

**AI anti-fraud cloud system as a cybersecurity tool  
for defense from bad bots in online video advertising  
“ADBOT SHIELD”: Investment Project**

Capstone Project Report

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## 1. Executive summary

**Industry:** ad tech.

**Mission:** To provide unique and high-quality AI cybersecurity tool for online video advertising.

**Problem/opportunity:** In accordance with the 2020 publication of Imperva's yearly "Bad Bot" review, in 2019, bad bot traffic increased to its peak anytime share of 24.1% of all traffic. In alarming way, 37.2% of whole traffic on the global computer network last year was robotic. Impostors regularly utilize complex ML and AI to happily struggle anti-fraud services. Merely a cybersecurity proofs-based real-time services can meet the new dangers fully equipped and keep business defended.

**Unique value proposition:** Now pixel is inserted into the page and it has been constantly working for years with one domain (pixel is used to transmit information about the ad display to the system where the counting is carried out). As this is a static script, it allows bad bots to de-encode it very easily. So, during traffic analysis, it will be identified as "white" traffic. Our unique solution is to integrate encrypted JavaScript code into the back-end of the website, this will allow to constant change of script encryption and change domain rotation during the video show, which will make the de-encoding of the script almost impossible.

**Goals:** 1. Creation and beta launch of the Minimum Viable Product (MVP).

2. Public Beta Launch. 3. Break-even point (BEP) in the first year of business.

**Why us:** We already have a core team with experience in media buying and implementing technical projects in the field of ad tech, clear understanding the market and its needs without third-party consultants, ability to carry out tests of competitors for verification of hypotheses.

**Why now:** Current technical solutions (anti-fraud filters) are no longer effective in combating bot traffic, experiments show that a large percentage of robotic traffic is recognized by filters as human. And since more and more money are spent on online video advertising every year, the problem is very urgent for companies which buy traffic. There are very few teams in the world who understand how to effectively solve this problem, and are probably already working on it. Therefore, in the near future, we should expect that a solution similar to what we offer will appear on the market, and either take a part of the market or sell the solution to large players.

**Core team:** Ryta Zasiiekina - CEO, Maksym Tsyparskyi – CTO, Back-end developer (name not disclosed), Front-end developer with expertise in traffic filters (name not disclosed)

### Financial projections:

USD	FY2022	FY2023	FY2024	FY2025	FY2026
Revenue	1,167,000	4,668,000	9,336,000	21,660,000	45,000,000
Operating income	274,000	2,984,400	7,728,800	19,670,000	42,532,000

### Use of fund:

48% - Salaries

27% - Marketing expenses

15% - Legal services (incl. patents registration)

8% - Office (rent, internet and general costs)

**Investments required:** 510,000 USD.

## **2. Introduction: Problem statement. Vision. Mission. Goals**

A bot – also known as the Internet bot or web robot – is a program or a script that runs automated tasks over the Internet. Typically intended to perform simple and repetitive tasks that would be time-consuming, mundane or impossible for a human to perform. The most advanced bots are powered by artificial intelligence. As this technology is still taking shape, most bots follow a set of rules programmed by a human via a bot-building platform. While bots may be used for productive tasks, despite their neutral origins, they often come in the form of malware.

In general, bots can be broken down into two categories – the good bots and the bad ones. As mentioned above, good bots are created to make humans lives easier and their activities involve: web crawling, website monitoring, the content retrieving, data aggregation, online transactions and so on. The bad bots bring fake (bogus) traffic to the webpage and their spiteful intention may engage: steal beneficial records, contents/tariff scraping, publishing spam commentaries and phishing references, deforming web analytics and injuring SEO, facilitating to DDoS attacks etc.

In accordance with the 2020 publication of Imperva's yearly "Bad Bot" review, in 2019, bad bot traffic increased to its peak anytime share of 24.1% of all traffic. In alarming way, 37.2% of whole traffic on the global computer network last year was robotic. Researchers remarked that bad bot complex levels stayed consecutive for the third year in a row, with 53.6% of spiteful bots being temperately complex, 26.3% simple, and 20.1% experienced. Experienced bots were detected to shoot marketplaces (28.5%) and the real estate segment (24.5%) the most. Whereas some bot problems are industry-related, researchers remarked that bad bot issues come across all businesses. The first five businesses shot with bad bot traffic are the education, financial, IT, marketplaces, and government.

To miss detection, bad bots are engaged in the art of pretending, frequently imitating network browsers. The elevated capacity and wide diversity of bad bots out there makes defense against this spiteful danger complex. This might lead companies to choose the wrong variants and result in losing a lot of advertising money. Skewed conversion rate could cause companies to shift budgets from the effective strategies to faulty ones. Not to mention that with crooked engagement metrics it might be hard to understand which content is important for companies' audience. Impostors regularly utilize complex ML and AI to happily struggle anti-fraud services. Merely a cybersecurity proofs-based real-time services can meet the new dangers fully equipped and keep business defended.

Advertisers expect that all online content is viewed by human audiences - to real consumers who have the potential to buy a product or service. That isn't always the case. The interactive advertising industry is plagued by an increasing level of illegal activity, known as traffic fraud, which is used by criminals to exploit the system and get paid for fake, non-human traffic. Traffic fraud is a serious problem. Addressing the issue together as an industry is essential to preserving the integrity of the online ecosystem and for maintaining trust from marketers.

The potential for digital advertising fraud subsists subsist that media expenses are considerable and performance indicators are equivocal or incomplete. Nefarious groups have found ways to profit by penetrating permitted systems and causing faked ad views, advertising clicks, and site visits utilizing robotic programs. Non-human traffic, popularly known as "bots", is driven by code, not humans so it has no ability to generate real conversions or purchases. Bots are smart enough

to mimic human behavior, making them difficult to detect. The activity generated by these bots muddles the engagement metrics driven by real, non-robotic traffic, which dissolves the value of proper publisher records. In addition, advertisers surcease paying a tangible part of their crusade dollars to fraudsters who deliver specious ad impressions that are never seen by humans.

Six negative impacts of traffic fraud:

1. Brands waste money on ad campaigns that include a material portion of fraudulent impressions.
2. Fraud complicates campaign performance analysis when human and non-human activity for ads and site visits are mixed in reports.
3. Brands lose confidence in digital media.
4. The supply of inventory is inflated artificially, reducing the value of legitimate publishers.
5. Failing to root out traffic fraud funds criminal activity and supports organized crime.
6. Fraud undermines industry self-regulation efforts, invites negative press about the industry, and potentially intervention by government regulators.

Here is the situation that shook the market of marketing and advertising. A situation where it took Shailin less than a week to create and complete the publisher's website and, with the help of bot traffic, make a real profit. Most of the purchased fake traffic was able to bypass well-known antibiotic platforms such as MOAT and IAS. This is because such traffic has been specifically designed to pass or bypass their verification processes. The main problem and the "nightmare" of people who pay for advertising on the Internet is that fake users can be purchased in a few hours using LinkedIn without the help of any special tools - it is much easier than getting pirated movies or music.

- I gathered the main conclusions from what was written:
- Robo-traffic that can bypass IAS, Double Verify and Moat checks costs \$0.001 per click;
- IAS filters only 17% of fake traffic, MOAT - 40%;
- It is not enough to use applications and sites to detect fakes, although this is also important;
- Buying fraudulent traffic is easier than getting pirated movies or music;
- Fraudulent traffic generators also run sites that are clients of MOAT, IAS, Double Verify and more;
- Once a bot gets in a native platform, from that moment it's a portion of their traffic;
- Search is built into the basis of advertising.

**Vision statement:** Safe space for online video advertising.

**Mission statement:** To provide unique and high-quality AI cybersecurity tool for online video advertising.

**Core values:**

- Meet the changing needs and desires of consumers
- Focus on new and innovative business ideas
- Continuous learning as constant personal and professional growth

**Goals:**

- Creation and beta launch of the Minimum Viable Product (MVP)
- Public Beta Launch
- Break-even point (BEP) in the first year of business.

### 3. Analysis of Business Model based on Canvas

#### 3.1. Analysis of Business Model based on Canvas

The model below reflects actual business environment and embedded in Business Model Canvas (table 1).

**The Business Model Canvas**

<b>Key partners</b> Affiliate ad networks and agencies	<b>Key activities</b> Anti-fraud services for video ad	<b>Value propositions</b> Defence from specific bad bots due to unique technology Reduction of marketing cost of customers Price	<b>Customer relationships</b> Personal assistance	<b>Customer segments</b> B2B
	<b>Key resources</b> Human: IT developers of technical projects in the field of adtech Legal: patent, certification		<b>Channels</b> Affiliate ad networks and agencies Conferences Social Networks Direct marketing	
<b>Cost structure</b> Performance driven Software development Marketing activities			<b>Revenue streams</b> Monthly package fee (subscription)	

Table 1. Analysis of Business Model based on Canvas.

Affiliate ad networks and agencies stay as key partners for the business, so it is needed to keep an increase in the number of such partners, as well as relationship with them under constant focus. Keeping key activities up and running, the Company needs to maintain, support and continuously develop its AI anti-fraud software tool, by continuously monitoring and identifying new bad bots.

To achieve this, the following key resources are required, such as: IT developers of technical projects in the field of adtech, as well as experienced lawyers outsourced. As this is very narrow field, and developers are highly appreciated in the market, it's very important to monitor their motivation in the project, as well as train and develop their assistants. As for legal services, it's very important to register company in US, as well as trademarks and patent there. After one year of work, it will be valuable to business to submit on certification by The Joint Industry Committee for Web Standards. It's required to draw up contracts correctly, limiting our liability as this is a very risky, but marginable market.

As the unique value proposition, "Adbot shield" will ensure defense from specific bad bots due to unique technology, compare to all the existing competitors (which don't identify such types of bad bots for today). As a result, this will solve their current pain and reduce marketing costs of customers (there will not be a need to pay for some percentage of ad video traffic due to its robotic nature), which is very valuable to them. And as a bonus, price for the solution will be less than competitors offer.

Cost structure consists of salaries for software development (48%), regular expenditures for advertising and marketing activities (27%) and legal services, incl. patents registration (15%).

The fight for the customers should be made through affiliate ad networks and agencies, conferences, social networks, direct marketing. On top, Company needs to offer individual approach and personal assistance where possible.

### 3.2. Analysis of Operating Model based on Canvas

The operating model (POLISM type) below (table 2) defines how the Company will deliver capabilities and financial outcomes required by the strategy, covering six elements (Processes, Organization, Locations, Information, Suppliers, Management).

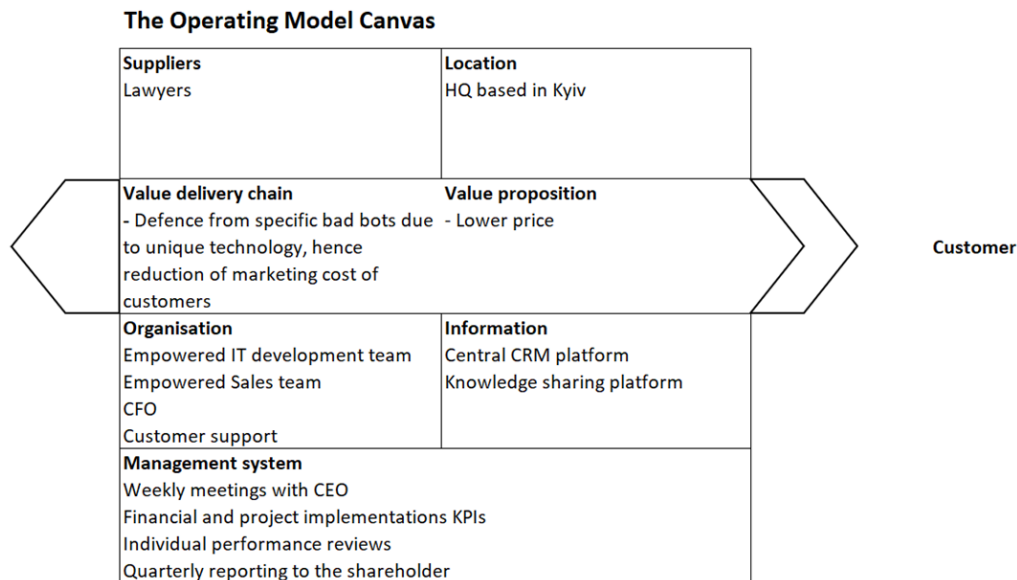


Table 2. Analysis of Operating Model based on Canvas.

As there are no goods producing, and all the staff will be in-house, the only supplier remain: lawyer outsourced. Legal services are important for intellectual property protection, as well as creating of one of the competitive advantages (certificates), limitation of liabilities before customers. But this will not directly influent on quality of services provided.

As the unique value proposition, "Adbot shield" will ensure defense from specific bad bots due to unique technology, compare to all the existing competitors (which don't identify such types of bad bots for today). As a result, this will solve their current pain and reduce marketing costs of customers (there will not be a need to pay for some percentage of ad video traffic due to its robotic nature), which is very valuable to them. And as a bonus, price for the solution will be less than competitors offer.

Location is needed only for office purpose. HQ will be based in Kyiv. For providing services and data storage internet and hosting will be required. Organization structure will consist of empowered IT development team, empowered sales team, CFO and customer support.

Operating of business requires central CRM platform, because very important aspect is to retain all information up to date, starting from client database, because personal and tight relations with customers are required for customer retention and continuous sales; as well as knowledge sharing platform (especially, because team players have unique expertise in adtech, and to mitigate the risk of loss of important knowledge, they have to share their knowledge in platform for future employees or their assistants).

As for management system, it will be ensured by weekly meetings with CEO, financial and project implementations KPIs, individual performance reviews, as well as quarterly reporting to the shareholder.



### 3.3. Five Forces analysis

Rivalry among existing competitors: we have a unique technology for defense from a specific bad bot traffic (which major competitors don't recognize in their reports, and identify such traffic as human, but which takes a very large share in video ad, and we can prove that); also, our solution will be much cheaper, which will make the solution available for medium and small business as well.

Bargaining power of customers: clients are media agencies, medium and large businesses that have their own media buying, as well as small businesses; for large clients, they will need to be convinced that our technology protects them from what our main competitors, who have licenses and names, do not protect them from, for which in turn, clients pay large commissions, and lose due to a gap in their technology big money for bot traffic.

Bargaining power of suppliers: this type of business does not depend on external suppliers, but more on the expertise of employees. Disadvantage is that bus factor=1.

Threat of substitutes: first of all, customers (big companies) of major competitors blindly trust their reports; medium and small business don't have a possibility to pay huge costs (as major competitors request) for traffic analysis; some of customers pay only for analysis of definite sample of traffic and then apply a certain percentage of identified as human one to all traffic; customers can substitute such solutions to analyzing some samples of traffic manually but it will be very subjective and not accurate, taking into consideration that they have to pay for traffic.

Threat of new entry: strong well-known competitors (Moat, IAS, DoubleVerify); customers often don't understand a deep of problem with bad bot traffic, as competitors don't recognize all types of bad bots; the biggest competitors have certification by JICWEBS (which standard requires update) and which is difficult to obtain, still which is a guarantee sign for big customers; patent registration at least in US it is required.

### 3.4. SWOT analysis

Strengths (internal origin):

- team with technical experience in this area
- experience in implementing technical projects in the field of adtech
- understanding the market and its needs without third-party consultants
- the ability to carry out tests of competitors - verification of hypotheses
- extensive experience of media buying in the team

Weaknesses (internal origin):

- bus factor =1 (minimum number of team members that have to suddenly disappear from a project before the project stalls due to lack of knowledgeable or competent personnel)
- absence of contractual intent with potential customers

Opportunities (external origin):

- attract customers because of a bug in the work of major competitors
- the use of tool in the industry of protection against cheating behavioral factors
- access to markets where MOAT and other major players do not work because of the high price list - India, Africa, etc.

- sale of the company together with patents after a few years of work to big player
- entering the market for the protection of media advertising in the industry of smart tv and connected devices for OTT and avod models - no one really has an anti-fraud for smart tv
- entering the market for the protection of media advertising in the industry of mobile operators (their IPs are wightlisted, that's why traffic from mobile operators is very difficult to analyze)

Threats (external origin):

- dirty PR from competitors - reputation in this area is important
- theft of a part of patents by competitors
- attempts to lure key people of the team away
- cyber-attacks on software in order to eliminate the player in the market
- the complexity of hiring specialists in the field of cybersecurity
- project location is Ukraine, which is a weak side to get money
- claims from clients on software due to not recognizing part of bots
- changes in browsers with a change in their development standards (like disabling cookies soon, which was difficult to predict 5 years ago).

### **3.5. PESTEL analysis**

Political factor is more or less tiny: a business that sells services on an international level needs to look at whether the laws and policies in countries that may have more strict governments affect the efficiency of their marketing campaign. In any case, a cybersecurity tool can't give a bad reputation to the government. But we have to be aware of such things as corruption within a certain country, tax policy and foreign trade policy before concluding contracts with consumers.

Economic factor will differ depends on country where services will be provided: as the project will enter different markets worldwide, and the economy differs from country to country because of various factors, we need to take a very close look at the factors and discuss each one to see if it will impact product sales, and, if it will, how we can maintain or even increase sales in a low economic environment.

Social factor is significant: organic engagement on video is higher than any other type of media, and 80% of users can recall a video ad they've seen in the past 30 days. Video is changing the way people shop and make purchasing decisions — 85% of millennials say they've made a purchase after viewing a marketing video. Social media platforms increasingly prioritize videos over other types of content. By 2022, on-line videos will draw up above 82% of total user internet traffic — 15 times upper than it was in 2017. — (Cisco) 55 Video Marketing Statistics For 2020 by Biteable. So, companies spend more funds each year for promotion of its products and services online. Still there is a big problem with bad bot traffic in internet. And this is business opportunity.

Technological factor is important as well: as we're living in the era of digitalization, technology can impact the business from different perspectives. Online video ad plays a big role in the age of digitalization. In our case, companies spend a lot of funds on marketing with hope to pay for real users, but in fact paying for bad bot traffic in a big part. That's why the thing to take into consideration is the efficiency of the technology used in the business to traffic analysis. We offer better and cheaper technology.

Legal factor: today, bad bot marketing traffic is still a legal grey area. Instead of waiting for a legal solution to the problem, online businesses should implement efficient technical bot protection and web scraping prevention measures. As well as, the European Data Protection Board's (EDPB) guidelines on valid consent from May 2020 rule out cookie walls as a valid way for websites of obtaining user consent to personal data processing and cookie use, which are necessary for traffic analysis to current anti-fraud systems.

Environmental factor: as company will not really produce any products, they will not waste any natural resources. This is a tricky area as consumers can judge the ethical approach of business from many viewpoints.

### 3.6. Value chain analysis

The value chain analysis below represents actual business management for the Company both for primary and support activities to create value for its customers (table 3).

Value Chain Analysis					
Primary activities	<b>Inbound logistics</b> Maintain connectivity with outsourced lawyers, hosting and internet providers	<b>Operations</b> AI software development Technological innovation Adherence to Six Sigma standards	<b>Outbound logistics</b> Continuing reliance on affiliate ad networks and agencies Invoicing Infrastructure ensures uninterrupted service availability	<b>Marketing &amp; Sales</b> Affiliate ad networks Conferences Social Networks Direct marketing Innovative role in the industry Lower price	<b>Services</b> Qualitative anti-fraud services for video ad Warranty support Clear reporting Quick response
					Customer value
Support activities	<b>Human resources management:</b> hiring talented people with experience and knowledge in narrow field, individual performance reviews, periodically measure employees' satisfaction, learning relationship environment				
	<b>Technology:</b> constant software (analytics tool) development and maintenance, constant improvement of internal reporting system, scalable technology infrastructure				
	<b>Procurement:</b> legal, hosting and internet services, advertising				
	<b>Firm infrastructure:</b> online, emphasis on quality, integrated ERP for all processes				
					Customer value

Table 3. Value chain analysis.

As a part of primary activities, the company can use such advantages of inbound logistics, as maintaining connectivity with outsourced lawyers, hosting and internet providers. In regards of outbound logistics, company will continuing rely on affiliate ad networks and agencies, which is risky still vital dependency; infrastructure of the company will ensure uninterrupted service availability. Operations of the company will be aimed at AI software development, technological innovation and adherence to Six Sigma standards.

Marketing and sales activities should start from through building links with affiliate ad networks, participating in thematic conferences, promotion in social networks, as well as direct marketing. The company's services will differ due to innovative role in the industry. Lower price, compare to competitors, will help to generate sales easier. Customer value will consist in providing qualitative anti-fraud services for video ad, ensuring warranty support, clear reporting and quick response.

As for support activities, the company will apply the following human resources management: hiring talented people with experience and knowledge in narrow field, individual performance reviews, periodically measure employees' satisfaction, learning relationship environment. Technologically, the company will also carry out constant software (analytics tool) development and maintenance, constant improvement of internal reporting system, scalable technology infrastructure.

### **3.7. Customers' need Definition**

A need is an opportunity to deliver a benefit to a customer. This definition contains three components:

1. A benefit that has value (the what).
2. A customer who values the benefit (the who).
3. A context that creates the opportunity to deliver the benefit (the when or where).

The benefit: unique and high-quality AI cybersecurity tool for online video advertising, which ensures defense from specific bad bots due to unique technology, compare to all the existing competitors (which don't identify such types of bad bots for today), and which will help to customers to reduce media spending for robotic traffic, disguised as human. The software of all competitors technically works by the same principal. Our solution will differ.

The customer: affiliate ad networks and agencies, as well as companies with own media buying units, those who spend a lot of funds monthly for attracting human traffic for video display ad.

The context: Advertisers expect that all online content is viewed by human audiences - to real consumers who have the potential to buy a product or service. That isn't always the case. The interactive advertising industry is plagued by an increasing level of illegal activity, known as traffic fraud, which is used by criminals to exploit the system and get paid for fake, non-human traffic. The only one parameter advertisers count in paying for traffic is score from anti-fraud companies, mostly big giants, the most reputable in ad tech, like MOAT, IAS, DoubleVerify (friend of Google). And their score is much higher than should be (they don't identify all kind of bad bots), which is proven experimentally.

### **3.8. Conclusion. Problem Definition. Areas for improvement**

In accordance with the 2020 publication of Imperva's yearly "Bad Bot" review, in 2019, bad bot traffic increased to its peak anytime share of 24.1% of all traffic. In alarming way, 37.2% of whole traffic on the global computer network last year was robotic. Impostors regularly utilize sophisticated ML and AI to happily struggle anti-fraud services. Merely a cybersecurity proofs-based real-time services can meet the new dangers fully equipped and keep business defended.

Current technical solutions (anti-fraud filters) are no longer effective in combating bot traffic, experiments show that a large percentage of robotic traffic is recognized by filters as human. And since more and more money are spent on online video advertising every year, the problem is very urgent for companies which buy traffic.

How traffic is analyzed now: pixel is inserted into the page and it has been constantly working for years with one domain. As this is static script, it allows bad bots to de-encode it very easy. So, during traffic analysis, it will be identified as "white" traffic.

Pixel is used to transmit information about the ad display to the system where the counting is carried out. Pixels are used to track the user's location, as well as record his actions, such as visits to pages, registration or conversion. With its help, the source of traffic can be determined, as well as information about the user's device, provider and other technical data.

Our solution is to integrate encrypted JavaScript code into backend of the website, this will allow to constantly change of script encryption and change domains rotation during the video show, which will make the de-encoding of the script almost impossible.

## 4. Analysis: Market analysis

### 4.1. Market overview

In 2020, the monetary losses of digital marketers increased to \$35 million. This happened due to advertising fraud. In 4th table, I reported on the economic losses that marketing fraud has brought to 15 countries.

Country	Global digital ad spend (USD) in 2020	Losses to ad fraud (USD) in 2020
United States	134.6 billion	11.4 billion
China	61.2 billion	5.2 billion
UK	19.25 billion	1.6 billion
Japan	15.7 billion	1.3 billion
Australia	2.7 billion	803 million
Germany	8.5 billion	730 million
Canada	6.8 billion	578 million
France	5.7 billion	485 million
Brazil	5.5 billion	468 million
Russia	3.8 billion	323 million
Italy	3.7 billion	315 million
South Korea	3.6 billion	300 million
Spain	3 billion	255 million
India	1.9 billion	162 million
Indonesia	1.5 billion	128 million

Table 4. Global digital ad spend in 2020 by countries (source: <https://www.cheq.ai>).

When international trust agents try to increase the "transparency" of online advertising, they face problems with unscrupulous users and expose advertising scams. In its study of online platforms and digital advertising, the UK's Competition and Markets Authority has identified advertising fraud as an industry-wide challenge and a problem that needs to be addressed immediately. According to a study by AdTech, the Australian Competition and Consumer Commission, "opacity may arise due to the increasing complexity and number of suppliers and services involved in the supply chain and the nature of some parts of the advertising chain, which can be metaphorically compared to black chest". In our study, such a supply chain is given as an environment for the development of fraud. The US Federal Trade Commission has reported to Congress on the proliferation of bots that affect online advertising. The commission said bots "use artificial intelligence and big data analytics to simulate real network users; The Department of Homeland Security has concluded that bots are becoming more widespread and much better at mimicking human behavior. These features can be used for both good and negative intentions".

1. The US lost \$11.4 billion due to advertising fraud, thus becoming the biggest victim of advertising fraud in 2020. The world's largest consumer invested \$135 billion in internet advertising, but lost significant amounts due to advertising fraud, namely \$11.4 billion. In 2020, during the Presidential race in the United States, 13% of all political expenditures (\$1.3 billion) were lost due to advertising fraud. This is in line with the essence of digital policy spending, when there was a need to spend a very significant amount of money on the election campaign before the election date with little accountability. This proves that in the United States in 2020, the biggest digital expense was political campaigns. Eventually, advertising fraud became even more

prevalent due to the perfect “storm” that contributed to bot attacks with minimal resource consumption. This “opportunity” was triggered by the COVID-19 outbreak, which led to the crisis.

2. China suffered losses of \$5.2 billion due to ad fraud. The world's leading media investment company GroupM has suggested that the level of advertising fraud in China reaches 30.7%. In 2020, Muddy Waters (short seller), led by Carlson Block, expressed his “prediction” of advertising fraud in the case of the acquisition of Baidu by Chinese company YY Live for \$3.6 billion. Muddy has made detailed allegations of advertising fraud. As an example, the man cited fake IP addresses, which turned out to be bots, the use of VPNs and other evidence of fake indicators. There is also a case where a fraudulent operation called “Red Eye” used traffic exchange platforms and a combination of bots and real users to create fraudulent traffic. The fraud involved digital publishers with more than 300,000 different URLs and applications. The scammers were connected through 99 different nodes that generated fake traffic. Criminals have influenced such well-known brands as Apple, Procter & Gamble, GSK, Dior and Chanel. Advertising fraud worked as follows: branded ads were displayed alongside pornographic content on both desktops and mobile devices. The Chinese Advertising Association (CAA) and the Trustworthy Accountability Group (TAG) were involved in solving the problem. In March 2021, the advertising industry's self-regulatory initiative announced new international standards in the Chinese market.

3. The UK suffered a loss of \$1.6 billion in 2020, due to advertising fraud (£1.2 billion). British companies trapped by fraudsters have called for doing everything possible to solve this problem. After the Financial Times falsified the domains of a trusted brand, the publisher researched 10 advertising exchanges and estimated the value of fraudulent inventory at \$1.3 million per month. FT's director of digital advertising operations, Anthony Hitchings, commented on the incident: “The scale of the fraud we have detected is very large. The industry continues to waste marketing budgets on what is essentially organized crime.” The British brand Virgin Media was also among dozens of brands advertised on fake sites filled with stolen content using scraper bots. Representatives of the brand said: “We hope that more can be done in this area to stop the payment of advertising fraud.” In 2020, a study was conducted in the UK, which involved such well-known brands as ISBA and PwC, HSBC, Walt Disney and Unilever. Each had about 300 separate supply chains. The study found that 15% of advertisers' costs in the UK are completely non-distributable, creating a markedly opaque supply chain. The data obtained from the demand platform (DSP) differs with the sales side. In July 2020, the Competition Authority expressed its opinion on the problem on the Internet advertising market. It wrote: “If the problems in the digital advertising market mean that [publishers] receive a smaller share of advertising revenue than they should, it is likely to reduce their incentives and ability to invest in news and other online content, to the detriment of those who use and appreciates such content, and for the wider society.”

4. Japan lost \$1.3 billion due to advertising fraud. About 31% of advertising in Japan is digital, which amounted to 15.7 billion US dollars in 2020. Of this amount, the country lost \$1.3 billion due to advertising fraud. However, the problem of ad fraud in Japan is gradually beginning to diminish. This was influenced by outliers such as Cyber Communications Inc (CCI), owned by Dentsu. Before they began checking cybersecurity ads, they found that the country's fraud rate in certain campaigns had almost reached 7%. Masatoshi Ito, president of the Japan Association of Advertisers (JAA) and chairman of Ajinomoto Co, recently announced the launch of the “Advertiser's Declaration on the Challenges of Digital Advertising.” This document sets out 8 “partnership principles”. These principles address many new industry issues that advertisers need to address, including the issue of advertising fraud, brand security, and the visibility and

transparency of the supply chain. Let's quote Yoji Inutsuka, a manager from Japan; The man said: "Despite the turbulent times for marketers, digital advertising remains an important source of advertising costs in Japan. In this situation, we see that fraudsters have ready access to the most modern tools ever available for large-scale fraud."

5. Australian marketers lost \$803 million in 2020 due to advertising fraud. During the peak of COVID-19, the rate of Internet fraud in Australia rose from 18% to 28%. Click fraud can be committed not only by direct competitors, but also by organized groups of professional criminals. Typically, the second option has a complex sophisticated infrastructure (which includes fake websites and automated bots); such schemes can deceive many businesses. CHEQ Australia Regional Managing Director Mick O'Brien says: "We see that much of the most important paid search costs are spent on invalid clicks, which is both an economic loss for companies and also denies advertisers important data when bots instead of people click on expensive ads". The Audited Media Association of Australia (AMAA) in its report on media trust showed that the biggest marketing problems are advertising fraud and Internet traffic provided by bots. The association said bots distort the actual effectiveness of the campaign, and 61% of marketers said they were trying to show evidence or effectiveness, which was 54% for media agencies in Australia. The ACCC, the Australian competition regulator, continues to study Australian online advertising, tackling non-transparency in the industry.

6. Germany lost \$730 million due to digital advertising fraud in 2020. Arne Kirchem, a member of the German Association of Advertisers and director of media at Unilever at DACH (consisting of Germany, Australia and Switzerland), believes that the monetary loss from advertising fraud will increase over time. Quoting him: "As the share of digital spending increases from year to year, the total amount of money spent also increases from year to year. This situation can not be accepted by any advertiser. The level of such fraud is about 5% and even higher." Arne notes that the increase in performance is irritating and reduces the level of trust on the part of advertisers. First you need to reach a common industry solution, get a clear idea of the scale of the problem, and then take action to eliminate the problem.

7. Canadian advertising fraud losses reached \$578 million, while Canadian companies' total expenses were \$6.36 billion dollars. In general, the cost of digital advertising accounted for 54% of marketing budgets. Moreover, forecasts say that by 2021, spending will increase to \$7 billion. Of that, \$578 million will be lost due to advertising fraud. Currently, the cost of advertising fraud in Canada is 13% of the cost of paid search and social networks, reaching 20% for Canadian digital agencies. However, almost every sector of the Internet is under the influence of fraud.

8. France lost \$485 million from advertising fraud. French marketing companies unite against advertising fraud: 15 French advertisers (including AccorHotels, Allianz France and Renault) have signed a manifesto stating that by spending money on advertising, the above-mentioned brands will give priority to websites marked Digital Ad Trust (DAT). It should be noted that DAT is a French brand that is responsible for brand security, visibility, advertising fraud, user experience and personal data protection. The company also certifies websites that follow responsible advertising practices. It is important to refer to industry standards (such as Better Ads Standards) and to include certified verification tools. To combat advertising fraud, three French sources of information, France Télévision, M6 and TF1, have teamed up to create a common advertising standard.

9. Brazil lost \$468 million from advertising fraud. The fact that the country is almost in the lead in terms of growth in spending in the world, leads to increased opportunities for advertising fraud. Despite the COVID-19 pandemic, Brazil has seen a 5% increase in digital advertising spending in 2020 (\$5.5 billion). Recently uncovered scams consisted of showing millions of out-of-context ads through more than 240 Android apps in the official Google Play store. It should be noted that most of the traffic (almost 21%) here comes from Brazil. With the active improvement of mobile communication, mobile fraud is also growing (in 2020, Brazil will increase the number of application installations by 50%). In particular, Brazil has a higher level of funding and more frequent installation of shopping programs. Such non-gaming programs are the most attractive for fraudulent advertising schemes.

10. Russia has lost 323 million US dollars. Russia's Interactive Advertising Bureau (IAB) shows that the digital share is 36% of the country's advertising market share. When it comes to advertising fraud, 70% of Russian brands say they use clicks as the main parameter of advertising effectiveness. This proves that Russian brands are particularly vulnerable in this sense. Many Internet fraudsters come from Russia, including those responsible for the Methbot case. As for fraudulent Russian-language forums, GoodGoogle is one of the more infamous Google Ads fraudsters related to Google Ads. This can be seen in a recent economic report from ClickCease (CHEQ, which offers solutions for small and medium-sized businesses). Combining hands-on customer service with special software, GoodGoogle promises customers the ability to block competing ads.

As a result, you can make a conditional “rating of advertising fraud.” In this ranking: 11th place is occupied by Italy (315 million dollars in losses from advertising fraud in 2020). This is followed by South Korea (\$300 million lost), Spain (\$255 million). At the end of the ranking are India (\$162 million) and Indonesia (\$128 million).

#### **4.2. Historical video ad market analysis for 3-5 years**

In less than five years, the cost of online advertising has almost doubled. Comparing 2015 and 2019: Global Internet advertising spending in 2015 was \$ 156 billion, while advertising spending in 2019 was \$ 299 billion. Digital media advertising spending in 2019 crossed the "highest" mark, reaching \$ 160 billion a year. Such costs include banner and multimedia advertising, sponsorship services, online video and social media. The world is gradually but steadily shifting from television and newspapers to digital advertising, which accounts for more than half of total spending. This respite and rising digital spending began in the late 2010s and will continue to do so everywhere. Interesting fact: between 2012 and 2020, the budget percentage of US marketing (allocated to social media) increased from 9% to almost 21%. Users are projected to spend more than \$ 183 billion as a result of the 2020 pandemic.

There are several reasons for this growth: first, consumers have shifted their focus from analog to digital advertising. Second, during the COVID-19 pandemic, the average daily time spent on the Internet increased: at the beginning of quarantine, the average user spent 3.2 hours online; during lockdown, time has increased to 7 hours a day, and people in the United States can spend an average of 11 hours a day in front of screens. According to eMarketer, digital video views among adults in the UK during the pandemic rose to 2.75 hours (almost 30 minutes daily).



Cisco company estimates that by 2022, online-video will account for more than 82% of all consumer Internet traffic - which is 15 times more than in 2017. — (Cisco) 55 Video Marketing Statistics For 2020 by Biteable.

73% of adults in the U.S. use YouTube — (from Pew Research). For reference, that's more than Facebook video and Instagram. Most 15–25-year-olds in the U.S. use it.

70% of what people watch on YouTube is determined by its recommendation algorithm (that's not ideal in many ways, for marketers or consumers).

90% of DIYers watch how-to videos on YouTube during an actual project.

Even though some data points to younger users leaving Facebook, including these stats from Facebook Stats Every Marketer Should Know in 2020 by Sprout Social. It also shows that older users are the fastest growing demographic. That's both a good and a bad thing for Facebook. Older users have more discretionary income (often), but younger ones are obviously going to stay with you longer.

88% of Facebook users are on the platform to stay in contact with friends and family.

#### **4.3. Digital video advertising market - forecasts from 2020 to 2025**

Digital video advertising is a type of video advertising that can be viewed on a network-connected device (such as a smartphone, desktop, or tablet). Companies use such video advertising as an interactive marketing strategy to increase the recognition of their own brand. In 2019, the global digital video advertising market was estimated at 41.132 billion US dollars. According to the World Bank, the percentage of people who use their devices through an Internet connection has risen from 6.77% (2017) to 47.72% (2020). This is a major factor in the spread of digital video advertising in the world.

Social networks are becoming increasingly popular, which is why advertisers are looking for their audience, focusing on Facebook and Google (the main technical "giants"). The use of smartphones by people to use social networks (such as Facebook and YouTube) will in the near future spend more of their revenue on mobile advertising, and this will further stimulate the growth of the digital video advertising market. Using digital video advertising, which can capture a large group of people at once, reduces the cost of promotion.

As the number of people who use social media grows, the chances for non-profit organizations and businesses to attract the target audience in social networks and, with them, the costs of these networks and advertising increase. As for predictions, for example, in February 2019, 81% of US residents used a smartphone; it is expected that by 2024 almost 90% of Americans will have a smartphone). In China, the use of smartphones has almost doubled in 5 years - and it is projected that by 2022 it will exceed 3.4 hours a day. Statista estimates that by 2025, China will have 1.13 billion smartphone users, which will be almost 14% of the world's population by 2025.

It is expected that advertising costs on mobile devices (including popular applications such as TikTok) will become more common. This is due to the fact that every year billions of users spend hundreds of hours using a smartphone. The significant growth of social media, video and e-commerce over the last 10 years is quite obvious and understandable, in contrast to television and print.

The pandemic has affected global spending projections: they could fall 8.1% this year. However, 53% of all global advertising costs are expected to continue to go online. It is also expected that with the doubling of digital content consumption, the cost of e-commerce and search advertising will continue; advertising budget will become more digital.

<b>Digital Video Viewers Worldwide, by Region, 2019-2023</b>					
<i>millions</i>					
	2019	2020	2021	2022	2023
Asia-Pacific	1,431.9	1,541.3	1,642.0	1,736.5	1,812.1
Latin America	289.2	298.2	305.9	312.0	317.9
North America	260.2	265.9	271.0	275.8	280.3
Western Europe	254.1	260.0	264.9	269.0	272.8
Central & Eastern Europe	226.6	233.5	239.1	245.5	250.3
Middle East & Africa	170.3	182.7	192.6	200.7	207.8
<b>Worldwide</b>	<b>2,632.2</b>	<b>2,781.6</b>	<b>2,915.5</b>	<b>3,039.5</b>	<b>3,141.2</b>
<i>Note: internet users of any age who watch streaming or downloaded video content via any device at least once per month</i>					
<i>Source: eMarketer, September 2019</i>					
T10538	www.eMarketer.com				

Table 5. Digital video viewers worldwide by region, 2019-2023.

It is likely that by 2023 the world's population will grow to 8 billion; more than 39% of Earthlings will become digital video viewers (for comparison - in 2019 there were 35%) - according to the US Census Bureau.

Nowadays, marketers are increasingly focused on developing interactive video content and more effective buying mechanisms. This is due to the booming e-commerce industry and the fact that Internet users are consuming digital content at a faster rate than ever before. One of the main drivers of growth in the global digital advertising market is the use of such advertising to raise awareness of various issues. In addition, with the advent of 5G technology, the digital video ad market will only grow over the next five years. Although its growth may be hampered by the impact of the GDPR and other regulations.

To prevent the spread of COVID-19, the government of many countries has restricted access to public places, schools and borders, making sporting events, business conferences and concerts impossible. Working offline has turned into work at home - remotely. As a result, marketers want to move to cheaper and more flexible channels (such as software advertising). There are also changes in the budget, which depends on the increase in the consumption of digital media over the Internet, because this is the "style" of most users during covid. Thus, the outbreak of the pandemic to some extent had a positive impact on the digital video market.

Global digital video markets are segmented by device type, end-user industry, and geography. By type of device, market segmentation is carried out as smartphones, tablets, laptops and others. Market segmentation by end-user industries is carried out as retail, automotive, healthcare, education and others.

In terms of geography, APAC has given a forecast that will witness a significant CAGR over a period of time. Geographically, North America accounted for a significant share of the global

digital video advertising market in 2019, but today the global digital video advertising market is classified as North American, South American, European, Middle Eastern and African (MEA) and Asia-Pacific. region (APAC). The use of social media (Facebook, Snapchat and Instagram) by the population of Canada and the United States has played a significant role in the growth of the digital video advertising market in the region. Returning to the statistics of 2018, the Bureau of Interactive Advertising writes that the cost of digital advertising in the US exceeded \$ 100 billion, and mobile advertising has taken a dominant position. The country has grown interested in developing original video content to improve the impact and effectiveness of video advertising campaigns. It follows that another reason for the development of the digital video advertising market is the growth of investment in original video content.

Demand for digital video advertising platforms in China and India is projected to increase, leading APAC to witness CAGR. BFSI, consumer durables and e-commerce will require increased advertising costs. To promote their products and services, e-commerce companies will work with redundant platforms (OTT) and social networks. As an example, I would like to cite Flipkart, which together with Hotstar launched a platform for video advertising - Shopper Audience Network, in 2018. This platform is suitable for marketers and brands, because it allows you to place targeted advertising with personalized videos on Hotstar.

Analyzing the situation in China, we see that among 98% of users (816 million people) the mobile Internet dominates. China's revenue from streaming advertising video in 2018 amounted to 7.8 billion dollars (about 35% of the total) - which emphasizes the importance of the mobility strategy. China is home to 3 of the world's five largest advertising services, each supported by one of the country's three technology "giants": Baidu, Alibaba and Tencent - collectively known as BAT (as shown in Figure 2). Their projects: Qiyi (Baidu), Youku (Alibaba) and Tencent Video have about 500 million UIA each. It is safe to say that due to the popularity of video advertising, in 2019, smartphones have surpassed TVs as the main entertainment device.

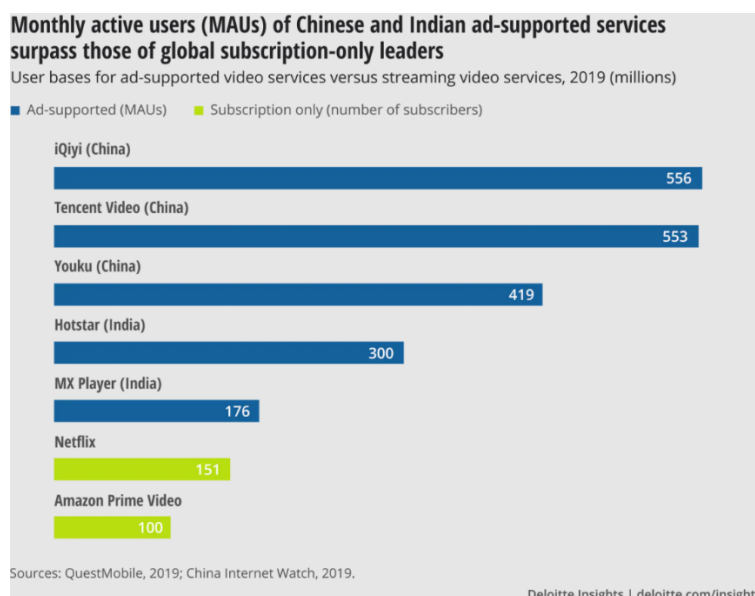


Table 6. Monthly active users (MAUs) of Chinese and Indian ad-supported services surpass those of global subscription-only leaders, 2019 (millions).

#### 4.4. Overview of competitors and substitute service

Top Competitors	Market Share	Vendor
IAS	21.52%	IAS
DoubleVerify	20.74%	DoubleVerify
comScore	14.40%	Comscore
Moat	23.45%	Oracle
Facebook Measurement	6.72%	Facebook
Adobe Media Optimizer	6.57%	Adobe
Other	6.60%	Other

Table 7. Top competitors of Adbot shield among platforms for measuring ad viewability and attention.

Main competitors are Integral Ad Science (IAS), Adobe Media Optimizer, DoubleVerify, comScore and Moat.

Integral Ad Science (IAS) was founded in 2009. It is headquartered in New York and operates in 17 offices in 12 countries. IAS offers technologies that manage high-quality advertising media and is a world leader in digital advertising verification. IAS professionally protects any advertising investment from fraud by providing advertisers and publishers with both information and special technology. It should be noted that the IAS is part of the group of software companies Vista Equity Partners.

Moat, valued at \$ 434 million in 2010, is part of the Oracle Data Cloud family. (Oracle acquired Moat in the spring of 2017). According to information on the Internet, Oracle Data Cloud "helps advertisers connect with the right customer, personalize each interaction, and measure the effectiveness of each engagement." By working on Oracle ID Graph, Oracle Data Cloud creates a real understanding between consumers, so businesses know more about who their customers are, what they do, where they go and what they buy." Rumor has it that Oracle has allocated \$ 850 million for Moat.

Double Verify serves clients such as Facebook. In general, Double Verify serves advertisers, marketplaces, brands and publishers. The essence of the company's work is to detect fraud (confirming that you pay for your ads to be viewed by real people, not bots). The program is also responsible for "visibility" (i.e. checks that the ad has a format that does not change depending on the device) and generally ensures the security of the brand. DoubleVerify raised \$ 549.5 million. DV is co-financed by 10 investors, including BlackRock Innovation Capital and Neuberger Berman Group. The last funding took place on October 28, 2020. DV acquired 4 organizations (the last one - Ad-Juster, Inc. on November 7, 2019).

By combining information from smartphones, tablets and computers with television and other demographic information, the global data platform helps the company to create its own products. For example, well-known tools for measuring ad networks such as Media Metrix and Mobile Metrix, as well as products of comScore marketing solutions. The latter offer special research, which includes analysis of data on site visits and advertising, viewing channels on television, online shopping and other information on comScore assets. The legal infrastructure for process control can be obtained through the company's software. Since 1999, when the company was established, it covers about 85% of total sales.

All of main competitors are certified by JICWEBS (The Joint Industry Committee for Web Standards) is made up of representatives from ISBA, the IPA, IAB UK, AOP and the NMA. It was

created by the UK and Ireland media industry to ensure independent development of standards and benchmarking of best practice for online ad trading.

Weaknesses of competitors:

- High threshold for their services usage - packages of the main competitors are sold by subscription for at least a year, and MOAT, for example, sells 1M pixels as minimum, which can only be afforded by large businesses, respectively, small and medium-sized businesses either cannot afford it, or do not know about such a problem at all
- It is troublesome and time intense to conclude contracts with the main market players, not everyone is ready to cooperate, picky
- Non-informative analytical reports, which does not allow to assess how well they measure traffic
- The main competitors still allow bot traffic to pass, and their traffic score, defined as human being, has a large experimental error
- Small competitors provide a lower quality service to protect against bots than the main players
- All competitors use the same static type of integration of JavaScript code into the page, which is easy to de-encode to bad bots

In 2016 Shailin Dhar published the study on advertising fraud (source: <https://medium.com>) that shows however ludicrously straightforward and profitable it's to form cash with bot traffic (actually, our team partially repeated this experiment by prior agreement with one of the partner ad networks (to show them a deep of problem) and was surprised).

Here is the situation that shook the market of marketing and advertising. A situation where it took Shailin less than a week to create and complete the publisher's website and, with the help of bot traffic, make a real profit. Most of the purchased fake traffic was able to bypass well-known antibiotic platforms such as MOAT and IAS. This is because such traffic has been specifically designed to pass or bypass their verification processes. The main problem and the "nightmare" of people who pay for advertising on the Internet is that fake users can be purchased in a few hours using LinkedIn without the help of any special tools - it is much easier than getting pirated movies or music.

- I gathered the main conclusions from what was written:
- Robo-traffic that can bypass IAS, Double Verify and Moat checks costs \$0.001 per click;
- IAS filters only 17% of fake traffic, MOAT - 40%;
- It is not enough to use applications and sites to detect fakes, although this is also important;
- Buying fraudulent traffic is easier than getting pirated movies or music;
- Fraudulent traffic generators also run sites that are clients of MOAT, IAS, Double Verify and more;
- Once a bot gets in a native platform, from that moment it's a portion of their traffic;
- Search is built into the basis of advertising.

## 4.5. Customer Segmentation

Consumer segmentation is used by marketers to get an accurate picture of their customers and group them by similarity. Segmentation allows you to develop clear messages for certain types of your customer base. Such messages must be personalized if the marketer wants to increase the number of transactions. However, so far it is difficult to name only one way to segment customers, which would be the best. Market segmentation in B2B comes with its own sets of challenges, such as the complex nature of products or services involved, the number of decision-makers involved in the purchase, longer sales cycles, and the importance of cultivating personal relationships. Therefore, it is essential to use the various types of market segmentation used in B2B before choosing the right metrics for segmenting the target audience. With segments identified, we assess their overall attractiveness of each segment by quantifying the size, future growth and price sensitivity of each segment (table 8).

Customer segment	Needs	Size	Expected growth	Price sensitivity	Overall attractiveness	
Innovative Solutions	Help them differentiate their product to end users	1	2	3	2	from 1 to 3
Proven Solutions	Create specific end-product result with off-the-shelf formulation	2	2	2	2	from 1 to 3
Price Seeker	Reliable quality and delivery at lowest price	3	1	1	2	from 1 to 3

Table 8. B2B segmentation analysis by customers need.

### B2B

<b>Geographic</b>
United States, China, UK, Japan, Australia, Germany, Canada, France, Brazil, Russia, Italy, South Korea, Spain, India, Indonesia

<b>Firmographic</b>
Affiliate ad networks and agencies, companies with own media buying unit

<b>Role</b>
Executive, Sales, Marketing, Research

<b>Behavioral</b>
Quality sensitive, price sensitive, innovative solution

Table 9. B2B market segmentation.

With firmographic data, B2B businesses can segment their market by categorizing firms along with relevant variables. In precise terms, firmographic segmentation can be defined as the classification of B2B customers according to shared company or organizational attributes. Industry firmographics refer to information about an organization's primary activities. This is the primary basis of segmentation to group firms that are in a similar line of business. In our case affiliate ad

networks and agencies, as well as companies with own media buying units are our target audience, as they are interested in accurate traffic measurement and analysis. As well as, understanding the behavior of customers is the only way to improve customer retention and loyalty. Besides, customer segmentation based on behavior patterns also helps in picking the right marketing strategy for every segment that is vital for creating a steady stream of quality leads. In our case there some business on the market who are aware of the problem with bot traffic, some of them are aware that nobody from current anti-fraud solutions doesn't protect them from specific bots, - they are waiting for innovative solution to solve the problem. Some medium and small business are price sensitive, as price for anti-fraud solutions from main competitors, is very high and should be paid for the year in advance, so they just can't allow it to their business. In any case, most of them require proven solution, which will show that it works better than existing competitors.

Today, prospects in B2B demand highly personalized conversations, and bombarding them with generic information will only harm your business. Instead, reaching out to prospects with need-based marketing campaigns is likely to yield better results. Need-based segmentation is centered on the philosophy that all customers are not created equal – allowing you to concentrate your bounded resources on prospects that are potentially more valuable to you, based on their need for your product and the ability to purchase it (more about this in the next section). Besides, salespersons can also use need-based information to create compelling sales scripts focused on solving the challenges faced by their prospects.

As for geographic segmentation, we chose those countries which suffered the most from ad fraud, as well as which are the most marginable and perspective by forecast on video ad market growth: United States, China, UK, Japan, Australia, Germany, Canada, France, Brazil, Russia, Italy, South Korea, Spain, India, Indonesia.

With a customer-based segmentation method, you need to analyze how well the customer meets the goals of your business. This method is quite promising, because it can be used to calculate the importance of a potential customer (in terms of what profit can be obtained from this customer). Over the last few years, multilevel segmentation has been taken to a new level. It is now possible to calculate a strategy that focuses on a limited number of Internet users (only those who are most valuable to your business), as well as the ability to distribute existing customers based on their life positions. A large number of marketers have moved away from the use of large amounts of data and automated marketing, which focused on a wide range of potential customers. These things have been replaced by maximizing profits from a short list of potential customers. When it comes to working with an existing customer base, it's hard not to mention the value of multi-level customer segmentation; smart marketers use all possible data to identify the potential value of already attracted customers. Many years marketing efforts have been concentrating on lead generation performance, experienced teams use big data to open the promising value of the customers already shopping from their business. Tiered segmentation enables demand formation marketers to divide existing customers depend on their customer lifetime value.

High touch – Executive (by role); innovative solutions (by need); USA, India, China, UK, Australia, Japan (by country); Large enterprises (by enterprise size)

Mid touch – Marketing (by role); quality sensitive (by need); Germany, France, Canada (by country); medium-sized enterprises (by enterprise size)

Low touch – Sales (by role); price sensitive (by need); Russia, Brazil, Indonesia, Italy, Spain, South Korea (by country); small-sized enterprises (by enterprise size).

#### 4.6. Overview of alternative uses of company's service on the market

According to Imperva's latest report "Bad Bot Report 2020", the financial sector is the main target for such activity, followed by ticketing, the education sector, government websites, and gambling (so such industries could be chosen as alternative to online video ad, as well as for expanding).

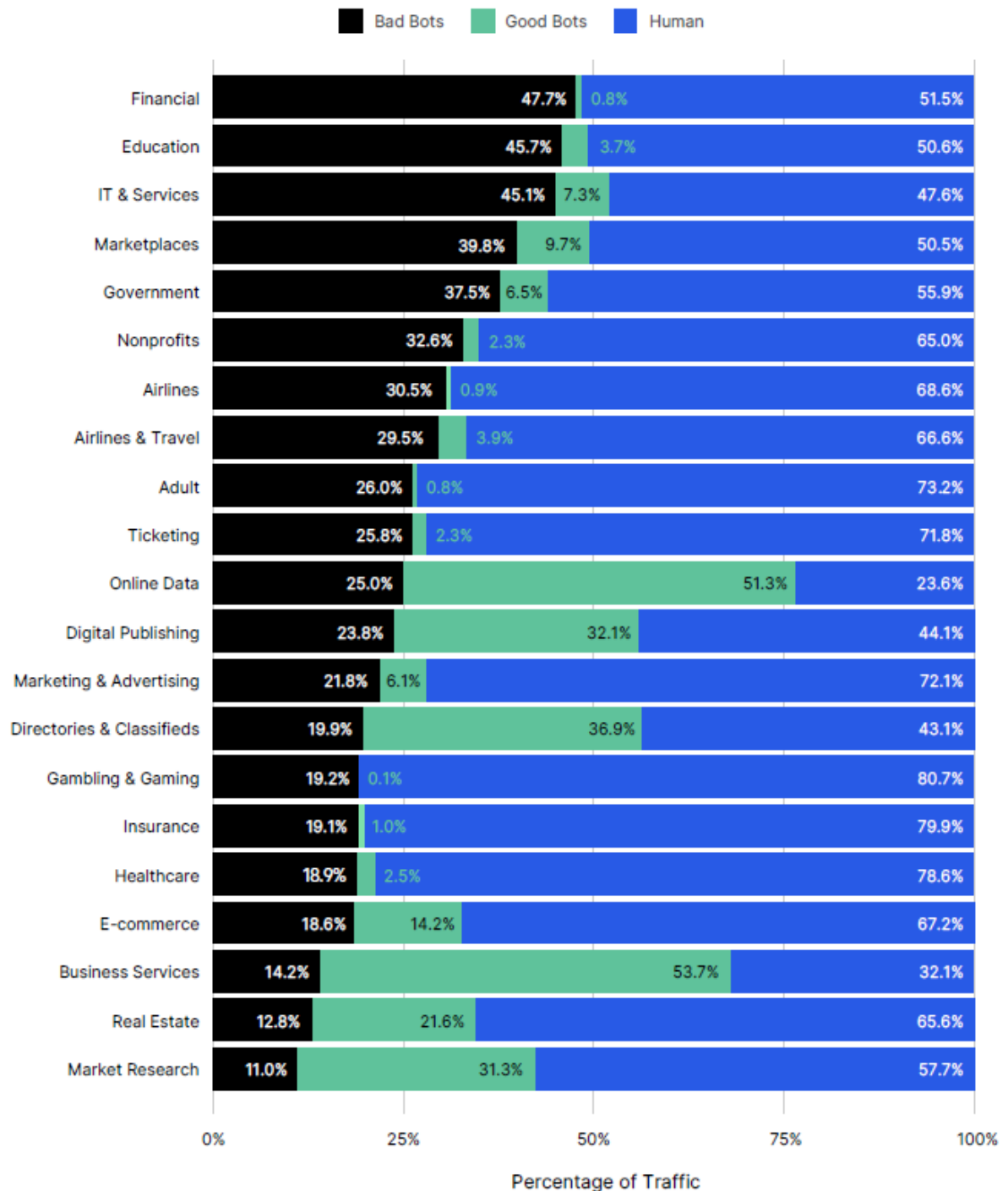


Table 10. Traffic ratio between bad, good bots and human one for 2019 by industry (source: Imperva's "Bad Bot Report 2020").

The highest percentage of fake users (47.7%) belongs to companies engaged in financial services. The percentage of bots in educational companies reaches 45.7%. In both cases, bots try to access the data and accounts of real users.



Another industry that is attacked by 39.8% of bots is trading platforms. It looks like bots on e-commerce websites are lowering prices and content and attacking user accounts.

The government (government) accounts for 37.5% of fake users (often bots interfere with voter lists). Non-profit organizations account for 32.7% of robot traffic. In such cases, bots use fake donation pages to steal credit card numbers. Unfortunately, many non-profit organizations cannot cope with this problem.

Another victim of fake traffic is the airline industry (30.5% of bots). Here, flight prices can be reduced not only by the company's direct competitors, but also by unofficial online travel agencies (OTAs), rates aggregators, metasearch engine, which use sophisticated bots that abuse the business logic of booking mechanisms. The scheme in this case works as follows: when request a ticket for selling, fake pages and bots can distort the booking rate, increase the amount of GDS costs and significantly slow down the sites, which causes customer dissatisfaction. In addition, the problem of account absorption is very common, as fake accounts, again, try to get into the accounts of real users and clear them of the accumulated balance of air miles.

Apparently, the first industry that has ever been attacked by bots is ticket sales. Currently, bots in this area account for only 25.8% of users. The following types of bots are most popular in this industry: credential stuffing bots that access user accounts, seat inventory checkers and scalping bots.

19.2% of robotic traffic is traced in gambling and gaming companies, which are hurt by aggregators that continuously grind for ever-changing betting lines. Users are deceived about the constant change of bets and may risk money (which could be easily be transferred to another account) or loyalty points in their gaming accounts.

Operating with a huge amount of data, the e-commerce industry accounts for 18.6% of fake traffic. Prices, bills, credit cards, various gift certificates and personal data of users are endangered.

Considering Table 11, which compares complexity of bad bot traffic by industry, we can see a difference: the largest share of complex bots is tracked in the following industries: marketplaces, real estate, ticket sales, IT, non-profit organizations and airlines. An important nuance - the number of bots does not always correspond to the complexity of their attacks. For example, an experienced bot can make fewer queries to achieve its goal. Bad bots operate daily in each of these industries. Every industry is bombarded to checkup the vitality of stolen credentials. Some are beat by experienced bots that again and again execute a definite task, such as checkup credit bank card credentials. Another may be cleaned for pricing content, while a third may be injured by bad bots checking gift certificates balances. Anyone can fall victim to a bot attack, because the problem of each fake user is unique and depends on the nature of the business, the content of the online page and the goal of the competitor, which he sets for bots. To protect your product from bot attacks, you need to work on optimization every day.

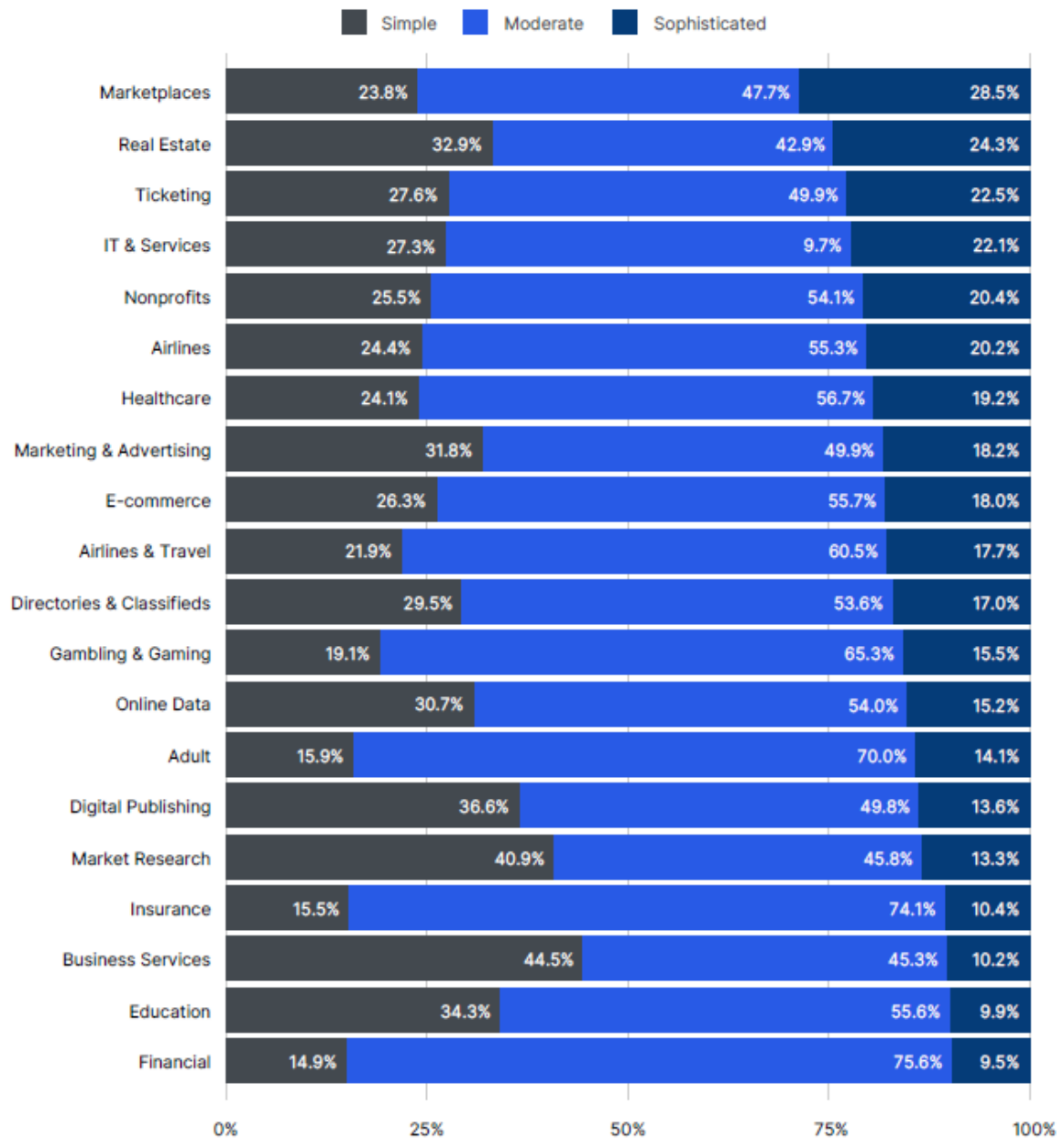


Table 11. Bad bot sophistication for 2019 by industry (source: Imperva's "Bad Bot Report 2020").

As a result, I can state the following to this section: the industry that suffered from bot attacks in 2019 is the industry that provides financial services (47.7%). This is because people who operate bots are always focused on the most profitable and simple source of income. In addition, more than three-quarters of fake users are so well thought out that they can bypass certain security systems and are difficult to detect.

The main purposes of bad bots are: account takeover and fraud (also known as credential stuffing, credential cracking or dictionary attacks); credit card fraud (card cracking or carding) custom content theft including financial data scraping; attacks on the application programming Interface (API); API hijacking; denial of service at the application layer (different from volumetric DDoS attacks).

## 5. Planning: Marketing and Sales

### 5.1. Description of marketing mix Product, Pricing, Placement, Promotion

Product	Promotion	Price	Place
Innovative solution	Affiliate ad networks and agencies	Competitive pricing strategy	Website
Proven solution	Conferences	Tiered subscription pricing model	
Informative analytical reports	Social Networks	On monthly basis	
	Direct marketing	Should be affordable to SME	
	Personall selling		

Table 12. Marketing mix, based on 4P approach.

We'll apply competitive pricing strategy - to set an adequate price, according to what the competition requires, you need to apply a competitive pricing strategy. Typically, this pricing method is used by newcomers to the market to establish and verify the correct price of goods. To do this, be sure to study your competitors: what do they do and how much do they charge? After that you will be able to offer your own prices and attract the first buyers. The problem you may have to face is the lack of information needed for pricing. Some medium and small business are price sensitive, as price for anti-fraud solutions from main competitors, is very high and should be paid for the year in advance, so they just can't allow it to their business.

There some business on the market who are aware of the problem with bot traffic, some of them are aware that nobody from current anti-fraud solutions doesn't protect them from specific bots, - they are waiting for innovative solution to solve the problem. In any case, most of customers require proven solution, which will show that it works better than existing competitors. Our anti-fraud solution will be innovative. As we'll differ from all competitors with our unique value proposition: now pixel is inserted into the page and it has been constantly working for years with one domain (pixel is used to transmit information about the ad display to the system where the counting is carried out). As this is a static script, it allows bad bots to de-encode it very easily. So, during traffic analysis, it will be identified as "white" traffic. Our unique solution is to integrate encrypted JavaScript code into the back-end of the website, this will allow to constant change of script encryption and change domain rotation during the video show, which will make the de-encoding of the script almost impossible.

Unlike competitors, we'll provide informative analytical reports, which will allow to assess how well we measure and analyze traffic.

We'll automate the process of concluding contract and make it more transparent. Unlike competitors, which are very picky in question to whom cooperate with, we will lower the bar to customers, and make solution available for SME as well. To start using solution, customers should visit the web-site, fill in and submit the pre-application form. Or if it's a direct contact with a person from affiliate ad networks and agencies, as well as companies with own media buying units (as a result of participating at a conference or direct marketing), an account manager will contact a customer and send the pre-application form for filling in. The process of KYC, as well as concluding contract will be very easy and customer-oriented.

## 5.2. Sales strategy (including sales channels)

One of my favorite definitions of strategy is the words of Michael D. Watkins: “Business strategy is a set of guidelines that, when transmitted and adopted in an organization, create the desired model of decision-making. Thus, strategy is about how people in an organization should make decisions and allocate resources to [achieve] key goals. A good strategy provides a clear roadmap that consists of a set of guidelines or rules that define the actions that business people should take (rather than take) and the things they need to prioritize (rather than prioritize) to achieve their desired goals. ” (see table 13).



Table 13. Sales strategy roadmap.

According to this quote, “a sales strategy outlines the detailed steps an enterprise takes to present and sell goods or services to target customers in such a way as to communicate that their product or service brings greater value to the buyer than those offered by their competitors”. The sales strategy is consequently based on value proposition – the reason why a customer should choose our product or service over that of our competitors. As for product-market growth matrix, which describes a combination of a firm’s activities in current and new markets, with existing and new products (table 14), we apply product development strategy.

	Existing Products	New Products
Existing Markets	<b>Market Penetration Strategy</b> <ol style="list-style-type: none"> <li>More purchasing and usage from existing customers.</li> <li>Gain customers from competitors</li> <li>Convert non-users into users</li> </ol>	<b>Product Development Strategy</b> <ol style="list-style-type: none"> <li>Product modification vis new features.</li> <li>Different quality level introduction</li> <li>“New” product.</li> </ol>
New Markets	<b>Market Development Strategy</b> <ol style="list-style-type: none"> <li>New geographic areas</li> <li>New distribution channels</li> <li>New segments</li> </ol>	<b>Diversification Strategy</b> <ol style="list-style-type: none"> <li>Organic growth</li> <li>Joint ventures</li> <li>Mergers and acquisitions</li> </ol>

Table 14. Product-market growth matrix.

As for strategy for competitive advantage by Porter (1980), we'll apply differentiation.

		Uniqueness perceived	Low cost
Competitive scope	Broad Target	Differentiation	Overall cost leadership
	Narrow Target	Focused differentiation	Focused cost leadership

Table 15. Strategies for competitive advantage by Porter.

According to Porter: "There are several ways to achieve a differentiation strategy, take into account differences in design or brand image, technology, characteristics, customer service, dealer network, etc. Strict differentiation increases brand loyalty, thus guaranteeing protection from 5 competitors. And while using this strategy, the firm cannot ignore costs, it is much easier for creators to cope with the possible difficulties of not having alternatives for buyers and the ability to compete with substitutes. products. Raising prices and avoiding competition for a leading position can be achieved by reducing the pickiness of potential buyers to the price.

Porter highlighted key segmentation skills and resources: strong marketing, creative product engineering, strong basic research, quality corporate reputation and technological leadership, maintaining industry traditions or learning from other companies' exclusive skills, and successful collaboration. Porter's general organizational requirements include: clear coordination of functions in research and product development; subjective measurement and encouragement, not just quantitative indicators; involving the workforce, scientists or creative people."

Mix element	Processes	KPIs
Promotion	Communications Mix	<b>Affiliate ad networks and agencies:</b> number of new customers, awareness, attitude, image indicators
		<b>Digital Media (social networks):</b> unique visitors/users, cost per action (CPA), displays, time on site, pages turned, conversion, bounce rate etc.
		<b>Conferences:</b> number of new customers
		<b>Direct Marketing:</b> email opening rate, conversion, cost per acquisition, order per customer, ROI, churn levels, consumer lifetime value
		<b>Personal Selling:</b> number of new customers, average sale amount and frequency, repeat purchase, customer satisfaction, cost of acquisition and retention, customer lifetime value
		<b>PR:</b> mentions, publications

Table 16. Control measures related to marketing mix element.

The following KPIs will be applied to promotion:

- Affiliate ad networks and agencies: number of new customers, awareness, attitude, image indicators
- Digital Media (social networks): unique visitors/users, cost per action (CPA), displays, time on site, pages turned, conversion, bounce rate
- Conferences: number of new customers

- Direct Marketing: email opening rate, conversion, cost per acquisition, order per customer, ROI, churn levels, consumer lifetime value
- Personal Selling: number of new customers, average sale amount and frequency, repeat purchase, customer satisfaction, cost of acquisition and retention, customer lifetime value
- PR: mentions, publications

The direct sales channel strategy will be applied. To start using solution, customers should visit the web-site, fill in and submit the pre-application form. Or if it's a direct contact with a person from affiliate ad networks and agencies, as well as companies with own media buying units (as a result of participating at a conference or direct marketing), an account manager will contact a customer and send the pre-application form for filling in.

Tiered segmentation will be applied based on B2B customers segmentation:

High touch – Executive (by role); innovative solutions (by need); USA, India, China, UK, Australia, Japan (by country); Large enterprises (by enterprise size)

Mid touch – Marketing (by role); quality sensitive (by need); Germany, France, Canada (by country); medium-sized enterprises (by enterprise size)

Low touch – Sales (by role); price sensitive (by need); Russia, Brazil, Indonesia, Italy, Spain, South Korea (by country); small-sized enterprises (by enterprise size).

Marketing objectives:

- Penetrate 5% of market by cash volume within 2022-20226
- Become the market leader in the industry for SME within 2022-20226
- Set up customer retention at level of 80% during the first year of operation
- Contract 5 large businesses as customers during the first year of operation
- Affiliate 6 large ad networks, each in one of the countries of high touch segmentation during the first year of operation.

Cost of customer acquisition can be calculated by merely dividing all the costs spent on getting additional customers (marketing expenses) by the amount of customers attracted in the period the cash was spent. For the first year of operation forecasted  $CAC = 240000 \text{ USD} / 110 = 2182 \text{ USD}$ .

Lifetime value can be calculated in many ways. As we have a subscription model, we prefer to compute it by a simple method: take the average monthly amount expected from each customer and divide it by expected churn rate (the rate at which customers will leave each month).

For the first year we expect to attract 110 customers (for 6 months subscription), the total revenue for the same period is expected 1,167,000 USD. So average monthly charge from one customer is  $1,167,000 / 110 = 10,609 \text{ USD}$ . Churn rate we expect 10%. Therefore, LTV for a new customer will be  $10,609 \text{ USD} / 0.1 = 106,090 \text{ USD}$ . In this case, customer's expected lifetime is  $106,090 / 10,609 = 10$  months.

### 5.3. Pricing strategy (including pricing benchmarks with competitors)

Competitor	Price per min package	Q-ty pixels
MOAT	100000 USD per year	1M per month
IAS	25000 USD per year	200k per month
DoubleVerify	30000 USD per year	300k per month
Trafficguard	35000 USD per year	350k per month
Adloox	1400 EUR per month	300k per month

If we bring to a common denominator:

Competitor	Price per package/month, USD	Q-ty pixels per month	Cost of 1 pixel
MOAT	8333.33	1M per month	0.0083
IAS	2083.33	200k per month	0.0104
DoubleVerify	2500.00	300k per month	0.0083
Trafficguard	2916.66	350k per month	0.0083
Adloox	1652.66	300k per month	0.0055

Table 17. Pricing benchmarks with competitors.

As we see from the table 17, IAS has the most expensive price for 1 pixel – 0.0104 USD. The following are MOAT, DoubleVerify and Trafficguard with price of 0.0083 USD per 1 pixel. The cheapest (but less popular and effective) is Adloox with price of 0.0055 USD per 1 pixel. The four main competitors don't offer monthly subscription to customers.

Prices Analysis (current)			Quantity of packages to be sold					
Category	Product	Unit	Y0 2022	Y1 2023	Y2 2024	Y3 2025	Y4 2026	Comments
Ad fraud protection (from bad bots)	Package of 200k pixel per month	USD	300	1200	2400	4800	12000	
	Package of 500k pixel per month	USD	180	720	1440	3000	6000	
	Package of 1M pixel per month	USD	90	360	720	1800	3600	
	Package of 2M pixel per month	USD	60	240	480	1200	2400	
	Package of 5M pixel per month	USD	30	120	240	600	1200	
Calculations: Number of clients * 12 (months) - those clients are subscribed to your services for years if it works properly								
For the Year 0: Number of clients * 6 (months), as 6 month are needed for completion of product development								
*1 pixel - 1 ad display								
				Per pixel				
	Package fee for 200k pixel per month	USD	700	0.0035				
	Package fee for 500k pixel per month	USD	1400	0.0028				
	Package fee for 1M pixel per month	USD	2500	0.0025				
	Package fee for 2M pixel per month	USD	4500	0.0023				
	Package fee for 5M pixel per month	USD	7000	0.0014				
Competitive pricing strategy — setting a price based on what the competition charges								
Tiered subscription pricing model								

Table 18. Pricing strategy.

As you see from the table 18, we'll sell pixels by following types of packages: 200k, 500k, 1M, 2M and 5M pixel (ad display) per month. Price per pixel will be lower than competitors offer. Cost for 1 pixel is close to 0. So, we'll apply competitive pricing strategy — setting a price depend on what the competition asks. As for pricing model, we'll apply tiered subscription one. Still, unlike main competitors, we'll allow subscription on a monthly basis charge, that not to create high threshold for our services usage - packages of the main competitors are sold by subscription for at least a year, and MOAT, for example, sells 1M pixels as minimum, which can only be afforded by large businesses, respectively, small and medium-sized businesses either cannot afford them.



## 5.4. Sales plan

A sales plan is a strategy that sets out sales targets and tactics for business, and identifies the steps to be taken to meet the targets.

### Sales

		Y0	Y1	Y2	Y3	Y4	
Product (or similar)	Units	2022	2023	2024	2025	2026	CAGR
Package of 200k pixel per month	USD	210000	840000	1680000	3360000	8400000	151.49%
Package of 500k pixel per month	USD	252000	1008000	2016000	4200000	8400000	140.28%
Package of 1M pixel per month	USD	225000	900000	1800000	4500000	9000000	151.49%
Package of 2M pixel per month	USD	270000	1080000	2160000	5400000	10800000	151.49%
Package of 5M pixel per month	USD	210000	840000	1680000	4200000	8400000	151.49%
<b>TOTAL</b>	<b>USD</b>	<b>1,167,000</b>	<b>4,668,000</b>	<b>9,336,000</b>	<b>21,660,000</b>	<b>45,000,000</b>	<b>149.19%</b>
<b>Total gross sales</b>	<b>USD</b>	<b>1,167,000</b>	<b>4,668,000</b>	<b>9,336,000</b>	<b>21,660,000</b>	<b>45,000,000</b>	
<b>Gross Sales YoY</b>	<b>%</b>		300%	100%	132%	108%	

Table 19. Sales plan 2022-2026, in USD.

The Company plans to deliver stable growth, making the first significant jump of 300% after one year of operations (2022 vs 2023), and with 100% increase in average year on year from 2023. Sales indicators show constant growth of revenues, reaching the level of 45,000,000 USD by the end of 2026.

We plan to attract 110 customers during the first year of operations, 5 of them are large businesses (table 20).

			Quantity of customers attracted				
Prices Analysis (current)			Y0	Y1	Y2	Y3	Y4
Category	Product	Unit	2022	2023	2024	2025	2026
Ad fraud protection (from bad bots)	Package of 200k pixel per month	q-ty	50	100	200	400	1000
	Package of 500k pixel per month	q-ty	30	60	120	250	500
	Package of 1M pixel per month	q-ty	15	30	60	150	300
	Package of 2M pixel per month	q-ty	10	20	40	100	200
	Package of 5M pixel per month	q-ty	5	10	12	50	100
<b>Total</b>		<b>q-ty</b>	<b>110</b>	<b>220</b>	<b>432</b>	<b>950</b>	<b>2100</b>

Table 20. Sales plan by quantity of customers attracted.

There are no cost drivers, as there is no production of goods, as well as cost of 1 pixel (ad display) is close to 0 (table 21).

Cost Drivers			
Category	Service	Unit	COGS, Y0 Net Income,
			USD %
	Package fee for 200k pixel per month	USD	99.90%
	Package fee for 500k pixel per month	USD	99.90%
	Package fee for 1M pixel per month	USD	99.90%
	Package fee for 2M pixel per month	USD	99.90%
	Package fee for 5M pixel per month	USD	99.90%

\*\* Cost for 1 pixel is close to 0

Table 21. Cost drivers.



## 6. Planning: Financials

### 6.1. Financing requirements summary

Financial projections:

USD	FY2022	FY2023	FY2024	FY2025	FY2026
Revenue	1,167,000	4,668,000	9,336,000	21,660,000	45,000,000
Operating income	274,000	2,984,400	7,728,800	19,670,000	42,532,000

Use of fund:

48% - Salaries

27% - Marketing expenses

15% - Legal services (incl. patents registration)

8% - Office (rent, internet and general costs)

Investments required: 510,000 USD.

Goals:

1. Creation and beta launch of the Minimum Viable Product (MVP).
2. Public Beta Launch.
3. Break-even point (BEP) in the first year of business.

### 6.2. Key assumptions made in the budgeting process (including macro parameters)

Key Assumptions	Input
Tax rate, %	8.7%
Annual Price increase, %	N/A
Advertising Budget, % to Revenue	21% *For the Year 0
Accounts Receivable Level, % of Revenue	N/A
Accounts Payable, % of COGS	N/A
Inventories Level, % of Revenue	N/A

Annual Parameters	2022 Year 0	2023 Year 1	2024 Year 2	2025 Year 3	2026 Year 4
Sales Growth rate, %		300%	100%	132%	108%
Div payout, %	50%	50%	50%	50%	50%

Tax rate 8.7% is Delaware's corporate income tax rate, because the company will be registered in USA. Advertising budget is 21% from the Revenue for the first year of operations. There are no COGS, as there is no production of goods. There is no annual price increase, as sales are in USD, and there are no interdependencies in different currencies and/or cost drivers. There is no Accounts Receivable and Accounts Payable, as there are no suppliers who we depend on in services supply, as well as customers receive their pixels as soon as they are charged on monthly basis.

The Company plans to deliver stable growth, making the first significant jump of 300% after one year of operations (2022 vs 2023), and with 100% increase in average year on year from 2023. It is planned to pay dividends in the amount of 50% each year starting from closing 2022.

The project budgeting is attached as appendix 1 to this capstone project.

As for macro indicators, the key statistics used by all investors and analysts to interpret any investment opportunities or to assess the general state of the economy are economic indicators. They create an idea of the state of the economy at different times (future, present and the past); shows that leading indicators move forward of the economic cycle, coincident indicators move together with the economy, and lagging indicators drop behind the economic cycle.

Following are the five most widely used lagging indicators at present: GDP Growth, Inflation Rates, Currency Strength and Stability, Labor Market Statistics, Commodity Prices.

Consumer costs are the funds that users (individuals or entire households) spend to meet their economic needs. Nowadays, consumer spending can be called any private purchases of durable or short-lived goods, as well as payment for services.

Countries	GDP	POPULATION	GDP PER CAPITA	INTEREST RATE	INFLATION RATE	UNEMPLOYMENT RATE	GOVERNMENT BUDGET	DEBT/GDP	CURRENT ACCOUNT	GDP YoY	GDP QoQ
Argentina	\$ 449.7 B	44.94 M	\$ 9,729.14	38 %	40.7 %	11 %	-8.5 % of GDP	89.4 %	1 %	-4.3 %	4.5 %
Australia	\$ 1,392.7 B	25.68 M	\$ 57,071.2	0.1 %	0.9 %	5.8 %	-4.3 % of GDP	45.1 %	2.5 %	-1.1 %	3.1 %
Brazil	\$ 1,839.76 B	210.15 M	\$ 11,121.74	2.75 %	6.1 %	13.9 %	-5.9 % of GDP	75.79 %	-0.72 %	-1.1 %	3.2 %
Canada	\$ 1,736.43 B	37.78 M	\$ 51,588.8	0.25 %	1.1 %	7.5 %	-15.9 % of GDP	88.6 %	-1.9 %	-3.2 %	2.3 %
China	\$ 14,342.9 B	1,400.05 M	\$ 8,254.3	3.85 %	0.4 %	5.5 %	-3.7 % of GDP	52.6 %	1 %	6.5 %	2.6 %
Euro Area	\$ 13,335.84 B	342.41 M	\$ 41,387.6	0 %	1.3 %	8.3 %	-0.6 % of GDP	84 %	2.3 %	-4.9 %	-0.7 %
France	\$ 2,715.52 B	67.29 M	\$ 44,317.4	0 %	1.1 %	8 %	-9.2 % of GDP	115.7 %	-1.9 %	-4.9 %	-1.4 %
Germany	\$ 3,845.63 B	83.17 M	\$ 47,628	0 %	1.7 %	4.5 %	-4.8 % of GDP	59.8 %	7 %	-3.7 %	0.3 %
India	\$ 2,868.93 B	1,312.24 M	\$ 2,169.1	4 %	5.52 %	6.5 %	-9.5 % of GDP	69.62 %	-0.9 %	0.4 %	7.9 %
Indonesia	\$ 1,119.19 B	270.2 M	\$ 4,450.7	3.5 %	1.37 %	7.07 %	-6.5 % of GDP	38.5 %	-0.44 %	-2.07 %	-0.42 %
Italy	\$ 2,001.24 B	59.64 M	\$ 35,613.8	0 %	0.8 %	10.2 %	-9.5 % of GDP	155.6 %	3.6 %	-6.6 %	-1.9 %
Japan	\$ 5,081.77 B	126.01 M	\$ 49,187.8	-0.1 %	-0.4 %	2.9 %	-2.4 % of GDP	236.6 %	3.2 %	-1.4 %	2.8 %
Mexico	\$ 1,268.87 B	126.58 M	\$ 10,275.63	4 %	4.67 %	4.4 %	-1.6 % of GDP	45.5 %	2.4 %	-4.3 %	3.3 %
Russian Federation	\$ 1,699.9 B	146.7 M	\$ 12,011.5	4.5 %	5.79 %	5.7 %	1.8 % of GDP	14.6 %	3.9 %	-1.8 %	1.5 %
Saudi Arabia	\$ 792.97 B	34.22 M	\$ 20,542.2	1 %	5.2 %	7.4 %	-4.5 % of GDP	22.8 %	6.3 %	-3.9 %	2.5 %
South Africa	\$ 351.43 B	58.8 M	\$ 7,346	3.5 %	2.9 %	32.5 %	-6.3 % of GDP	83 %	2.2 %	-4.1 %	6.3 %
South Korea	\$ 1,646.74 B	51.78 M	\$ 28,605.7	0.5 %	1.5 %	4 %	-2.6 % of GDP	253.24 %	3.5 %	-1.2 %	1.2 %
Turkey	\$ 754.41 B	83.61 M	\$ 14,999	19 %	16.19 %	13.4 %	-3.4 % of GDP	39.5 %	-5.1 %	5.9 %	1.7 %
United Kingdom	\$ 2,829.11 B	67.03 M	\$ 43,688.4	0.1 %	0.4 %	5 %	-16.9 % of GDP	100.2 %	-3.5 %	-7.3 %	1.3 %
United States	\$ 21,433.2 B	329.48 M	\$ 55,809	0.25 %	1.7 %	6 %	-4.6 % of GDP	107.6 %	-3.1 %	-2.4 %	4.3 %

Table 22. Global Macro Indicators by countries 2021 (source: <https://www.fxempire.com/>).

### 6.3. Capital Expenditures forecast for 1 year, for 5 years

Capital Expenditures (CapEx)						
		Year 0	Year 1	Year 2	Year 3	Year 4
	Units	2022	2023	2024	2025	2026
Grand Total, USD	45,000	17,000	25,000	33,000	39,000	45,000
Office Equipment	45,000	17,000	8,000	8,000	6,000	6,000
Laptops	USD	15,000	6,000	6,000	6,000	6,000
Printers	USD	2,000	2,000	2,000		

Table 25. CapEx.

As there is no production of goods, CapEx is low and calculated only for laptops and printers.

Depreciation							
Dep Years	Res. Value		Year 0	Year 1	Year 2	Year 3	Year 4
		Units	2022	2023	2024	2025	2026
Estimated Annual Depreciation for Purchased Units (Y+1)							
5	20%	USD	2,400	960	960	960	960
5	20%	USD	320	320	320	-	-
Depreciation							
	Year 0	Year 1	Year 2	Year 3	Year 4		
Units	2022	2023	2024	2025	2026		
18,240	-	2,720	4,000	5,280	6,240		
Annual Depreciation (PL)							
USD	-	2,400	3,360	4,320	5,280		
USD	-	320	640	960	960		
Depreciation							
	Year 0	Year 1	Year 2	Year 3	Year 4		
Units	2022	2023	2024	2025	2026		
39,680	-	2,720	6,720	12,000	18,240		
Accumulated Annual Depreciation (BS)							
USD	-	2,400	5,760	10,080	15,360		
USD	-	320	960	1,920	2,880		

Table 26. Depreciation calculations.

Depreciation was calculated for 5 years by straight line method, separately for P&L and for BS.

## 6.4. Operating Expenses forecast for 1 year, for 5 years

Operating Expenses (forecast)						
	Units	2022	2023	2024	2025	2026
Company registration and maintenance (US)	USD	15000	5,000	5,000	5,000	5,000
Patents & TM registration	USD	50000	5000	5000	5000	5000
Certification by JICWEBS	USD	0	500,000	50,000	50,000	50,000
Lawyer (outsourced)	USD	60000	84,000	120,000	120,000	180,000
IT Costs - Internet/Bandwidth/Hosting	USD	24000	30000	36000	48000	60000
General Office Costs	USD	12000	15,000	17,000	20,000	25,000
Office Rent	USD	36000	48,000	54,000	60,000	66,000
Salaries	USD	432000	657,600	907,200	1,194,000	1,512,000
Marketing Expenses	USD	240000	300000	360000	420000	480000
Entertainment Expenses	USD	12000	24000	36000	48000	60000
Miscellaneous	USD	12000	15,000	17,000	20,000	25,000
<b>Total</b>	<b>USD</b>	<b>893,000</b>	<b>1,683,600</b>	<b>1,607,200</b>	<b>1,990,000</b>	<b>2,468,000</b>

Table 27. Operating expenses.

Use of fund for the first year:

48% - Salaries

27% - Marketing expenses

15% - Legal services (incl. patents registration)

8% - Office (rent, internet and general costs).

Starting from the 2nd year we'll submit for JICWEBS certification. As this is expensive and long-term procedure, we decided not to do it in the first year, to mitigate risk of not attracting sufficient number of customers for break-even point.

We'll conclude contract with outsourced lawyer, which will register company and open settlement accounts in US (Delaware), register trademarks and submit for patent registration in US, Europe and China. There also will be cost for company maintenance. Lawyer also will prepare contracts for our customers and limit all our risks.

As our business model is connected to the online solution, we'll pay a lot for hosting (for data storage) and internet.

The largest part of expenses is salaries, as mainly it will be paid to IT developers due to the nature of project. We have also included an annual salary increase for those employees who have already worked for the company.

Marketing expenses will be divided to different promotion types: affiliate ad networks and agencies, digital media (social networks), conferences, direct marketing, personal selling, PR.

Cost of customer acquisition can be calculated by merely dividing all the costs spent on getting additional customers (marketing expenses) by the amount of customers attracted in the period the cash was spent. For the first year of operation forecasted  $CAC = 240000 \text{ USD} / 110 = 2182 \text{ USD}$ .

## 6.5. Profit and Loss Statement elements

In the current business set up, P&L analysis shows the following trends, caused by changes between major P&L lines and YoY. Main target: to keep Net Income positive from Y0 with the stable annual growth through cost control and accurate sales policy.

*All figures are in USD th*

### PROFIT AND LOSS STATEMENT

	2,022	2,023	2,024	2,025	2,026
<b>Sales</b>	<b>1,167.00</b>	<b>4,668.00</b>	<b>9,336.00</b>	<b>21,660.00</b>	<b>45,000.00</b>
Cost of goods sold or service	0.00	0.00	0.00	0.00	0.00
<b>Gross profit</b>	<b>1,167.00</b>	<b>4,668.00</b>	<b>9,336.00</b>	<b>21,660.00</b>	<b>45,000.00</b>
Selling, general and administrative expenses	893.00	1,683.60	1,607.20	1,990.00	2,468.00
<b>Operating profit</b>	<b>274.00</b>	<b>2,984.40</b>	<b>7,728.80</b>	<b>19,670.00</b>	<b>42,532.00</b>
<i>Operating profit margin</i>	<i>0.23</i>	<i>0.64</i>	<i>0.83</i>	<i>0.91</i>	<i>0.95</i>
Depreciation	0.00	2.72	4.00	5.28	6.24
<b>EBIT</b>	<b>274.00</b>	<b>2,981.68</b>	<b>7,724.80</b>	<b>19,664.72</b>	<b>42,525.76</b>
<i>EBIT margin</i>	<i>0.23</i>	<i>0.64</i>	<i>0.83</i>	<i>0.91</i>	<i>0.95</i>
Interest rate	31.50	22.75	14.00	5.25	0.00
<b>EBT</b>	<b>242.50</b>	<b>2,958.93</b>	<b>7,710.80</b>	<b>19,659.47</b>	<b>42,525.76</b>
<i>EBT margin</i>	<i>0.21</i>	<i>0.63</i>	<i>0.83</i>	<i>0.91</i>	<i>0.95</i>
Taxes	21.10	257.43	670.84	1,710.37	3,699.74
<b>Net income</b>	<b>221.40</b>	<b>2,701.50</b>	<b>7,039.96</b>	<b>17,949.10</b>	<b>38,826.02</b>
<i>Net Income margin</i>	<i>0.19</i>	<i>0.58</i>	<i>0.75</i>	<i>0.83</i>	<i>0.86</i>

Table 28. Profit & Loss Statement.

The Company plans to deliver stable growth, making the first significant jump of 300% after one year of operations (2022 vs 2023), and with 100% increase in average year on year from 2023, which gives 150% CAGR over 5 years.

Tax rate 8.7% is Delaware's corporate income tax rate, because the company will be registered in USA. Advertising budget is 21% from the Revenue for the first year of operations. There are no COGS, as there is no production of goods. There is no annual price increase, as sales are in USD, and there are no interdependencies in different currencies and/or cost drivers.

Gross Profit Margin is expected at 95% at the end of 2026 with CAGR of 250% over five years. Net income Margin is expected at 86% at the end of 2026 with CAGR of 46% over five years.

*All figures are in USD th*

### STATEMENT OF RETAINED EARNINGS AND INCOME DISTRIBUTION

	2,022	2,023	2,024	2,025	2,026
DIV payout	0.00	0.00	0.00	0.00	0.00
Dividends	110.70	1,350.75	3,519.98	8,974.55	19,413.01
Retained earnings	110.70	1,350.75	3,519.98	8,974.55	19,413.01
Cumulative retained earnings	110.70	1,461.45	4,981.43	13,955.98	33,368.99

Table 29. Statement of retained earnings and income distribution.

It is planned to pay dividends in the amount of 50% each year starting from closing 2022. To the end of year 2026 the amount of cumulative retained earnings will be 33,369,000 USD.

## 6.6. Balance Sheet forecast for 1 year, for 5 years

<b>BALANCE SHEET</b>					
	<b>2,022</b>	<b>2,023</b>	<b>2,024</b>	<b>2,025</b>	<b>2,026</b>
<b>ASSETS</b>					
<b>Current assets</b>					
Cash & Cash Equivalents	558.70	1,759.17	5,130.15	14,028.98	33,442.23
Accounts Receivable	0.00	0.00	0.00	0.00	0.00
Inventory	0.00	0.00	0.00	0.00	0.00
Prepaid expenses	0.00	0.00	0.00	0.00	0.00
<b>Total current assets</b>	<b>558.70</b>	<b>1,759.17</b>	<b>5,130.15</b>	<b>14,028.98</b>	<b>33,442.23</b>
<b>Fixed assets (non-current assets)</b>					
Gross PPE	17.00	25.00	33.00	39.00	45.00
- cumulative depreciation	0.00	2.72	6.72	12.00	18.24
<b>Net Fixed Assets</b>	<b>17.00</b>	<b>22.28</b>	<b>26.28</b>	<b>27.00</b>	<b>26.76</b>
<b>TOTAL ASSETS</b>	<b>575.70</b>	<b>1,781.45</b>	<b>5,156.43</b>	<b>14,055.98</b>	<b>33,468.99</b>
<b>LIABILITIES</b>					
Accounts payable	0.00	0.00	0.00	0.00	0.00
Short-term-liabilities	0.00	0.00	0.00	0.00	0.00
Credit	365.00	220.00	75.00	0.00	0.00
<b>TOTAL LIABILITIES</b>	<b>365.00</b>	<b>220.00</b>	<b>75.00</b>	<b>0.00</b>	<b>0.00</b>
<b>SHAREHOLDER'S EQUITY</b>					
Contributed capital	100.00	100.00	100.00	100.00	100.00
Retained Earnings	110.70	1,461.45	4,981.43	13,955.98	33,368.99
<b>TOTAL SHAREHOLDER'S EQUITY</b>	<b>210.70</b>	<b>1,561.45</b>	<b>5,081.43</b>	<b>14,055.98</b>	<b>33,468.99</b>
<b>TOTAL LIABILITIES AND SHAREHOLDERS</b>	<b>575.70</b>	<b>1,781.45</b>	<b>5,156.43</b>	<b>14,055.98</b>	<b>33,468.99</b>
<i>Balance check line</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>

Table 30. Balance sheet.

The business model is built on outsourcing of legal services and internet/hosting and minimizes inventories and other optimization steps, major conclusions should be done around cash collection and credits.

There is no Accounts Receivable and Accounts Payable, as there are no suppliers who we depend on in services supply, as well as customers receive their pixels as soon as they are charged on monthly basis.

Annual growth of sales contributes to current assets increase give CAGR of 178% over five years for Total Assets and CAGR of 317% for Retained Earnings.

Shareholders also have contributed capital in amount of 100,000 USD.

As for liabilities, there are two credits from banks: 210,000 USD and 300,000 USD.

As for PPE, it is calculated only for laptops and printers, as due to the business model there is no need to other PPE.

## 6.7. Cashflow forecast (including working capital planning) for 1 year, for 5 years

Cash Flow statement represents stable growth of the cash at the end of every period over 5 years and reflect cash-out Investing activities, starting 2022. Related depreciation is recorded, according to 5-year linear basis.

*All figures are in USD th*

### CASHFLOW STATEMENT

	2,022	2,023	2,024	2,025	2,026
Net Income	221.40	2,701.50	7,039.96	17,949.10	38,826.02
Depreciation	0.00	2.72	4.00	5.28	6.24
+ or - changes in AR	0.00	0.00	0.00	0.00	0.00
+ or - changes in AP	0.00	0.00	0.00	0.00	0.00
<b>Cashflow from Operating Activities</b>	<b>221.40</b>	<b>2,704.22</b>	<b>7,043.96</b>	<b>17,954.38</b>	<b>38,832.26</b>
Capital Investments (CapEx)	-17.00	-8.00	-8.00	-6.00	-6.00
Return (dividends) from investments made	0.00	0.00	0.00	0.00	0.00
<b>Cashflow from Investing activities</b>	<b>-17.00</b>	<b>-8.00</b>	<b>-8.00</b>	<b>-6.00</b>	<b>-6.00</b>
Credits from commercial banks	510.00	0.00	0.00	0.00	0.00
Repayment of credits to commercial banks	-145.00	-145.00	-145.00	-75.00	0.00
Proceeds from IPO	0.00	0.00	0.00	0.00	0.00
Equity financing from the founders/investors	100.00	0.00	0.00	0.00	0.00
Dividends to the shareholders	-110.70	-1,350.75	-3,519.98	-8,974.55	-19,413.01
<b>Cashflow from Financing Activities</b>	<b>354.30</b>	<b>-1,495.75</b>	<b>-3,664.98</b>	<b>-9,049.55</b>	<b>-19,413.01</b>
<b>Total Cashflow</b>	<b>558.70</b>	<b>1,200.47</b>	<b>3,370.98</b>	<b>8,898.83</b>	<b>19,413.25</b>
Cash at the beginning of the period	0.00	558.70	1,759.17	5,130.15	14,028.98
<b>Cash at the end of the period</b>	<b>558.70</b>	<b>1,759.17</b>	<b>5,130.15</b>	<b>14,028.98</b>	<b>33,442.23</b>

Table 31. Cashflow statement.

The Company is running mostly on turnover capital, with credits regularly returned.

### Working capital

		2022	2023	2024	2025	2026	CAGR
	Units	0.000	0.000	0.000	0.000	0.000	-
Accounts Receivable	USD th	0.000	0.000	0.000	0.000	0.000	-
Inventories	USD th	0.000	0.000	0.000	0.000	0.000	-
Accounts Payable	USD th	0.000	0.000	0.000	0.000	0.000	-

### Net Working capital

		2022	2023	2024	2025	2026	
	Units	558.701	1,759.173	5,130.153	14,028.981	33,442.230	178.15%
Current Assets	USD th	558.701	1759.173	5130.153	14028.981	33442.230	178.15%
Current Liabilities	USD th	0.000	0.000	0.000	0.000	0.000	-

Table 32. Working capital.

Net working capital consists only of current assets.



## 6.8. Key metrics/Dashboards (Graphs, Ratio analysis)

Ratio analysis								
		Operational years						
	Units	2022	2023	2024	2025	2026	CAGR	Formula
<b>Liquidity</b>								
Current ratio	times	1.5	8.0	68.4	-	-		=(Current assets-Other assets)/Current liabilities
Quick ratio	times	1.5	8.0	68.4	-	-		=(CA-Inv)/Cur. Liabs
Cash ratio	times	1.5	8.0	68.4	-	-		= Cash/Cur. Liabs
Net Working Capital	USD th	193.701	1,539.173	5,055.153	14,028.981	33,442.230	262%	= Current asset - current liabilities
<b>Long-term solvency (financial leverage)</b>								
Equity multiplier	times	2.7	1.1	1.0	1.0	1.0	-22%	= Total assets/Total equity
<b>Turnover ratios</b>								
Receivables turnover	times	-	-	-	-	-	-	= Sales/Accounts receivables
Days' sales in receivables	days	-	-	-	-	-	-	= 365/Receivable turnover
Payables Turnover	times	-	-	-	-	-	-	= CoGS/Accounts payable
Days sales in payables	days	-	-	-	-	-	-	= 365/Payables Turnover
NWC turnover	times	6.0	3.0	1.8	1.5	1.3	-31%	= Sales/NWC
Total asset turnover	times	2.0	2.6	1.8	1.5	1.3	-10%	= Sales/Total assets
<b>Profitability ratios</b>								
Profit margin	%	19%	58%	75%	83%	86%	46%	= Net Income/Sales
Return on assets (ROA)	%	38%	152%	137%	128%	116%	32%	= Net income/Total assets
Return on equity (ROE)	%	105%	173%	139%	128%	116%	3%	= Net income/Total equity

Table 33. Ratio analysis.

The current ratio is a liquidity ratio that measures whether a firm has enough resources to meet its short-term obligations. A current ratio that is in line with the industry average or slightly higher is generally considered acceptable. A current ratio that is lower than the industry average may indicate a higher risk of distress or default. Similarly, if a company has a very high current ratio compared to its peer group, it indicates that management may not be using its assets efficiently.

The quick ratio is a type of liquidity ratio, which measures the capability of a company to use its near cash or quick assets to extinguish or retire its current liabilities immediately. The higher the ratio result, the better a company's liquidity and financial health; the lower the ratio, the more likely the company will struggle with paying debts.

The cash ratio, sometimes specified as the cash asset ratio, is a liquidity metric that points out a company's ability to settle accounts with short-term debt obligations with its ready money and cash equivalents. In contrast to other liquidity ratios such as the current ratio and quick ratio, the cash ratio is more stringent and conservative arrangement since only ready money and cash adequations – a company's most liquid assets – are used in the computation.

Net working capital is the difference between a business's current assets and its current liabilities. Net working capital is calculated using line items from a business's balance sheet. Generally, the larger your net working capital balance is, the more likely it is that your company can cover its current obligations.

The equity multiplier is a financial ratio of a company's loan to the value of its equity (leverage), that determines the sum of a company's assets that are financed by its shareholders in contrast to total assets with total shareholder's equity. To sum up, the equity multiplier indicates the proportion of assets that are financed or under an obligation to the stockholders.

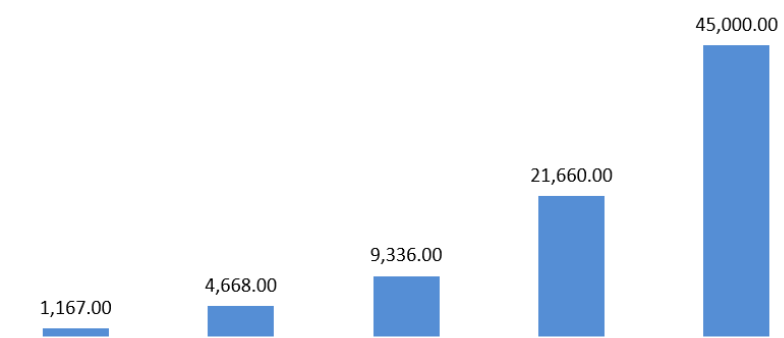
A high turnover ratio shows that management is being very efficient in using a company's short-term assets and liabilities for supporting sales. In other words, it is generating a higher dollar amount of sales for every dollar of working capital used. In contrast, a low ratio may indicate that



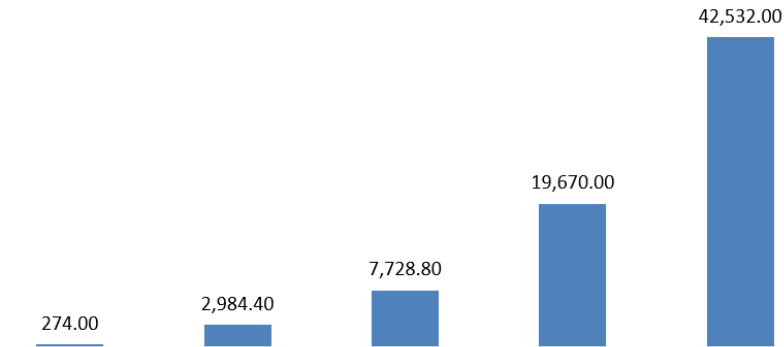
a business is investing in too many accounts receivable and inventory to support its sales, which could lead to an excessive number of bad debts or obsolete inventory.

Asset turnover, total asset turnover, or asset turns is a financial proportion that indicates the efficiency of an organization's employing of its assets in making sales revenue or sales income to the organization. The upper the asset turnover ratio, the more rational a company is at making revenue from its assets. On the contrary, if a firm has a reduced asset turnover proportion, it states it is not efficiently employing its assets to make sales.

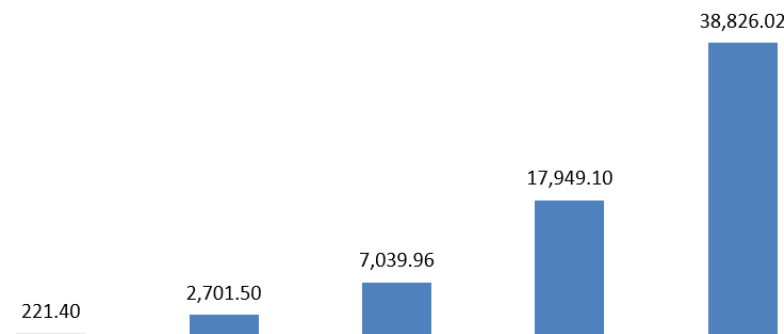
**Gross sales, 2022-2026, [USD th]**



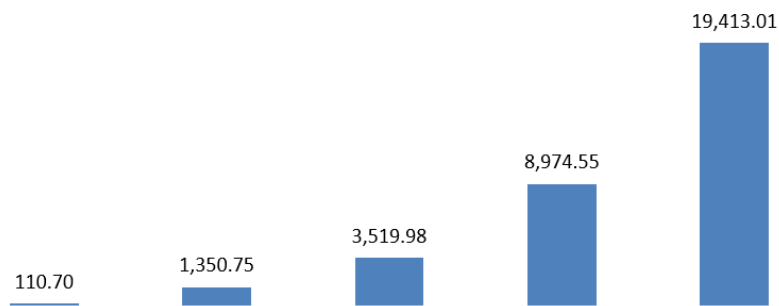
**EBITDA, 2022-2026, [USD th]**



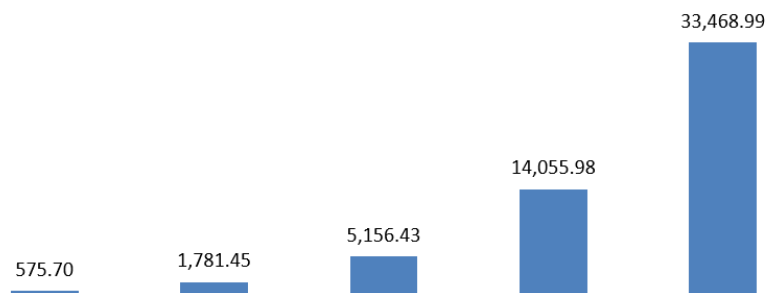
**Net income, 2022-2026, [USD th]**



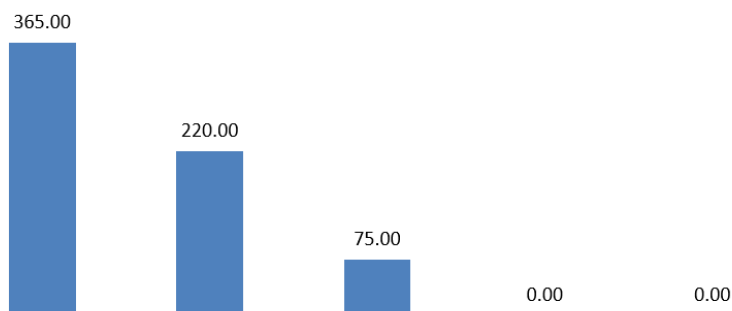
### Retained earnings, 2022-2026, [USD th]



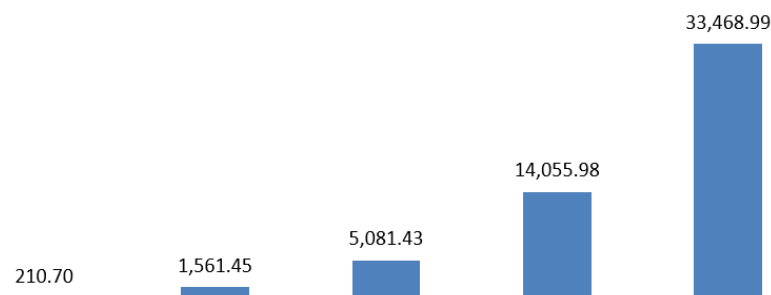
### Total assets, 2022-2026, [USD th]



### Total liabilities, 2022-2026, [USD th]



### Total equity, 2022-2026, [USD th]



As we see from the graphs, CAGR is positive, except liabilities, which is very good. Gross sales, EBITDA, Net income, Retained Earnings, Total assets and Total equity increase in absolute value from year to year at times.

## 7. Implementation: Resources required for project implementation including team

### 7.1. Human resources

Organizational Chart and Salaries						
	Units	2022	2023	2024	2025	2026
<b>Total HC</b>	<b>HC</b>	<b>13</b>	<b>19</b>	<b>25</b>	<b>31</b>	<b>37</b>
<b>Total USD / month</b>	<b>USD</b>	<b>36,000</b>	<b>54,800</b>	<b>75,600</b>	<b>99,500</b>	<b>126,000</b>
<b>Total USD / year</b>	<b>USD</b>	<b>432,000</b>	<b>657,600</b>	<b>907,200</b>	<b>1,194,000</b>	<b>1,512,000</b>
<b>Administration</b>	<b>HC</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
CEO	USD	4,500	5,000	5,500	6,000	6,500
<b>Finance</b>	<b>HC</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
CFO	USD	2,500	2,800	3,000	3,300	3,600
<b>Marketing &amp; Sales</b>	<b>HC</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
CBDO	USD	3,000	3,300	3,700	4,000	4,300
Sales manager	HC	3	5	7	9	11
	USD	6,000	11,500	17,500	25,200	34,100
<b>IT</b>	<b>HC</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
CTO	USD	5000	5300	5700	6100	6500
IT developer	HC	3	5	7	9	11
	USD	12,000	20900	30400	40500	51200
<b>Account &amp; Support management</b>	<b>HC</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>11</b>
Account & Support manager	USD	3,000	6,000	9,800	14,400	19,800

Table 34. Organizational Chart and Salaries.

We already have a core team with experience in media buying and implementing technical projects in the field of ad tech, clear understanding the market and its needs without third-party consultants, ability to carry out tests of competitors for verification of hypotheses.

Core team: Ryta Zasiakina - CEO, Maksym Tsyparskyi – CTO, Back-end developer (name not disclosed), Front-end developer with expertise in traffic filters (name not disclosed).

Brief summary about CEO:

- 6 years in fintech industry as Chief Business Development Officer
- 10 years as Business Development Officer in commercial projects
- Solid experience in at the intersection of financial, legal and technical fields worldwide
- Wide contacts network in banking, legal and fintech and IT worldwide
- Successful experience of entering different markets with new solutions
- 10 years of experience working with clients in B2B segment

Brief summary about CTO:

- 13 years in commercial software development in different roles and projects
- 6 – years in Project Manager/ Scrum Master role
- 7 – years in QC/QA and Lead activities with experience in manual and automation testing

- Solid understanding of Software lifecycle development, QA Methodology including Agile, all aspects of product automation and manual testing and release processes
- Communication with all participants during software life cycle (developers, PMO, QA engineers, POs)
- Cooperation with distributed teams and executing activities in more than one project
- Providing management with release risks, planning, resources
- Hiring new team members
- Coaching team members
- Excellent verbal, writing communication and presentation skills

#### Technical Skills

SkillCategory	SkillList
Web	Websphere , Apach, HTML, CSS, CMS, IIS, JavaScript , AJAX, WSDL, SOAP, Bootstrap
Expirience with tools	SoapUI, WebDriver, Selenide, Jbehave, Cucumber, Jmeter, Maven, Jenkins, Git
RDBMS	Oracle, MySQL, DB2
Programming Languages/ Technologies	Java, SQL, xpath, XML, CMIS Workbench, Drules guvnor, activeVOS, Sonar, Veracode
OperatingSystems	Windows, Linux, Mac OS
Development Tools	SQL developer, Toad, Visual Studio, IDEA,
Other	ATG, Drupal, wordpress, shop script, woocommerce

We'll also required some competencies from employees to this project. Competencies ensure the individual with a scheme or pointing of the behaviors that will be valuable, recognized and rewarded. In connection with that, we plan to spend time and funds to ensure that competencies are successfully employed. This will assure expecting improvement in the assessment of job performance.

We'll require and assess following soft competencies: achievement orientation, concern for quality, information seeking, customer service orientation, interpersonal understanding, relationship building, teamwork & cooperation, impact & influence, analytical thinking, conceptual thinking, initiative, continuous learning, average score.

Periodically, we'll measure gaps between the employees' actual competencies level (ACL) and required competencies level (RCL) or ideal competency level. The RCL score is 4.00 or the maximum number, but for the ACL scores the values can be 1.00 to 4.00. In this case, if the score of ACL is laid between 1.00 - 1.99 that means the assessed person or employee has a lack of competence in that competency and it can cause a negative impact on his/her performance. If the score of ACL is laid between 2.00 to 2.99 that means the employee's competency needs some developments for increasing his or her performance. If the score of ACL is laid between 3.00 to 3.99 that means the designated competency has met the company's required competency and the score of 4 is that the employee is superior in showing the performance.

## 7.2. Organizational resources

The company will use different motivation theories, depends on a role of employee. It will have a functional organizational structure, there will be team leaders of functional units in the company. Mostly, all of them will play a key role in the company, and have unique knowledge and experience. They will have direct access to the CEO of the company, and she will share strategic plans with them. All other employees will be managed by team leaders. They also will have access to the CEO, but limited. The CEO will mostly apply goal-setting and expectancy motivation theories to team leaders.

If talking from goal-setting theory perspective, performance goals play a key role in motivation of team leaders. As they will have clear performance goals, it will mobilize their efforts, direct their attention, increase their persistence, and affect the strategies they will use to accomplish tasks, doesn't matter whether it's a personal task or a group one (task for a functional unit team). Team leaders will have motivation to control the process of proper accomplishment of tasks in time, as the goal will be set to them by the CEO itself. Goals influence the individual's intentions, which are defined as the "cognitive representations of goals to which the person is committed". That's why this commitment will continue to direct their behavior until the goal is achieved. Goals from CEO will be specific, difficult and accepted by team leaders, so it will lead to higher levels of performance than easy vague goals or no goals at all. It helps to better understand the desired result and motivated to achieve.

If talking from expectancy theory perspective, they will desire to perform, because in case of successful performance of a task, they'll get desirable outcomes (valence), so they should exert effort. As well as, it's possible to reach different outcomes (instrumentality), all of them are desirable. Team leaders in the company will always have challenging tasks for performance and a great support from the CEO (for example, in resources they require to perform a task: advise, more employees to hire, an expert to attract as a consultant, additional costs to approve, additional duties (more power) to empower etc.), so this will increase chances of successful task performance, and they use greater efforts to do that. They will not lose motivation and desire to perform, so the level of performance will remain high.

As for other employees, the Company will generally apply equity theory of motivation. According to that theory, motivation is strongly influenced by the desire to be treated fairly and people's perceptions about whether they have been treated fairly. All employees, subordinates to team leaders, will have accurate role perceptions from them, get a feedback from them from time to time. When effort, ability and accurate role perceptions are all present, then high level of performance occurs. The final outcome, satisfaction, is followed from performance, as well as from a perception that rewards have been given out fairly. Besides a feedback from a team leader, employees will realize that the CEO knows about their personal input and outcome, and approves salary rise or promotion from time to time, when team leader asks about that. They will get fair salaries according to their personal input, as well as the company will cover costs for over-time work, counting based on a salary of employee per hour, if over-time work was really needed and an employee agrees to perform it.

As for reinforcement theory, it will apply rare, and will not be applied at all as negative reinforcement (punishment). In negative reinforcement, a response or behavior is strengthened by stopping, removing, or avoiding a negative outcome or aversive stimulus. But it also could demotivate employees a lot, especially in IT segment. So, we'll exclude such risk.

When communication is well with a team, it helps eliminate misunderstandings and can encourage a healthy and peaceful work environment. Efficient and open communication with a team also let get work done quickly and professionally. In the company organizational communication will be built mostly based on verbal and written one. Written communication is the medium through which the message of the sender is conveyed with the help of written words. Letters, e-mails, weekly and quarterly reports, memos will be some forms of written communication in the company. Unlike some other forms of communication, written messages can be edited and rectified before they are sent to the receiver, thereby making written communication an indispensable part of informal and formal communication. This form of communication encapsulates features of visual communication as well, especially when the messages are conveyed through electronic devices such as laptops, phones, and visual presentations that involve the use of text or words. The company will use for written communication CRM system, corporate chats, secure messengers, etc. Verbal mode of communication relies on words to convey a message. This is the standard method of communicating that employees will use on a day-to-day basis. The most often communication will be interpersonal or small group one (weekly meetings of team leaders with CEO, with their teams, between team leaders, in a working group, etc.).

In the company people-oriented culture will be prevalent. It will value fairness, supportiveness, and respect for individual rights. In addition to having fair procedures and management styles, the company will create an atmosphere where work is fun and employees do not feel required to choose between work and other aspects of their lives. There is a greater emphasis on and expectation of treating people with respect and dignity. The company will recognize that achievements deserve to be acknowledged and rewarded. This will take the form of bonuses, extra vacation time, and even simple actions such as a heartfelt “thank you”. The company will also recognize that all employees, no matter how “big” or “small” their role, are vital contributors to the success of the company and its brand. Employees will be treated accordingly, as valued partners. There will be a culture of mutual respect. Employees will be listened to by leadership, their input sought, and their feedback acted upon. Employees in its turn will have a vested interest in the success of their projects, and will be willing to go the extra mile. They will feel appreciated and needed, which can result in lower staff turnover. The company will make employee success and growth a central priority. This works on the principle that an employee’s career success and the success of the company go hand in hand. Discussions with employees about their career path and promotions from within will give employees incentive to stay with the company and continually grow. Internal and external training, industry conferences, and tuition reimbursement will not only equip employees with valuable skills, but send the message that they are valued.

As for organizational commitment, all three forms of commitment highly influence the length that employees stay with organizations. As for the Company both types of commitment will prevail equally: continuance and affective ones. As for continuance commitment, employees will feel the need to stay with the company because their salary and benefits will not improve if they move to another organization, moreover the level of salaries the company offers is much bigger than anywhere in the market. Such situation can become an issue for the company as employees that are continuance committed may become dissatisfied (and disengaged) with their work and yet, are unwilling to leave the company. That's why the company will aim to encourage affective commitment. The company’s employees will be also affectively committed to their organization, it means that they will want to stay at their organization. They will identify with the company’s goals, feel that they fit into the organization and are satisfied with their work. Employees will feel valued and are great assets for the company.

### 7.3. Financial resources

We plan to take two credits from US banks: 210,000 USD for 3 years under 5% of interest rate and 300,000 USD for 4 years under 7% of interest rate. There calculations (table 35) of credit body and credit principal to pay (separately and cumulative). We plan to fully repay the credit for the 4th year of the company's operation.

	Units	Dec 31 2022	Dec 31 2023	Dec 31 2024	Dec 31 2025	Dec 31 2026
<b>Credit taken during year</b>	<b>USD</b>	<b>510,000</b>	-	-	-	-
Remaning credit body	USD	510,000	365,000	220,000	75,000	-
<b>Interest to pay</b>	<b>USD</b>	<b>31,500</b>	<b>22,750</b>	<b>14,000</b>	<b>5,250</b>	-
Credit principal to pay	USD	145,000	145,000	145,000	75,000	-
<b>Cash Out</b>	<b>USD</b>	<b>176,500</b>	<b>167,750</b>	<b>159,000</b>	<b>80,250</b>	-

<b>Credit 1</b>						
<b>Credit terms</b>	<b>Units</b>					
<b>Credit body</b>	<b>USD</b>	300,000				
<b>Period</b>	<b>years</b>	4				
<b>Credit principal to pay</b>	<b>USD</b>	75,000				
<b>Interest rate, %</b>	<b>USD</b>	7% annual				
<b>Start year</b>		300,000				

	Units	2022	2023	2024	2025	2026
<b>Remaning credit body</b>	<b>USD</b>	<b>300,000</b>	<b>225,000</b>	<b>150,000</b>	<b>75,000</b>	-
Interest to pay	USD	21,000	15,750	10,500	5,250	-
Credit principal to pay	USD	75,000	75,000	75,000	75,000	-
<b>Cash Out</b>	<b>USD</b>	<b>96,000</b>	<b>90,750</b>	<b>85,500</b>	<b>80,250</b>	-

<b>Credit 2</b>						
<b>Credit terms</b>	<b>Units</b>					
<b>Credit body</b>	<b>USD</b>	210,000				
<b>Period</b>	<b>years</b>	3				
<b>Credit principal to pay</b>	<b>USD</b>	70,000				
<b>Interest rate, %</b>	<b>USD</b>	5% annual				
<b>Start year</b>		210,000				

	Units	2022	2023	2024	2025	2026
<b>Remaning credit body</b>	<b>USD</b>	<b>210,000</b>	<b>140,000</b>	<b>70,000</b>	-	-
Interest to pay	USD	10,500	7,000	3,500	-	-
Credit principal to pay	USD	70,000	70,000	70,000	-	-
<b>Cash Out</b>	<b>USD</b>	<b>80,500</b>	<b>77,000</b>	<b>73,500</b>	-	-

Table 35. Credits.

### 7.4. Legal resources

We'll conclude contract with outsourced lawyer, which will register company and open settlement accounts in US (Delaware), register trademarks and submit for patent registration in US, Europe and China. There also will be cost for company maintenance. Lawyer also will prepare contracts for our customers and limit all our risks. We'll also submit from the 2<sup>nd</sup> year to such certificates as:

- Viewability Certification by JICWEBS (The Joint Industry Committee for Web Standards) is made up of representatives from ISBA, the IPA, IAB UK, AOP and the NMA. It was created by the UK and Ireland media industry to ensure independent development of standards and benchmarking of best practice for online ad trading
- TAG (Trustworthy Accountability Group) Certification Against Fraud, which launched its program to struggle robotic traffic in the digital ad supply chain

- The IAB Europe Transparency and Consent Framework (TCF) is the alone GDPR accordance solution making a proper industry-standard treatment to assist all parties in the digital ad chain assure that they act in accordance with the EU's GDPR and ePrivacy Directive when handling personal information or admission and/or storing data on a user's system, such as cookies, ad and device identifiers and other tracing technologies
- MRC certification, which assists a merchant/audience measuring contractor to gain the assurance of marketers and to obtain their trust

## 8. Implementation: Implementation plan including risk assessment

### 8.1. The list of risks, risk segmentation (Impact/Probability). Mitigation Plan.

Description	Probability (1-5)	Impact (1-5)	Severity (P x I)	Priority	Level of risk	Risk owner	Risk management strategy	Cost of resources, USD	Action plan
Person with a narrow expertise leaves the project (Bus-factor - 1)	1	5	5	6	Low	CEO	Mitigate	300	1) Make him sharing his knowledge and expertise with other team players 2) Make him a mentor to a new hired employee in the same narrow field 3) Sign a long-term contract with him (incl. non-compete clause)
Hacking software	2	5	10	3	Medium	CTO	Mitigate/Transfer	15000	1) Auditing of software each year 2) Insure software and company activities
Legal action	1	5	5	6	Low	CEO	Transfer	300	Limit our liability in the contract (through lawyer (outsourced)), as well as prescribe who can act as a third-party auditor in controversial issues
Not finding a large client in the first year of work	3	5	15	1	High	CBDO	Mitigate	240000	1) Develop and use definite sales strategy 2) approve sufficient budget for marketing activities 3) control sales plan month by month starting from product launch day
Refusal to obtain a certificate	3	3	9	4	Medium	CBDO	Mitigate	25000	1) Hire experienced consultant in obtaining license 2) Divide sales into different target segments - only top market players need a certificate, as well as do explanatory work to show that the certificate is not a guarantee of protecting against bot traffic
Actions of oligopolists against new market player	1	5	5	6	Medium	CEO	Mitigate	550000	1) develop proper management and marketing strategies from the beginning 2) register patents 3) Certification by JICWEBS
Other players will copy the technology	2	4	8	5	Medium	CEO	Mitigate	50000	To register a patent on technology in US, China and EU (through lawyer (outsourced))
Refusal from large clients to conclude contracts due to origin of core team	3	4	12	2	Medium	CEO	Mitigate	15000	Register company in US, obtaining TMs, patents and certificate on it (through lawyer (outsourced))

Table 36. Risk register.

Description of risks and actions to do (consider risk register, table 36):

- Person with a narrow expertise leaves the project (Bus-factor - 1): 1) Make him sharing his knowledge and expertise with other team players 2) Make him a mentor to a new hired employee in the same narrow field 3) Sign a long-term contract with him (incl. non-compete clause);
- Hacking software: 1) Auditing of software each year 2) Insure software and company activities;
- Legal action: Limit our liability in the contract (through lawyer (outsourced)), as well as prescribe who can act as a third-party auditor in controversial issues;
- Not finding a large client in the first year of work: 1) Develop and use definite sales strategy 2) approve sufficient budget for marketing activities 3) control sales plan month by month starting from product launch day;



- Refusal to obtain a certificate: 1) Hire experienced consultant in obtaining license 2) Divide sales into different target segments - only top market players need a certificate, as well as do explanatory work to show that the certificate is not a guarantee of protecting against bot traffic;
- Actions of oligopolists against new market player: 1) develop proper management and marketing strategies from the beginning 2) register patents 3) Certification by JICWEBS;
- Other players will copy the technology: To register a patent on technology in US, China and EU (through lawyer (outsourced));
- Refusal from large clients to conclude contracts due to origin of core team: Register company in US, obtaining TMs, patents and certificate on it (through lawyer (outsourced)).

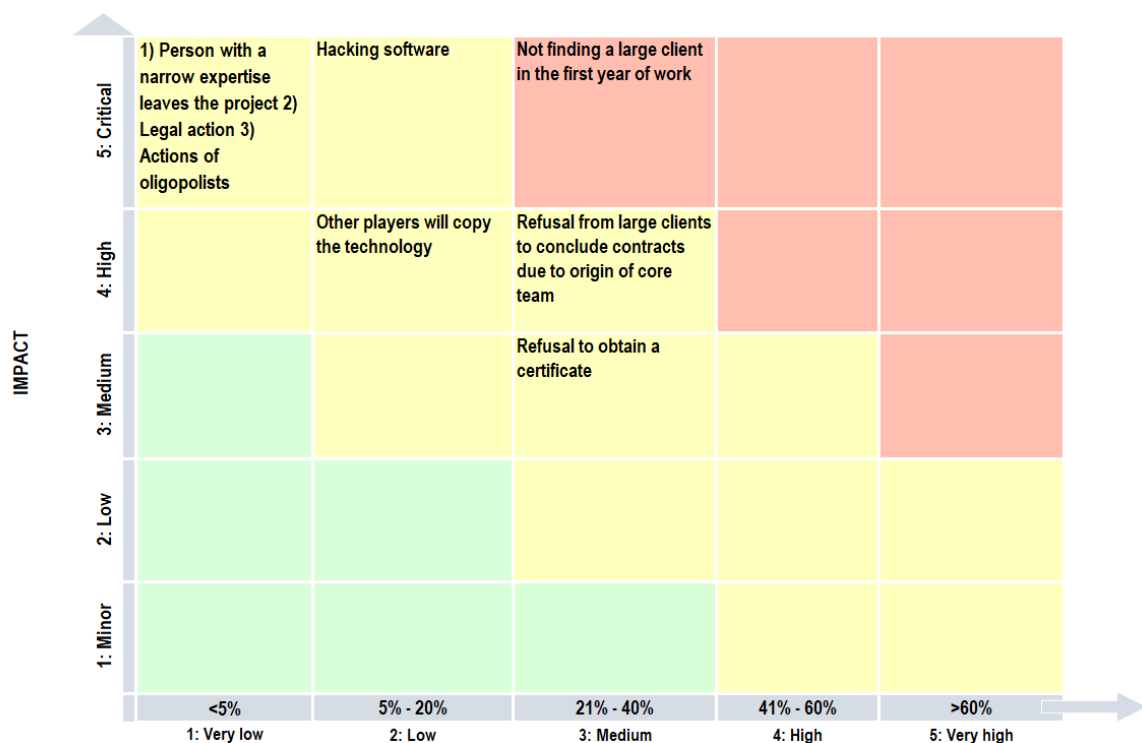


Table 37. Risk map.

## 8.2. Project implementation plan (Gantt chart)

The project implementation plan (Gantt chart) is attached as appendix 2 to this capstone project. Here there are specified only milestones list with their acceptance criteria.

Milestone 1: Legal and financial ground set-up.

- |   |                   |
|---|-------------------|
| - Conclude contract with law firm (outsourced lawyer)   | 03.01.22-17.01.22 |
| - Company registration in US (Delaware)                 | 17.01.22-31.01.22 |
| - Opening settlement bank account in US                 | 31.01.22-14.02.22 |
| - Submit on trademark registration in US, Europe, China | 14.02.22-16.05.22 |
| - Submit on patent registration in US, Europe and China | 02.05.22-27.06.22 |
| - Get a loan in two investment banks in US              | 14.02.22-14.03.22 |

Milestone acceptance criteria:

1. Company is registered.
2. Settlement account is opened.
3. Loan was got from two banks.
4. Trademark and patent are on registration.

Milestone 2: Provide a workplace.

- |  |                   |
|--|-------------------|
| - Rent office in Kyiv                      | 03.01.22-17.01.22 |
| - Conclude contract with internet provider | 03.01.22-17.01.22 |
| - Buy laptops and printer                  | 03.01.22-17.01.22 |
| - Buy other office stuff                   | 03.01.22-17.01.22 |

Milestone acceptance criteria:

1. Concluded contract for office rent at least for 1 year.
2. Concluded contract with internet provider.
3. 7 laptops and 1 printer were bought.
4. The entire minimum set of office supplies was purchased.

Milestone 3: Marketing activities

- |  |                   |
|--|-------------------|
| - Prepare action plan of marketing activities  | 28.02.22-25.04.22 |
| - Communicate business as our potential customers<br>to be the first who will test our product when it will<br>be launched | 14.03.22-06.06.22 |

Milestone acceptance criteria:

1. Find at least 10 customers to test product for free before launch to the market.

Milestone 4: Product development

- |   |                   |
|---|-------------------|
| - Conclude contract with hosting provider in US   | 03.01.22-17.01.22 |
| - Layout design - admin panel   | 17.01.22-14.02.22 |
| - Integration and set-up CI (continuous integration) pipeline                                     | 14.02.22-28.02.22 |
| - Front-end development (admin panel, data output)  | 14.02.22-11.04.22 |
| - Integration authentication and authorization plugin   | 28.02.22-28.03.22 |
| - Setting up notifications (when registering, logging in,<br>resetting password)                  | 28.03.22-25.04.22 |
| - Realization of generating standard reports based on<br>gathered data                            | 28.03.22-25.04.22 |
| - Realization of gathering necessary data into database<br>(headers, browsers) to analyze traffic | 11.04.22-02.05.22 |
| - Purchase of the first 10 mirror domains, from<br>which we will rotate Javascript codes          | 11.04.22-18.04.22 |
| - Creation of an algorithm for permanently changing<br>the encryption code for data collection    | 11.04.22-02.05.22 |
| - Set up load balancer (infrastructure for scaling load)  | 25.04.22-09.05.22 |
| - Set up docker swarm (infrastructure for instant<br>scaling load)                                | 25.04.22-09.05.22 |

Milestone acceptance criteria:

1. Definition of Done (DoD) for each technical stage and meeting the deadline of each stage.

Milestone 5: Product testing (internal)

- Testing on affiliate ad networks, where we put the code, to check how the reporting works 09.05.22-23.05.22
- Revisions 23.05.22-06.06.22
- Testing 06.06.22-20.06.22

Milestone acceptance criteria:

1. Functionality tested and documented.
2. Passed security and load checks
3. Stakeholders have accepted functionality.

Milestone 6: Launch

- Product testing (external) with potential customers for free 20.06.22-04.07.22
- Launch for market 04.07.22-11.07.22

Milestone acceptance criteria:

1. Product tested successfully with all potential customers which agreed on testing for free, before
2. launch the product to the market.

### **8.3. Interdependencies and project implementation control activities**

Project implementation control activity 1: delay in getting loan.

Actions to do:

If medium: CEO has to deal with the banks personally and find out the reason of delay, make research on other financing options.

If critical: CEO has to start looking for loans in different banks, looking for business angels and other quick options for financing the project.

Project implementation control activity 2: satisfaction of key employees (bus factor = 1).

Actions to do:

If medium: CEO has to find out reasons of dissatisfaction by talking to key employee, find optimal solution.

If critical: CEO has to find out reasons of dissatisfaction by talking to key employee, if this could be resolved - do that, if not, start looking for candidate with similar experience (could be more expensive) and agree terms of working in the project with current employee.

Project implementation control activity 3: Increase in the number of potential customers who agree on test for free.

Actions to do:

If medium: CBDO has to inform CEO, find out reasons of that: if there were sufficient number of meetings with targeted customers, or if they decline the offer - work on it more thoroughly why they do it, convert feedback from the market to business opportunity.

If critical: CBDO has to inform CEO, find out reasons of that, review the marketing plan - target audience, channels; make adjustments to the marketing activities based on feedback from market.