC and CPA.

2.4 Segmenting and Targeting

DSP platforms can often support various kinds of advertising formats. Whatever format is used, the main purpose is to target the audience as accurately as possible. One of the DSP functions is to analyze the audience that an advertiser needs to reach. It is implemented with the help of special technological software that can vary by targeting quality. A DSP helps to find out the targeted segment by using technology that provides user data including the geographical location, age, sex, interests (defined by search requests). (Demand Side Platform 2016) In this section the segmentation and targeting theory is presented because it is one of the essential DSP features.

2.4.1 Segmentation

Segmentation refers to separating potential or existing customers in different categories according to the particular criteria. As the market is full of individuals with

their own preferences, social status, income and other features, it brings us to the fact that they need to be treated according to these distinctions and, therefore, segmentation is about dividing customers into groups of people with similar needs, common features. Competent segmenting helps to increase profit by suggesting the product to the right group of people who are more likely to buy it according to their characteristics and needs. Moreover, there is a possibility to analyze company with the help of segmentation and add some new products in a product line as well as define areas where the company can better compete. There are various ways to separate consumers using different criteria; everything depends on the company's product, goals and marketing strategy itself. In order to implement market segmentation, it is necessary to define segment bases and determine what characteristics are important for each market segment. All variables inside of the criteria have a goal to identify if they have an impact on consumer behavior. Main customer segmentation criteria are following (McDonald, Dunbar 2012, 53-54):

Geographic segmentation assumes market division in geographical units. It can be divided by country or even more specific such as region, city or climate. The company can decide to operate in one or several geographical regions. (ibid., 49.)

Demographic segmentation assumes division in such variables as age, generation (X,Y,Z..), gender, marital status, family size, occupation, income level, education, ethnic background, religion. Demographic variables are the most popular factors for dividing customers in groups. One of the reasons is that preferences and consumption level often depend on demography as well as those factors are easy to identify. (ibid., 55.)

Psychographic segmentation assumes division by social class, lifestyle and personality type. Representatives of one demographic group can have absolutely different psychographic profiles. Lifestyle reflects what daily activities people do, what inspires them. This segmentation is one of the most effective one because people with similar lifestyles are often interested in the same products, for example, Fishermen are all interested in products for fishing; vegetarians are often interested in all kind of organic and natural products. (ibid., 55.)

Behavioral segmentation assumes division by customers' knowledge, relationships and nature of using the product as well as reaction. Upcoming events and celebrations, level of customers brand awareness, customer loyalty level, shopping style are the examples of events affecting customers' behavior. (McDonald & Dunbar 2012, 58.)

Benefit segmentation. It is important to know what benefits customers expect from the product, what is their need and what motivate them to buy it. Being aware of this can help companies to identify more business opportunities. The example of benefit distinction can be toothpastes with different functions. Each person is looking for particular toothpaste whether it is anti-cavity or whitening toothpaste. Benefit segmentation is one of the most important kinds of customer distinction, as it makes possible to satisfy customers' need and get profit. (ibid., 58.)

2.4.2 Targeting of the needed audience

When segmentation process is done, there is the time of choosing target segment and deciding what marketing strategy to use. The company can focus on the only one segment and become an expert and reach a market leader position. However, it is possible to choose several segments. There is another instrument – positioning that helps to differentiate product of the competitors by creating a positive impression of it. That could be done by adjusting product's attributes: quality, price... (De-Pelsmacker et al. 2001, 123.) Depending on the chosen targeted group, advertiser chooses appropriate advertising format to promote the product.

One of the targeting function is to decrease spends on advertisement by showing it to a particular group of people that can be potentially interested in the product. When a message, banner or contextual advertisement is shown to a targeted audience, it increases a website's conversion rate. There are various targeting methods: geo-targeting, time-targeting, theme-targeting and demographical targeting. Geo-targeting refers to targeting customers of a particular geographical area that can be a country, a region or a city. Time targeting refers to setting a particular time frame for

advertisement show (special period of a day or a week). Theme targeting refers to choosing an appropriate web-resource for advertisement placement. The place has to be related to a product essential core. Demographic targeting refers to choosing a gender and age of a potential customer. The better result can be reached with the use of several targeting methods at the same time. (Musykant 2009, 76-78)

3 Research Methodology

3.1 Research Design

Research approach and designs are fully depended on the given objective and questions of the study. Research design is the study framework or a plan guiding researcher in collecting and analyzing data. An appropriate research design helps to succeed in the study by meeting research objectives. The main issue is to know what kind of information the research aims to acquire. (Saunders, Lewis, & Thornhill 2009, 141-142.)

There are three research design categories: exploratory, explanatory and descriptive. The research objective is to suggest most suitable partners for the case company to be successful in RTB process. By doing that I have to find and describe most reliable, effective and popular DSP companies. In this thesis research was implemented to build biggest DSPs' companies portfolios as well as analyzing feedbacks in order to see strong and weak parts of them. Therefore descriptive design is implemented as the most suitable for this study. The core of this research is a description of particular characteristics of something being studied “to portray an accurate profile of persons, events or situations” (Robson 2002, 59).

One of research questions requires defining what DSP systems are the suitable for Pixelads by counting results by numbers, therefore, quantitative approach was used as well. In the research, the quantitative method is in the form of calculation of the amount of positive and negative answers as well as positive replies percent-

age.Quantitative research is research that is demonstrated and counted in amounts and quantities. It is based on facts and experiences can be checked and verified by the official data before the analysis. The data is not based on the personal opinions but facts. (Glynn, Dylan, Fischer & Kerstin 2010, 47) Descriptive Statistics are used to present quantitative descriptions in a manageable form. The detailed explanation of descriptive statistics analysis can be found in the chapter 3.3.

3.2 Data Collection Method

There are two data collection methods: primary and secondary data. Primary data is information gathered with via first-hand investigation. Primary data is usually collected with the help of interviews, surveys, experiments, questionnaires... (Eriksson & Kovalainen 2008, 77.)

Secondary data is information that was once collected to serve the purpose of a specific study, but is also suitable later on for the use of others. Secondary data is the foundation of primary data. Secondary data can be gathered from literature or any other sources (White 2010, 61.)

Secondary data was used in order to answer research questions of the research. The information was gathered from DSP companies' websites and a reliable G2Crowd source in order to ensure validity and credibility of the research. The method implemented was desk research which refers to obtaining information from already existing sources for reaching the research objective. Secondary data was used in the research as the information was taken from G2Crowd customers' reviews. The advantage of the secondary data is already available and ready to be evaluated. (Saunders et al. 2009, 272.) The reason of choosing this method is that this particular source contains real verified users' feedbacks after using the platform. In order to obtain the relevant feedbacks, user role (user) and category (sell-side-platform) were selected to filter the results.

The period of data collection lasted 2 weeks where 173 reviews in form of positive and negative feedbacks were collected by desk research from written information on the review website and then transformed into numerical data; then the basic math-

ematician formula of percentage was used. The formula is following: (number of positive replies * 100%) / (number of positive and negative replies in total).

3.3 Data Analysis Method

Analysis method depends on the research nature and research approach being used. Data analysis is the process where data is interpreted what leads to particular conclusions and result validations. (Kumar 2011, 88.)

As the written documents in form of reviews were collected as a secondary data, the content analysis was implemented in form of descriptive statistics. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. (Descriptive Statistics, 2006). With descriptive statistics you are simply describing what is or what the data shows. Descriptive statistics help us to simplify large amounts of data in a sensible way. Each descriptive statistic reduces lots of data into a simpler summary. Gathered secondary data was transformed into the quantitative and analyzed in numbers with the use of simple formula of percentage.

DSP companies were taken from G2Crowd website list of most popular reviewed DSPs. (G2Crowd [demand-side-platform] 2016.) The G2 Crowd is the center that tries to avoid fake reviews problem by using LinkedIn to identify users and ensure that companies do not give feedbacks about their own services. (Inc [The art of science of sniffing out fake reviews] 2014) 173 reviews were collected in total.

4 Research results

In the Result Chapter, DSP profiles are presented as well as tables and figures reflecting users' reviews analysis. The collected data is analyzed according to research questions that were mentioned in the Introduction.

4.1 Demand Side Platforms profiles

Thirteen digital advertising companies were selected for the study. They were taken from the list of strong performers among DSP companies according to the G2 Crowd rating list of spring 2016. G2Crowd is a leading global platform specializing in business software reviews. They rank technological companies according to users' reviews. G2 Crowd lists of companies were chosen as they are most reliable specialists in the internet technology analysis field. Moreover, their researches are the latest. The reports themselves are closed for free reading and can be purchased for relatively high price.

The following portfolios of the main DSP players were collected from their websites where they provide information. The portfolio includes the following parts:

1. *What the company exactly is*. It can be not only a DSP platform but also have other products and solutions.
2. *Channels of functionality*. It shows via which devices a DSP company can reach the targeted audience of an advertiser.
3. *Software*. It is the name of the DSP that the digital company has software
4. *Special features*. It shows what characteristics the DSP has.
5. *Key clients*. It means who can use the company services in general and if it has other products and services besides DSP.

4.2 DSPs Portfolios

Media Math is a global technology company that has ***channels of functionality*** in DSP, display, mobile, social, video and cross-channel. The ***software's*** name is Terminal One Marketing Operating System and it has ***special features***, such as data activation, execution automatization, interactions optimization across all addressable media, superior performance delivery, transparency, control to all marketers and indi-

vidualized consumer experience. The ***key clients*** are agency holding companies, top brands and operating agencies. (MediaMath 2016)

BrightRoll is Yahoo!'s brand of programmatic advertising technology that has ***channels of functionality*** in DSP, display, mobile, video and cross-channel. The ***software's*** name is BrightRoll DSP and it has ***special features***, such as Yahoo!'s billion users' data access, Yahoo!'s billion users' insight access, access to billions of daily data events and flexible client-service options. The ***key clients*** are advertisers and agencies. (BrightRoll 2016)

StackAdapt is a native advertising DSP platform as well as a programmatic native advertising platform that has ***channels of functionality*** in DSP and video. The ***software's*** name is StackAdapt and it has ***special features*** in providing technological tools for advertisers for reaching a targeted audience. The ***key clients*** are advertisers. (Stackadapt 2016)

RocketFuel is a programmatic media-buying/marketing platform that has ***channels of functionality*** in DSP, display, mobile, social, video and cross-channel. The ***software's*** name is MomentScoring and it has ***special features***, such as campaign optimization automatization, campaign planning, monitoring, analytic, first and third data integration and audience extension. The ***key clients*** are advertisers. (Rocketfuel 2016)

DoubleClick is an ad-technology platform by Google that has ***channels of functionality*** in DSP, display, mobile, social, video and cross-channel. The ***software's*** name is DoubleClick Digital Marketing and it has ***special features*** such as creating, managing and growing campaigns effectively. The ***key clients*** are top marketers, publishers, ad networks and agencies. (DoubleClick 2016)

Turn is a cloud platform that has ***channels of functionality*** in DSP, display, mobile, social, video and cross-channel. The ***software's*** name is Turn DSP and it has ***special features***, such as audience addressing and planning, 150 pre-integrated data, technology and inventory partners, 3 million ad opportunity evaluations per second and performance analysis. The ***key clients*** are top marketers, publishers, ad networks and agencies. (Turn 2016)

Rubicon is a DSP that has ***channels of functionality*** in DSP, display, mobile, video and cross-channel. The ***software's*** name is Rubicon Project for buyers and it has ***special features***, such as targeted audience reaching, unparalleled brand engagement and customer acquisition. The ***key clients*** are advertisers. (Rubicon 2016)

DataXu is a marketer-aligned data and analytics company that has ***channels of functionality*** in DSP, display, mobile, video, social network and cross-channel. The ***software's*** name is DataXu and it has ***special features***, such as media activation, data management and marketing analytics. The ***key clients*** are brands and agencies. (DataXu 2016)

AppNexus is an internet technological company that has ***channels of functionality*** in DSP, display, mobile, video and cross-channel. The ***software's*** name is AppNexus Programmable DSP and it has ***special features***, such as digital advertising, time-to-market acceleration and programmable marketing. The ***key clients*** are advertisers, publishers, ad tech companies and agencies. (AppNexus 2016)

AOL is a digital advertising company that has ***channels of functionality*** in DSP, display, mobile, video and cross-channel. The ***software's*** name is ONE by AOL and it has ***special features***, such as possibility to choose plug-in modules to meet specific needs. The ***key clients*** are advertisers and publishers. (AOL 2016)

he Trade Desk is a digital advertising company that has ***channels of functionality*** in DSP, display, mobile, video, social network and cross-channel. The ***software's*** name is The Trade Desk and it has ***special features***, such as full-funnel attribution and cross-device targeting. The ***key clients*** are advertisers and agencies. (The Trade Desk 2016)

Centro is a DSP company that has ***channels of functionality*** in DSP, display, mobile, video, social and cross-channel. The ***software's*** name is Centro DSP and it has ***special features***, such as a campaign performance review, real-time campaign optimization and fraud protection. The ***key clients*** are advertisers. (Centro 2016)

4.3 Demad Side Platforms' reviews analysis

Descriptive Statistics analysis was implemented based on the users reviews taken from G2 Crowd website. (G2 Crowd 2016) The questions were asked: "what do you like best?" and "what do you dislike?". After analysing the answers, benchmarking points are following:

1. Interface
2. Reporting system
3. Optimization capabilities
4. Targeting capabilities
5. Support team efficiency
6. Integration capabilities

Only users' and agencies' reviews of demand side platforms were analysed. Validated and fresh 173 reviews were taken from G2 Crowd website. The numbers of the reviews are following: Media Math - 35, BrightRoll - 12, StackAdapt - 13, Rocket Fuel - 16, DoubleClick - 19, Turn - 21, Rubicon Project - 13, DataXu -15, AppNexus - 12, AOL - 2, The Trade Desk - 6, Centro - 9. There is a difference in reviews amount that is influenced by popularity level of a DSP. Relatively not so popular DSP can have potential to get more users if they provide decent services.

The figures, represented further, show the rating of the DSPs that satisfied most of the users in each of the feature. The percentage of positive impressions was calculated with the help of formula: (number of positive replies * 100%) / (number of positive and negative replies in total).

The tables show the DSPs rating based on the percentage of positive feedbacks. The second and third columns shows number of positive: “easy and intuitive”, “easy set-up and optimization of the campaign” and negative “they need to work better on their communication and transparency”, “analytic reporting is lacking compared to other DSPs” feedbacks.

4.3.1 Interface

Figure 1 and Table 1 show that only four DSPs got 100% of positive feedback concerning Interface usage experience: StackAdapt, BrightRoll, AOL and The Trade Desk. DoubleClick, Rubicon Project and MediaMath have more than 75% of positive reviews. Positive reviews pointed that interfaces are intuitive and easy to use.

The negative comments about DSPs with the rating less than 100% and more than 75% were that DoubleClick's interface is not intuitive enough. Robicon has old-looking design and MediaMath's interface is not user friendly.

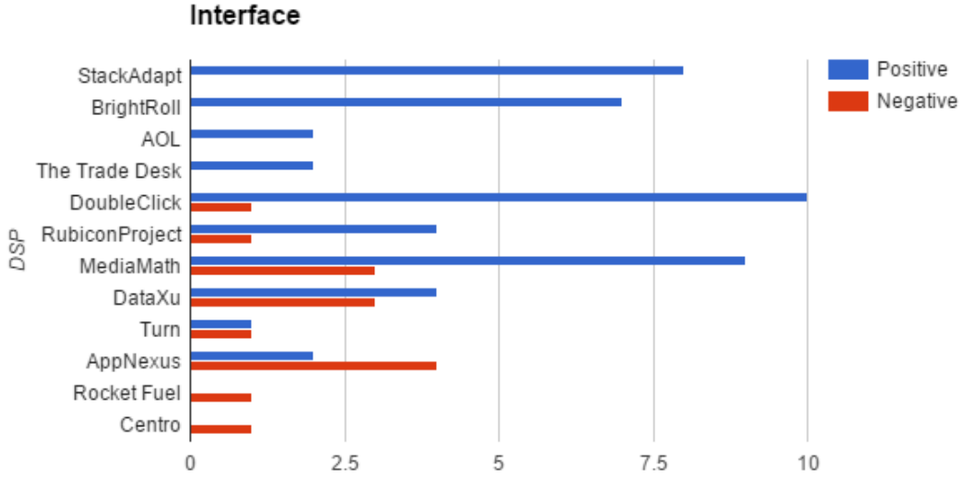

Figure 1 Interface: respondents' replies

Table 1 Interface

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
StackAdapt	8	0	100%
BrightRoll	7	0	100%
AOL	2	0	100%
The Trade Desk	2	0	100%
DoubleClick	10	1	91%
RubiconProject	4	1	80%
MediaMath	9	3	75%
DataXu	4	3	57%
Turn	1	1	50%
AppNexus	2	4	33%
Rocket Fuel	0	1	0%
Centro	0	1	0%

4.3.2 Reporting system

Figure 2 shows that RocketFuel, The Trade Desk and AppNexus have 100% of positive feedbacks where users say that there is real-time reporting, data export possibility, granular reporting. StackAdapt and Turn have 75% of positive reviews where respondents mention such drawbacks as lack of granularity.

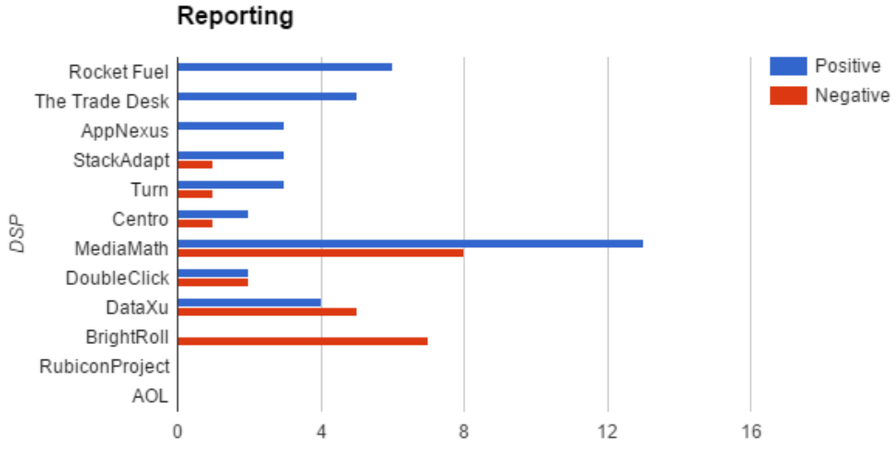

Figure 2. Reporting: respondents' replies

Table 2. Reporting

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
Rocket Fuel	6	0	100%
The Trade Desk	5	0	100%
AppNexus	3	0	100%
StackAdapt	3	1	75%
Turn	3	1	75%
Centro	2	1	67%
MediaMath	13	8	62%
DoubleClick	2	2	50%
DataXu	4	5	44%
BrightRoll	0	7	0%
RubiconProject	0	0	0%
AOL	0	0	0%

4.3.3 Optimization capabilities

All DSPs have good feedback about optimization capabilities. However, RubiconProject's optimization function wasn't mentioned by anyone. Rocket Fuel, BrightRoll, StackAdapt, Double Click, AOL, The Trade Desk and Centro's positive comments were about real-time optimization possibility, adjusting campaign optimization technology, ease of optimization.

The negative comments about MediaMath, DataXu, Turn, AppNexus were that MediaMath needs to have easier optimization features, DataXu could have better optimization technology, Turn has a lack of transparancy of optimization actions taken, AppNexus has difficult optimization of direct campaigns.

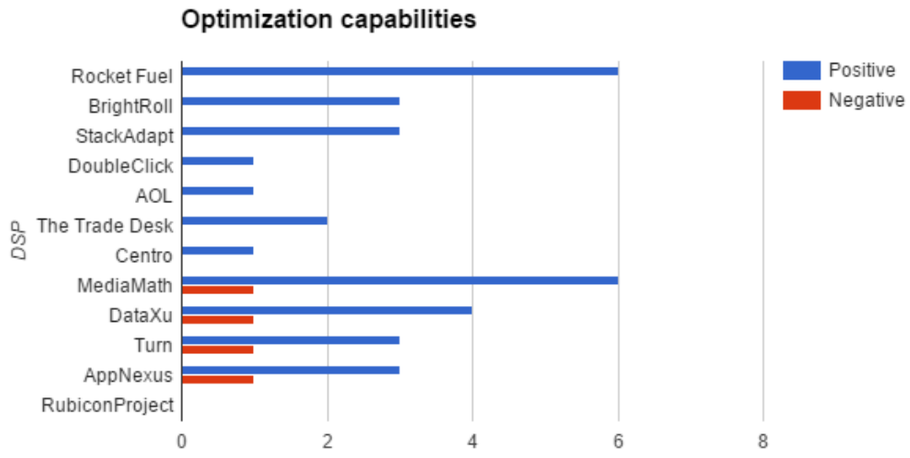

Figure 3. Optimization capabilities: respondent's replies

Table 3. Optimization

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
Rocket Fuel	6	0	100%
BrightRoll	3	0	100%
StackAdapt	3	0	100%
DoubleClick	1	0	100%
AOL	1	0	100%
The Trade Desk	2	0	100%
Centro	1	0	100%
MediaMath	6	1	86%
DataXu	4	1	80%
Turn	3	1	75%
AppNexus	3	1	75%
RubiconProject	0	0	0%

4.3.4 Targeting capabilities

Figure 4 and Table 4 show that all the DSPs have more than 75% of positive feedback except MediaMath. The positive feedbacks were about robust targeting capabilities and ability to target audienca across varios channels (display, mobile...), detailed targeting options.

Media Math got 50% of negative comments where users said that some targeting options are given only by request and has to be downloaded, there is a lack of video targeting options. StackAdapt has a drawback such as lack of granular targeting capabilities as well as DataXu demands particular set of data from users.

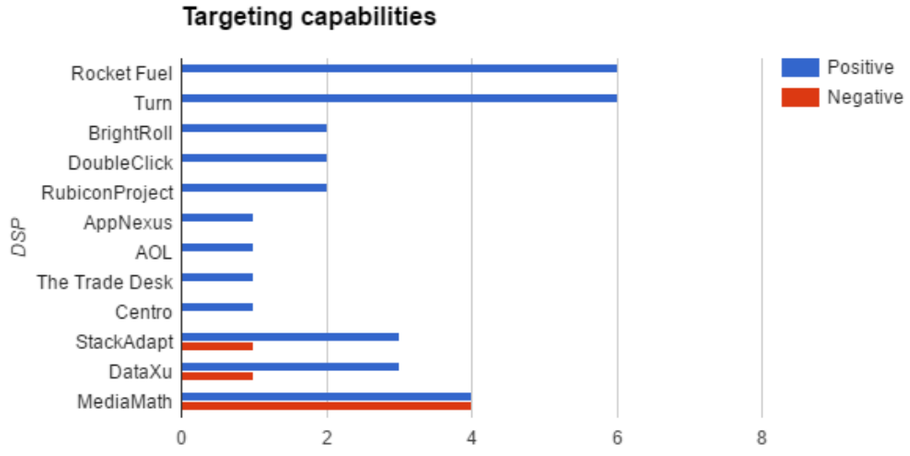

Figure 4. Targeting capabilities: respondents' replies

Table 4. Targeting

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
Rocket Fuel	6	0	100%
Turn	6	0	100%
BrightRoll	2	0	100%
DoubleClick	2	0	100%
RubiconProject	2	0	100%
AppNexus	1	0	100%
AOL	1	0	100%
The Trade Desk	1	0	100%
Centro	1	0	100%
StackAdapt	3	1	75%
DataXu	3	1	75%
MediaMath	4	4	50%

4.3.5 Support team efficiency

All DSPs got good feedbacks about support team work quality except DoubleClick and AppNexus, they got only 30-33% of positive replies. Positive comments consisted the information that support teams are responsive, forward thinking, knowledgable about their product, helpful.

DoubleClick's respondents mention lack of support and difficulties to reach it. AppNexus has a problem that support team is not helpful, slow and impersonal because of the ticket system.

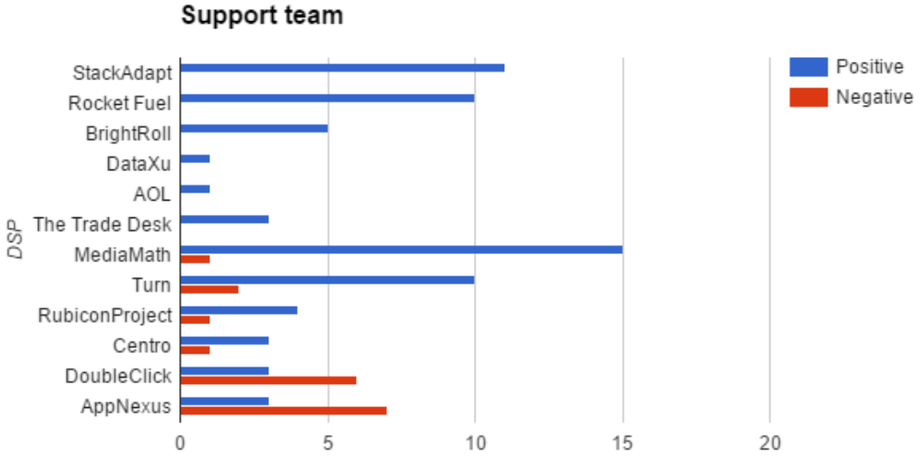

Figure 5. Support team efficiency: respondents' replies

Table 5. Support team

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
StackAdapt	11	0	100%
Rocket Fuel	10	0	100%
BrightRoll	5	0	100%
DataXu	1	0	100%
AOL	1	0	100%
The Trade Desk	3	0	100%
MediaMath	15	1	94%
Turn	10	2	83%
RubiconProject	4	1	80%
Centro	3	1	75%
DoubleClick	3	6	33%
AppNexus	3	7	30%

4.3.6 Integration capabilities

There are several absence of information about StackAdapt, Rocket Fuel and Centro's integaration capabilities. However, DoubleClick, The Trade Desk, AppNexus, DataXu, BrightRoll, AOL have positive comments. MediaMath and Rubicon have 50% of positive feedbacks. Turn has only negative comment.

Double Click has many integration features as well as The Trade Desk and AOL. AppNexus, DataXu and BrightRoll are flexible in term of integration that makes it convinient to work with.

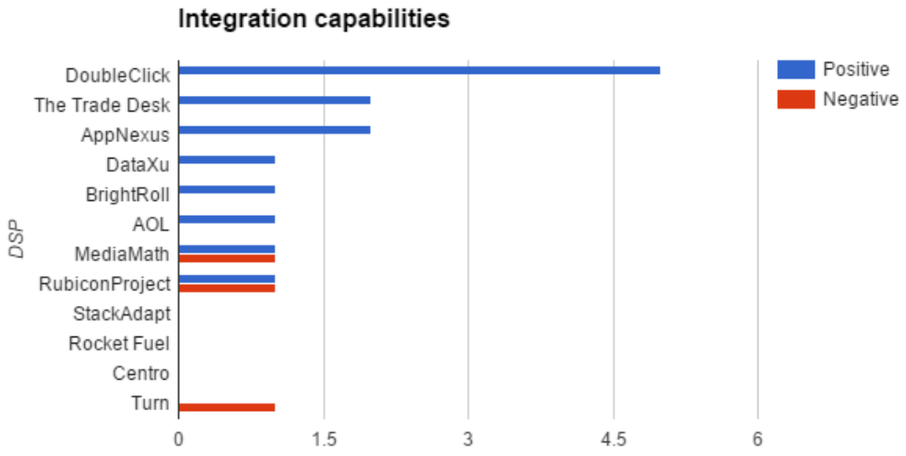

Figure 6. Integration capabilities: respondents' replies

Table 6. Integration capabilities

DSP	Positive feedbacks	Negative feedbacks	% of positive feedbacks
DoubleClick	5	0	100%
The Trade Desk	2	0	100%
AppNexus	2	0	100%
DataXu	1	0	100%
BrightRoll	1	0	100%
AOL	1	0	100%
MediaMath	1	1	50%
RubiconProject	1	1	50%
StackAdapt	0	0	0%
Rocket Fuel	0	0	0%
Centro	0	0	0%
Turn	0	1	0%

5 Discussions

The chapter contains summary of main results, illustrating research questions' answers. The objective of the study was to suggest most suitable partners for the case

company. This chapter presents summed up results, then examines credibility of the study and ends with the future research on the subject.

5.1 Conclusions

The study described main characteristics of main DSPs companies such as channels of functionality, key clients, software features and the name of DSP.
Dealing with an online service, such as a DSP, requires obtaining preliminary information about the quality its basic features. This can be taken from one's own experience or from the reviews or feedbacks of other users – discovering their positive or negative reactions on the main platform features. In this study, an analysis of a DSP's reviews from a reliable source was implemented in order to identify its strong and weak parts of services, such as interface, reporting, optimization, targeting, support team and integration.

Table 7 presents where DSPs are successful and where they are not. ***The Trade Desk***, ***AOL*** and ***BrightRoll*** show the best results as they scored more than 75% in 5 categories. ***Turn***, ***StackAdapt***, ***Rocket Fuel***, ***AppNexus*** and ***Double Click*** follow them with 4 categories exceeding 75%. Finally, ***Rubicon Project, Centro, Media Math*** and ***DataXu*** finish the list.

Table 7. Overall performance

DSP	***More than 75% of positive feedbacks***	***Less than 75% of positive feedbacks***
MediaMath	Interface Optimization Support team	Reporting Targeting Integration
BrightRoll	Interface Optimization Support team Targeting Integration	Reporting
StackAdapt	Interface Reporting	Targeting

	Optimization Support team	
Rocket Fuel	Reporting Optimization Support team Targeting	Interface
Double Click	Interface Optimization Targeting Integration	Reporting Support team
Turn	Reporting Optimization Support team Targeting	Interface
Rubicon Project	Interface Support team Targeting	Integration
DataXu	Optimization Support team Integration	Interface Reporting Targeting
AppNexus	Reporting Optimization Targeting Integration	Interface Support team
AOL	Interface Optimization Support team Targeting Integration	
The Trade Desk	Interface Reporting Optimization Support team Targeting Integration	

Centro	Optimization Support team Targeting	Interface Reporting

The Trade Desk received positive impressions about its interface, reporting, optimization, support team, targeting and integration features – all set.

AOL received positive impressions about its interface, optimization, support team, targeting and integration. However, there were no comments concerning the reporting system and, therefore, it remains unknown.

BrightRoll gained positive impressions about its interface, optimization, support team, targeting and integration. However, the reporting system received 0% of positive feedback.

Turn received positive impressions about reporting, optimization, support team, targeting but not about a sufficiently user-friendly interface. Moreover, information about integration was not available.

StackAdapt gained positive impressions about its interface, reporting, optimization, support team. However, it had a drawback in its targeting feature.

RocketFuel received positive impressions about reporting, optimization, support team and targeting. However, it did not have sufficiently user-friendly interface. Moreover, in the same way as in Turn, information about integration was not available.

AppNexus obtained positive impressions about reporting, optimization, targeting and integration. However, the downsides were that it did not have an intuitive interface and it had a poor support team.

Double Click gained positive impressions about its interface, optimization, targeting and integration. However, its reporting was not sufficiently detailed and it had a poor support team.

Rubicon Project received positive impressions about its interface, targeting and support team but it had a lack of integration and no feedback about optimization options.

Centro had positive impressions about optimization, targeting and support team but not about a user friendly interface and detailed reporting. The feedback on integration was absent.

Media Math received positive impressions about its interface, optimization and support team but not about a user friendly interface and detailed reporting. Moreover, targeting and integration were its clear drawbacks.

DataXu gained positive impressions about integration, optimization and its support team. However, it did not have a user friendly interface and detailed reporting. Moreover, targeting was a clear drawback.

The study revealed that there were DSPs companies without significant drawbacks that are possible to deal with: The Trade Desk, AOL, Bright Roll, Turn, Rocket Fuel and AppNexus because they had positive feedbacks concerning the most important features – targeting and optimization.

The author's managerial implication can be contacting managers of the DSP companies with the best features to know some additional conditions of cooperation.

5.2 Reliability, Validity and Credibility

In order to approve the study's validity and credibility, researches have to be able to clearly present the data interpretation as well as methods have to be transparent. It has to be possible to replicate the study and gain the similar outcome. (Sinkovics, Penz & Ghauri 2008, 699.)

Reliability demonstrates how research was implemented enabling the possibility to repeat the study and gain the s results. (Saunders, Lewis & Thornhill 2009, 222) The reliability, credibility and validity of the research were ensured by analyzing the latest feedbacks from reliable source that have approved respondents as there is a common practice when internet reviews can be ordered or written by an organization itself or by a competitor. The calculations were based on the simple formula indicat-

ing the percentage of positive feedback that helped to rate DSPs and enabling to see its strong and weak parts.

The reliability of the study can be affected by technology development and platform updates in the future because internet technologies are developing constantly. The research has its limitations as any other researches: the amount of reviews is not equal enough and some DSPs features were not mentioned in the feedbacks that requires personal user experience.

5.3 Recommendations

The subject can be learnt deeply technologically and with the gathering of primary data from the own user-experience. There is a large field for the researching because of the technological aspect as internet technologies are constantly being improved.

Another study can even create a new kind of DSP platform with additional sets of features. However, it would require deep knowledge of this kind of technology.

The Pixelads could also try those DSPs that didn’t get many feedbacks but still got more positive reactions and impressions.

References

Advertising Bureau (IAB)'s 2012 Advertising Revenue Report

Aol. 2016 Accessed on 25.11.2016. Retrieved from: http://www.aolplatforms.com/onebyaol

Appnexus. 2016. Accessed on 25.11.2016. Retrieved from: https://www.appnexus.com/en/agencies-and-advertisers/programmable-dsp

Bagherjeiran, A, Hatch, A, Ratnaparkhi, A. and Joshi, A. Yahoo! Inc. 2015. Contextual advertising with user features. 12.05.2015. Accessed 20.12.2016 https://www.google.ch/patents/US9031863

Barnes, S.,Hunt, B. eds. 2013. E-commerce and v-business. Routledge.

Best Demand Side platforms (DSP). 2016. Accessed on 23.11.2016. Retrieved from: https://www.g2crowd.com/categories/demand-side-platform-dsp

Bharat, B. 2006 Electronic commerce: framework, technologies and applications. Tata McGraw-Hill Education. New Delhi

Bigdeal platform description, 2016 *[Corporate document]*

Brigthroll. 2016. Accessed on 25.11.2016. Retrieved from: https://brightroll.com/dsp

Canzer, B. 2005. E-Business. Cengage Learning. USA.

Centro. 2016. Accessed on 25.11.2016. Retrieved from: https://www.centro.net/products/dsp-programmatic-advertising

Cohen-Almagor, R. 2011. Internet history.

Curtis, G., Cobham, D. 2008. Business Information Systems: Analysis, Design and Practice. Pearson Education. United Kingdom

DataXu. 2016. Accessed on 25.11.2016. Retrieved from: https://www.dataxu.com/

De Pelsmacker, P. Geuens, M. Van den Bergh, J. 2001. Marketing communications. Essex: Pearson Education Limited.

Demand Side Platform. 2016. Accessed on 15.09.2016. Retrieved from: http://rtb-media.ru/wiki-dsp/

DesMarais, C. 2014. The art and science of sniffing out fake reviews. Accessed on 24.01.2017. Retrieved from: http://www.inc.com/christina-desmarais/how-this-website-uses-data-to-eradicate-fake-reviews.html

DoubleClick. 2016. Accessed on 25.11.2016. Retrieved from: https://www.doubleclickbygoogle.com/

Fernandez-Tapia, J. 2015. Optimal budget-pacing for Real-time Bidding.

Funk, T. 2009. Web 2.0 and Beyond: Understanding the New Online Business Models, Trends, and Technologies.

G2Crowd. 2016. Demand Side Platforms. Accessed on 25.01.2017. Retrieved from: https://www.g2crowd.com/categories/demand-side-platform-dsp

Glynn, Dylan & Fischer, Kerstin 2010. Cognitive Linguistics Research, Quantitative Methods in Cognitive Semantics. Corpus-Driven Approaches. Berlin, Boston: De Gruyter Mouton, 47

Hawthorn, W. 2017. What is Benchmarking? - Definition, Types, Process & Examples. Accessed on 23.12.2016. Retrieved from: http://study.com/academy/lesson/what-is-benchmarking-definition-types-process-examples.html

TheTradeDesk. 2016. Accessed on 25.11.2016. Retrieved from: http://www.thetradedesk.com/

Kananen, J. 2011. Rafting Through the Thesis Process, Step by Step Guide to Thesis Research. Jyväskylä: JAMK University of Applied Sciences.

Kleinrock, L. 2008. History of the Internet and its flexible future. *IEEE Wireless Communications*, *15*(1), pp.8-18.

Kleinrock, L. 2010. An early history of the internet [History of Communications]. *IEEE Communications Magazine*, *48*(8), pp.26-36.

Laudon, K.C., Traver, C.G. 2009. E-commerce: business. technology. society. 5th Edition. Prentice Hall. New Jersey, USA.

Leiner, B.M., Cerf, V.G., Clark, D.D., Kahn, R.E., Kleinrock, L., Lynch, D.C., Postel, J., Roberts, L.G. and Wolf, S. 1999. A brief history of the internet.

Malhotra, N.& Peterson, M. 2006. Basic Marketing Research. A Decision-Making Approach. International Edition. 2nd edition. Pearson Education International.

McDonald, M. Dunbar, I. 2012 Market Segmentation : How to Do it and How to Profit from it. [eBook] Wiley

MediaMath. 2016. Accessed on 25.11.2016. Retrieved from: https://t1.mediamath.com/app/

Real Time Bidding. 2016. Accessed on 09.09.2016. Retrieved from: http://rtb-media.ru/wiki

Rocketfuel. 2016. Accessed on 25.11.2016. Retrieved from: https://rocketfuel.com/tag/moment-scoring/

Rogers, W., 2014. Sustainability and the role of revenue generation. A guide to the best revenue models and funding sources for your digital resources, p.9.

Rubiconproject. 2016. Accessed on 25.11.2016. Retrieved from: http://rubiconproject.com/

Saunders, M., Lewis, P., Thornhill, A. 2009. Research Methods for Business Students. 5th ed. Essex, England: Pearson Education Limited.

Sell-Side Platform (Supply-Side Platform). 2016. Accessed on 23.12.2016. Retrieved from: http://rtb-media.ru/wiki-ssp/

Sharma, S., 2015. Internet Marketing: The Backbone of Ecommerce. *International Journal of Emerging Research in Management &Technology*, *4*(12), pp.200-202.

Stackadapt. 2016. Accessed on 25.11.2016. Retrieved from: https://www.stackadapt.com/

Sinkovics, R., Penz, E., Ghauri, P. 2008. Enhancing the trustworthiness of qualitative research in international business. Management international review, 48, 6, 689 – 714.

Descriptive Statistics. 2006. Accessed on 10.03.2017. Retrieved from: https://www.socialresearchmethods.net/kb/statdesc.php

Turn. 2016. Accessed on 25.11.2016. Retrieved from: https://www.turn.com/resources/introduction-to-turn-dsp

Wang, J., Zhang, W., Yuan, S. 2016. Display Advertising with Real-Time Bidding (RTB) and Behavioural Targeting. [monograph]. University College London, Shanghai Jiao Tong University, MediaGamma Ltd.

Weinstein, A. 2004. Handbook of market segmentation : strategic targeting for business and technology firms. 3rd ed. The Haworth Press cop.

White, P. 2010. Making Use of Secondary data. Part of a book: Clifford, N. French, S. & Valentine, G. Key Methods in Geography. London: SAGE Publications Ltd

Yuan, S., Abidin, A. Z., Sloan, M., and Wang, J. 2012. Internet advertising: An interplay among advertisers, online publishers, ad exchanges and web users.

Музыкант, В. 2009. *Маркетинговые основы управления коммуникациями.* 1st ed. Eksmo.