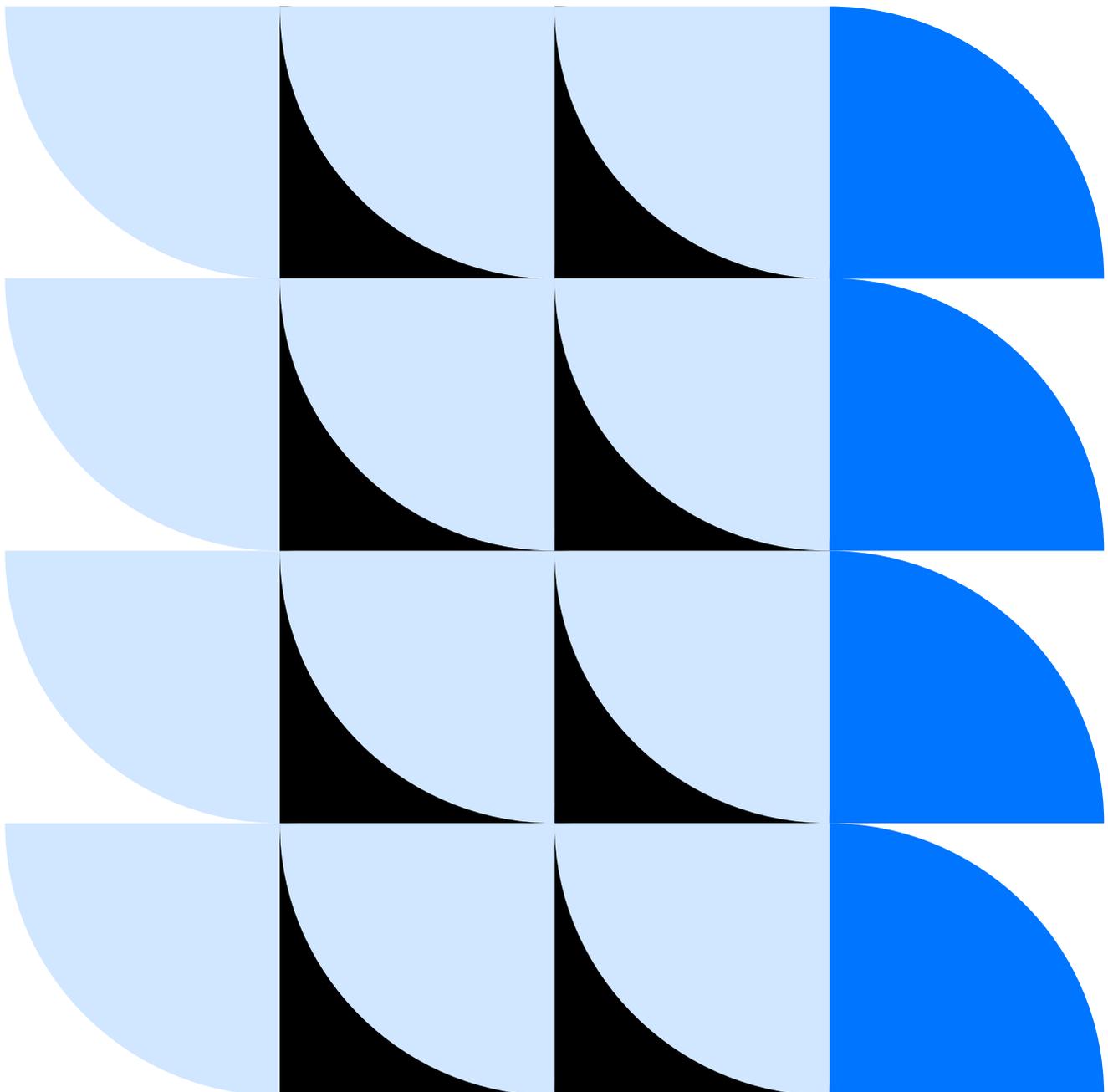


Delivering eLearning

A non-obvious way to beat the industry competition with accelerated web performance

06/09/2020



eLearning infrastructure has been pushed to a new max

eLearning companies are pretty much like rockets nowadays. The great shift from offline to online has led to an increasing traffic trend in the eLearning industry, and has served as nuclear fuel for rapid growth. Still, not all of the rockets have managed to get off the ground. Why? With greater opportunities come new challenges.

eLearning infrastructure has been pushed to a new max

On the one hand, the eLearning industry is enjoying a massive boom as millions of students are now looking to invest their time in online education; on the other hand, **the industry faces a crisis as websites are overloaded, which affects the ability to deliver a quality learning experience to new and existing users.**

At Uploadcare, we wanted to find out how many eLearning providers were ready to face the new reality from a technical perspective. We also wanted to suss out what differentiates those whose numbers of new learners skyrocketed and those who didn't manage to seize the opportunity for growth.

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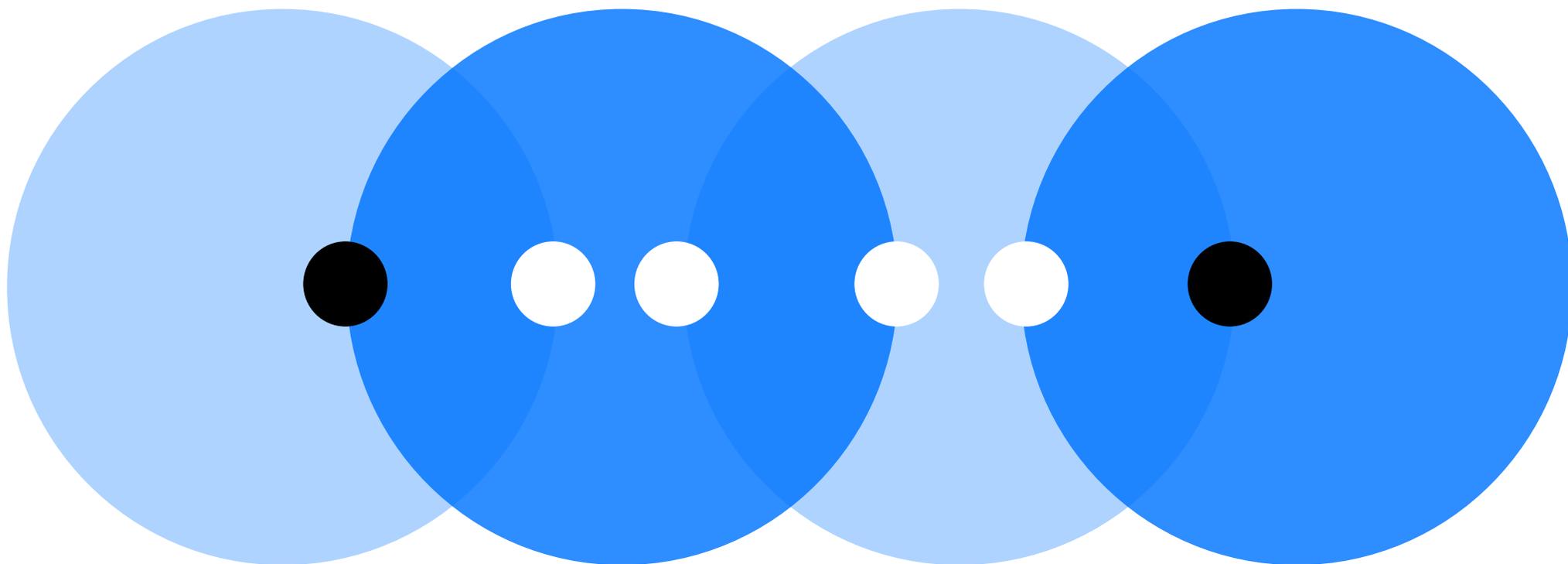
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The data we used in our research



The data we used in our research

McKinsey, in their report *COVID-19: Implications for Business*,¹ claimed that while remote has become the new normal, employees are finding that they don't have the skills to be successful in an extended remote environment, and they're worried that staying remote could make them less valuable.

That's why, before we conducted our research, we suggested that the eLearning sphere has experienced significant growth in Q1 2020 (January – March). People need to obtain new skills, and eLearning platforms are the way to do it.

¹ <https://www.mckinsey.com/business-functions/risk/our-insights/covid-19-implications-for-business>

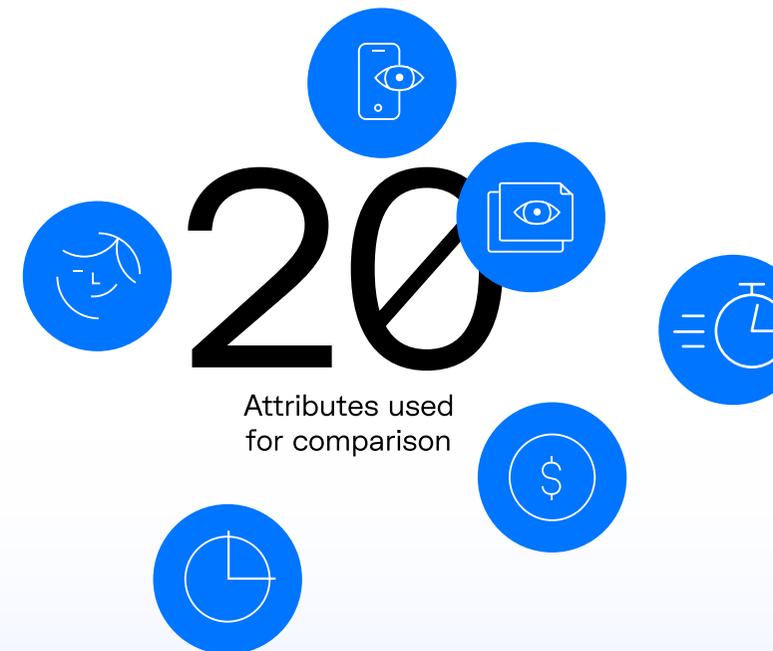
The data we used in our research

In this study, we analyzed 150 websites of eLearning companies. The sample includes both large and small companies of different types:

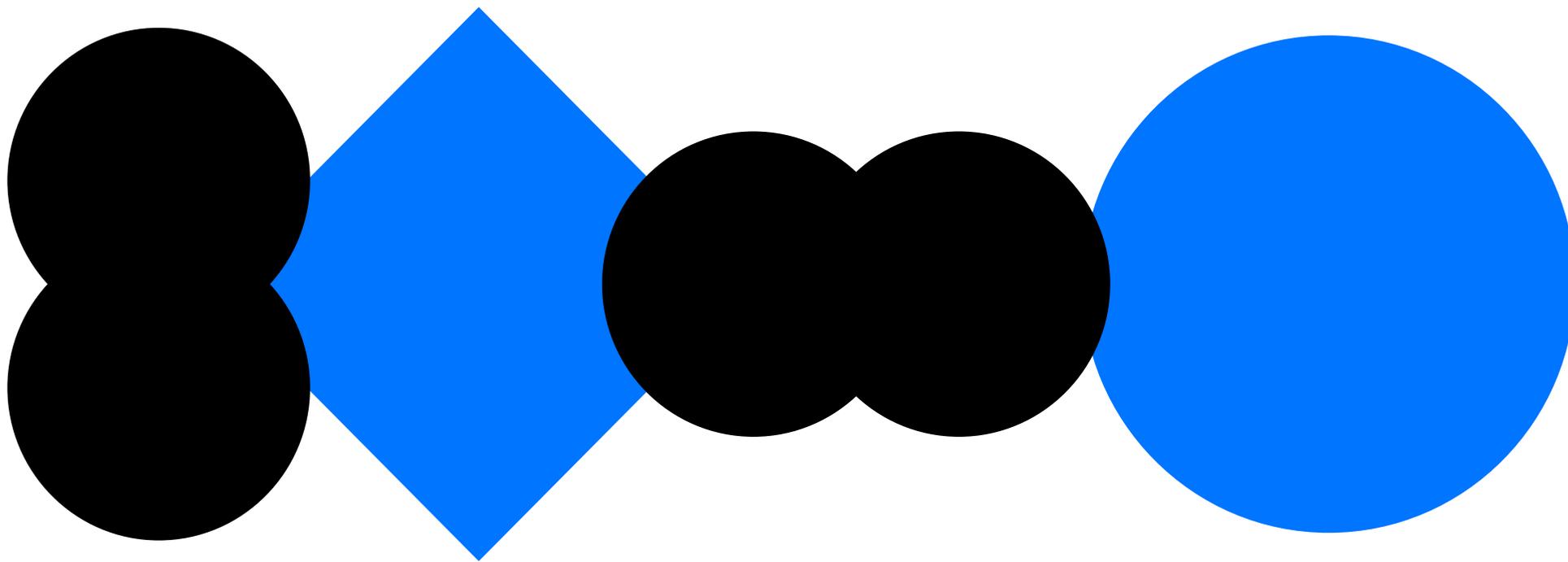
- Course marketplaces
- Academic platforms
- B2B learning management system (LMS) providers
- Learning platforms with unique author content

We carefully crafted the test sample, so it could well represent the general trend in the industry.

We compared these eLearning websites using 20 attributes, such as Google index size, number of visitors, technologies implemented on the main webpage, etc., in order to find out how well the industry can tackle the increased traffic from the perspective of web performance and online experience. For the analyses, we used SimilarWeb, BuiltWith, Google Lighthouse API, and PageDetox by Uploadcare.



The state of eLearning infrastructure



The state of eLearning infrastructure

In this study, we analyzed two major factors: marketing and technology.



Marketing

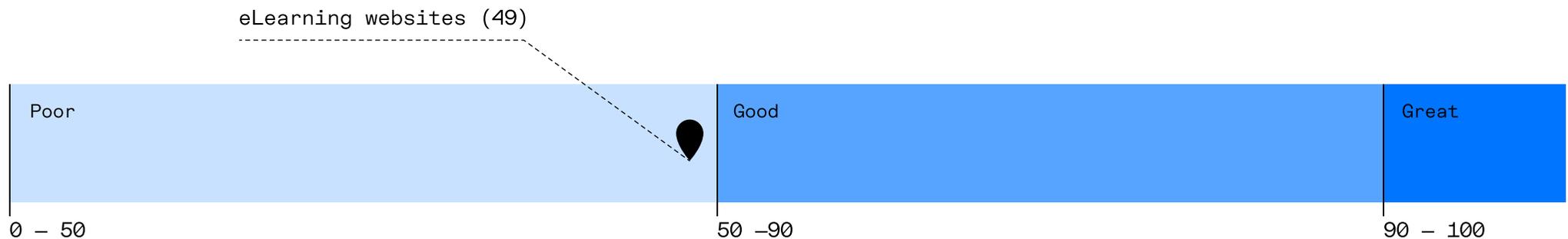
The marketing part covers the quality of the eLearning landing landscape for user acquisition.



Technology

The technology part looks into how eLearning is built and the challenges eLearning providers face when scaling their infrastructure.

Performance score



PageSpeed Insights is a service created by Google that analyzes the performance of a web page and provides insights on how to improve it. One of its components is Lighthouse, an automated tool for collecting data. The result of the data analyses is the Performance Score metric.

Performance Score summarizes the values of various PageSpeed Insights criteria and gives you a numeric value. Typically, a score of 90 or higher is considered

very good, and below 50 is poor. With this in mind, let's get back to the eLearning field. Tests have shown that the average Performance Score of eLearning websites is just 49.

To define a threshold for a well-performing eLearning website, we calculated the standard deviation, which is a statistical measure that shows the dispersion of performance values of the companies

chosen for the study. We've determined that value to be 20, which allows us to see that in the eLearning field, a website should have a Performance Score of 70 or higher to be considered as high-performing. Among the 150 analyzed eLearning websites, only 14 (or 9%) have such a result.

- The benchmark for Performance Score says that a score of 50 or less is considered as a poor result.
- The average Performance Score for eLearning websites is 49.
- Only 9% of eLearning websites have a Performance Score over 70.

What can we conclude from all of that? Even though we're seeing an increase in the number of average monthly users, we're also seeing that most eLearning

companies don't convert the traffic on their landing pages as efficiently as they potentially could.

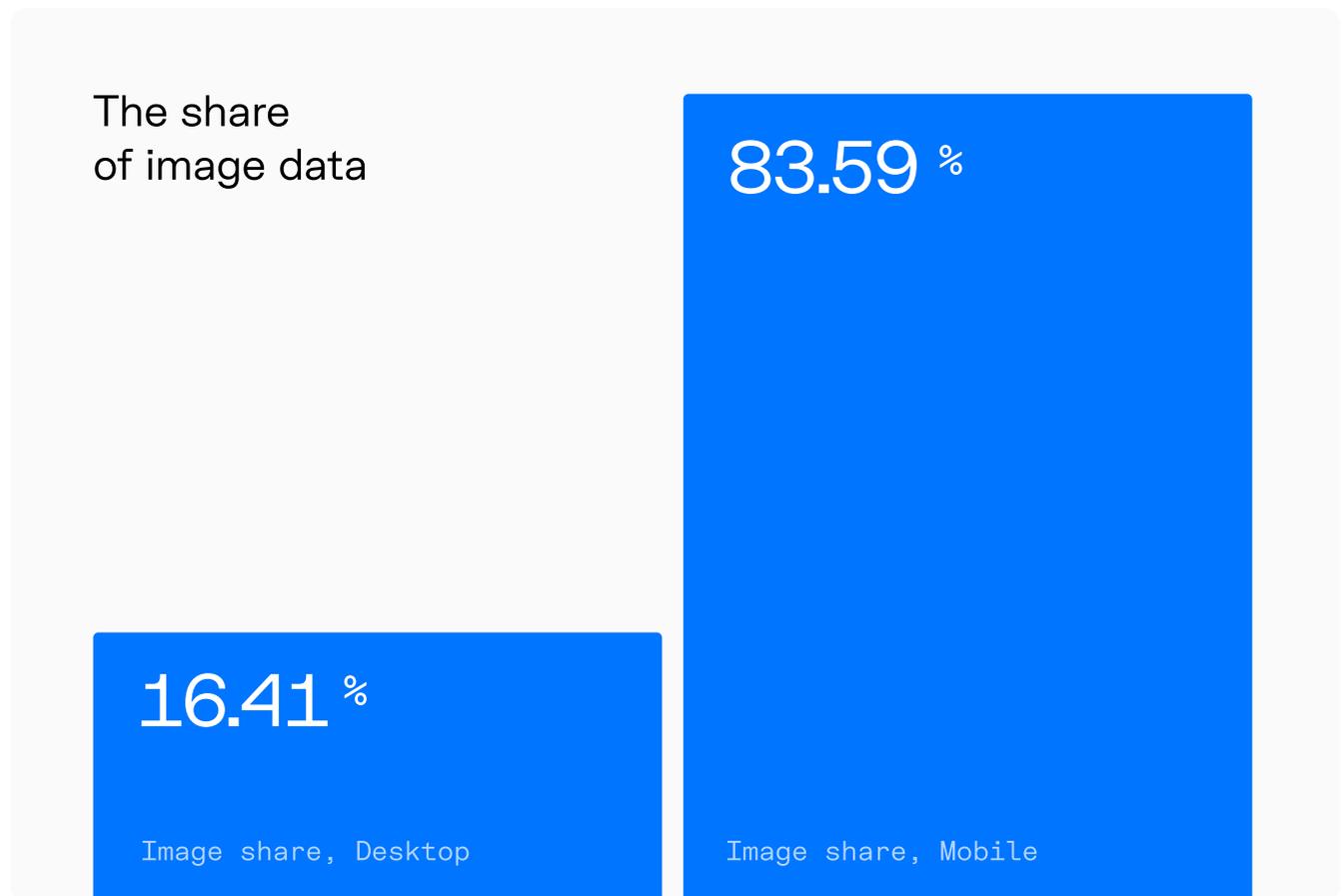
Images are key for the Performance Score

If you look at any website, it's likely full of images. For instance, the internet average of image share in page size is over 50%, while for online retail websites the average could easily reach over 70%.

Unoptimized, images can add up to many megabytes of data. Larger image files take longer to load, which has a negative impact on PageSpeed score and position in search results.

In our sample set, we compared the ratio of image data footprint to overall data footprint of eLearning websites.

As you can see, optimizing images is important, but for mobile websites, it's crucial.



Images are key for the Performance Score

Our next natural step was to find out whether eLearning websites have taken image optimization to the max, or if there was room for improvement; so we ran PageDetox and Lighthouse API tests.²

The collected data showed that there's definitely space for web performance improvement in the eLearning field. On mobile devices in particular, it can dramatically improve the quality of website interactions by up to 20%, measured by page load times and user engagement metrics.

² We used Lighthouse v.4.x because it was the latest version when we conducted our research. As of the publication of this report, v.6.0 is the current version, which has significant changes in the criteria and their specific weight, so the results will be different.

Improvement potential

	Desktop (on average)	Mobile (on average)
Page load time	▼ 8.2%	▼ 18.7%
Bounce rate	▼ 19.7%*	▼ 7.16%*
Engagement rate	▲ 10.1%**	▲ 15.83%**
Performance Score	▲ 5 points	▲ 11 points

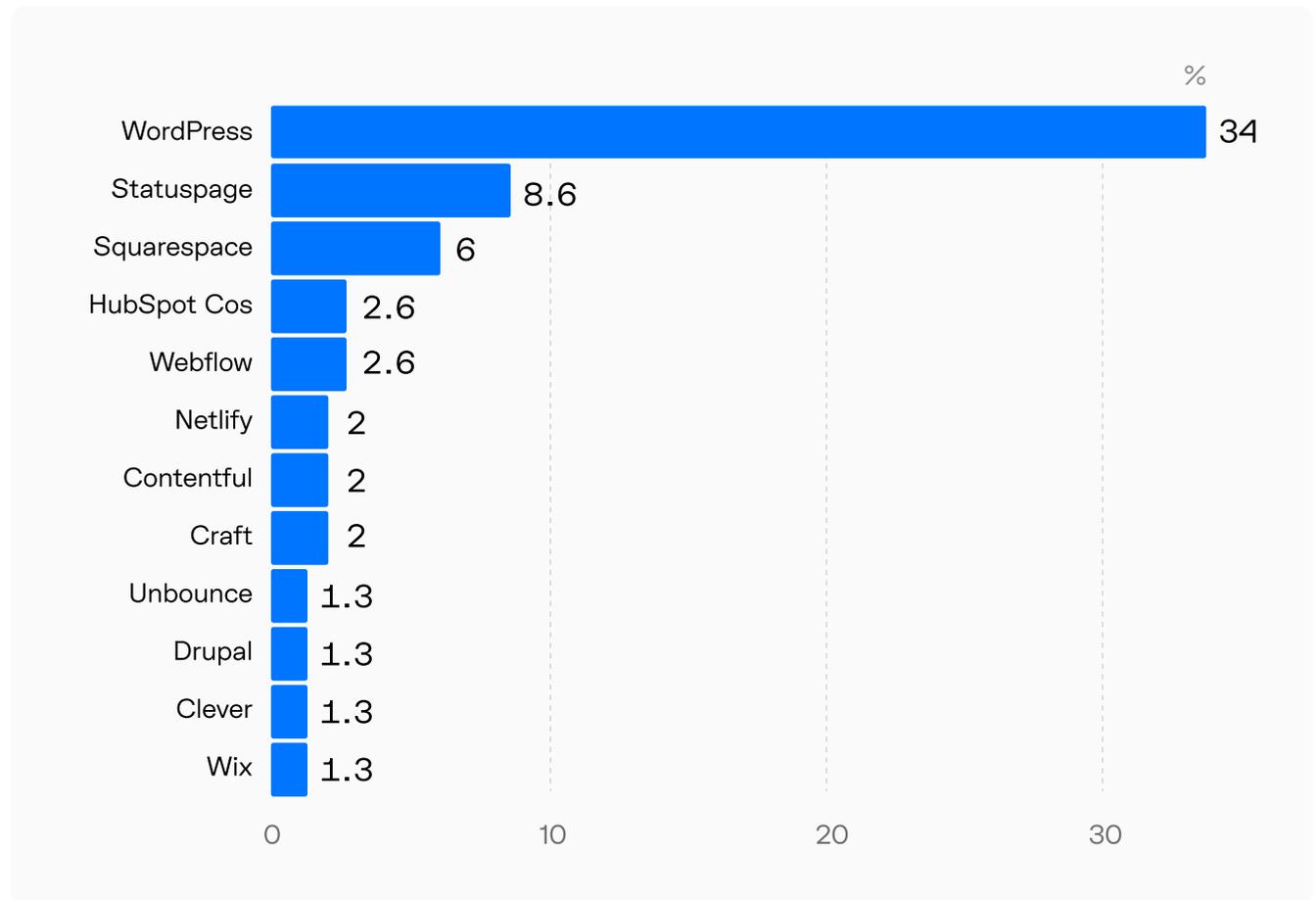
* The initial Bounce Rate of every page is taken as 100%.

** The initial Engagement Rate of every page is taken as 100%

Potential rapid traffic growth can also bring technical issues. eLearning companies should not only have a sound infrastructure to host content, but they should also be ready to scale their backbone to serve a smooth learning experience. So, with all that in mind, let's have a closer look at what eLearning companies' websites are made of.

Technology stack: CMS

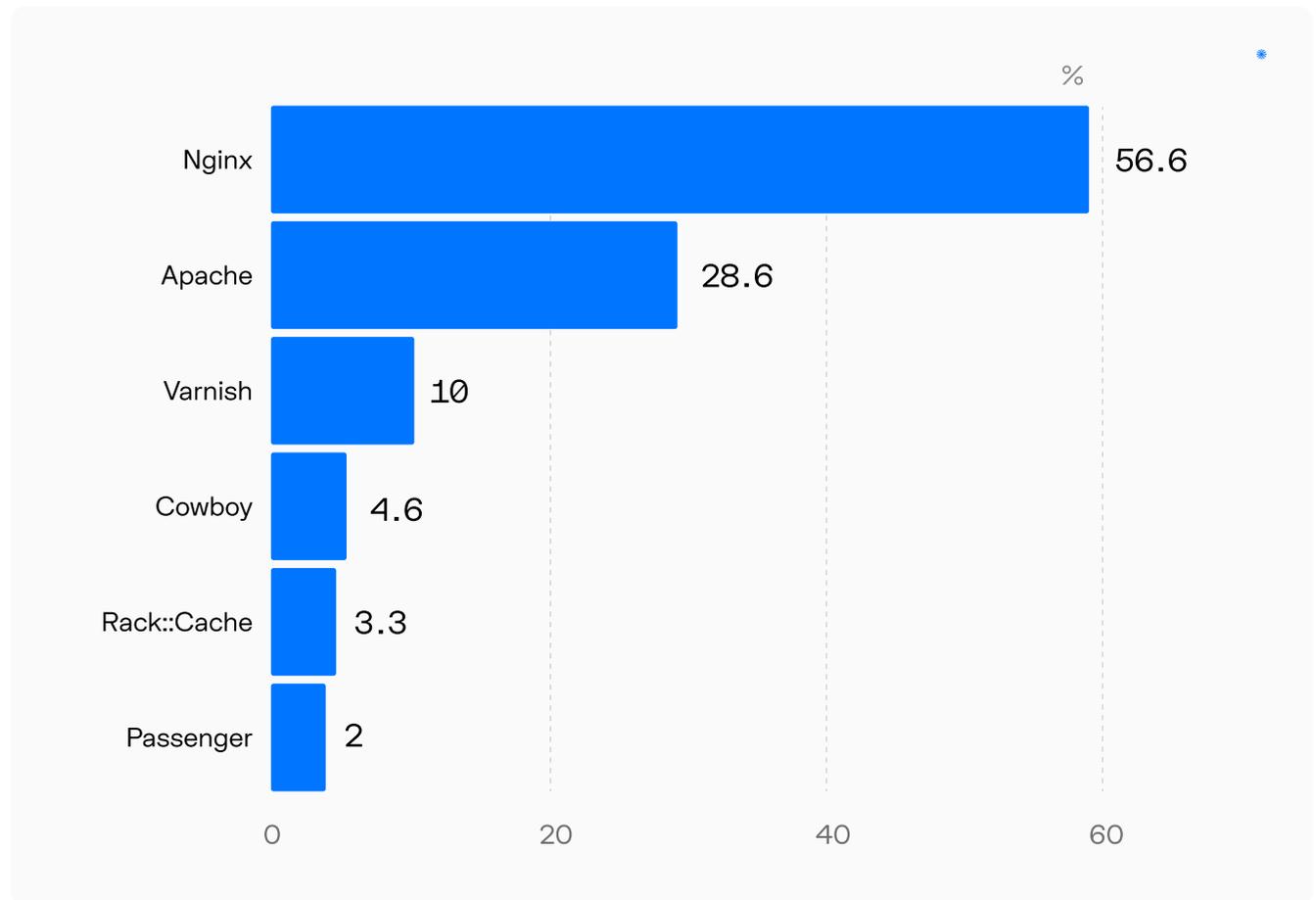
A content management system (CMS) is the foundation of most websites. The most popular technology is WordPress: over one-third of companies have chosen it for their landing pages. What about the rest?



Technology stack: Web server

A web server stores, processes, and delivers web pages to users. In other words, it helps to turn a static design and snippets of code into an actual web page.

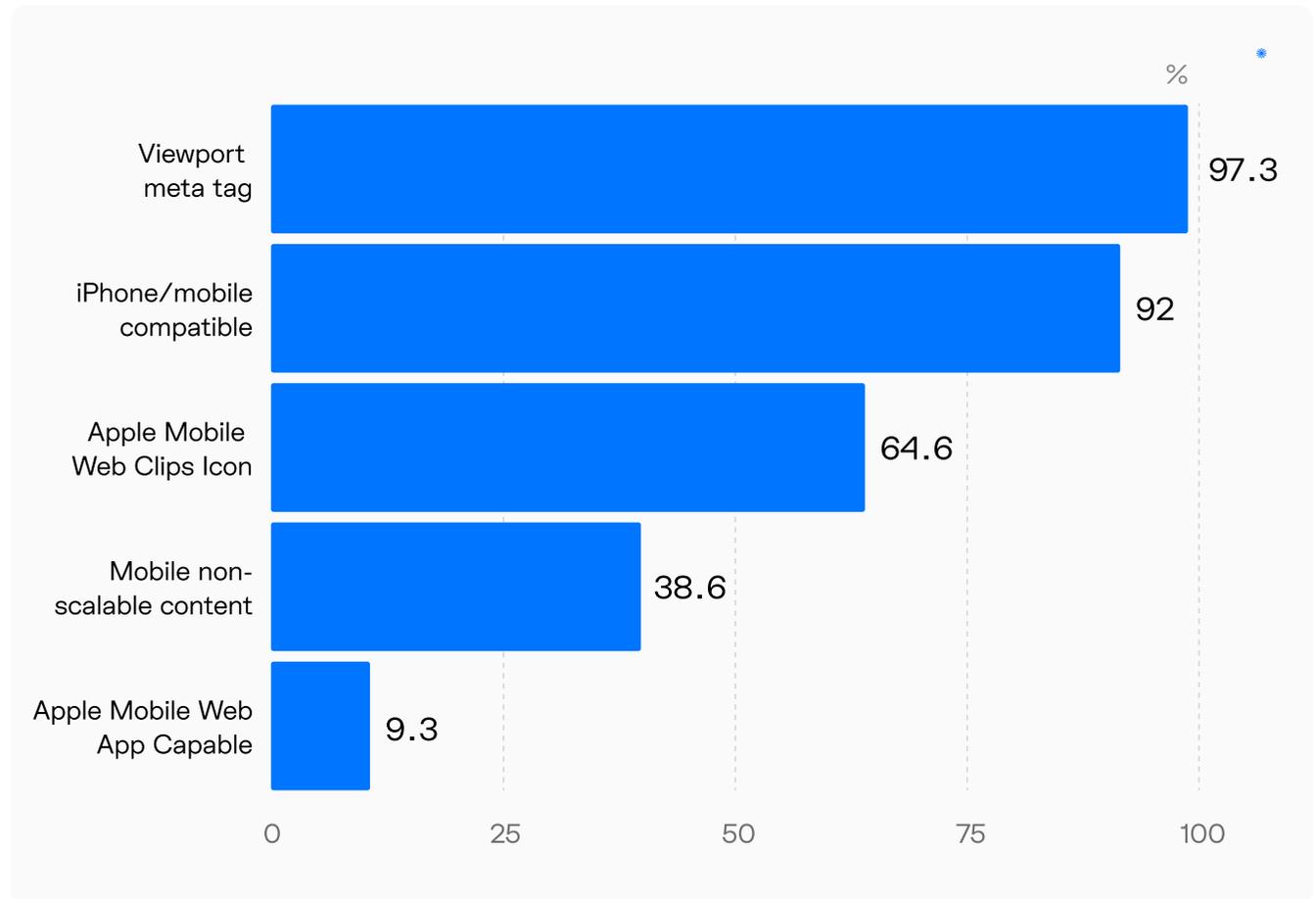
* One platform can use multiple technologies.



Technology stack: Mobile compability

The share of mobile website traffic has already been slightly above the 50% mark since the end of 2016.³ Since 5G is becoming more of a reality, it'll obviously only grow. Generally, it's clearly seen that platforms are committed to creating a mobile-friendly experience (specifically iPhone-oriented).

* One platform can use multiple technologies.

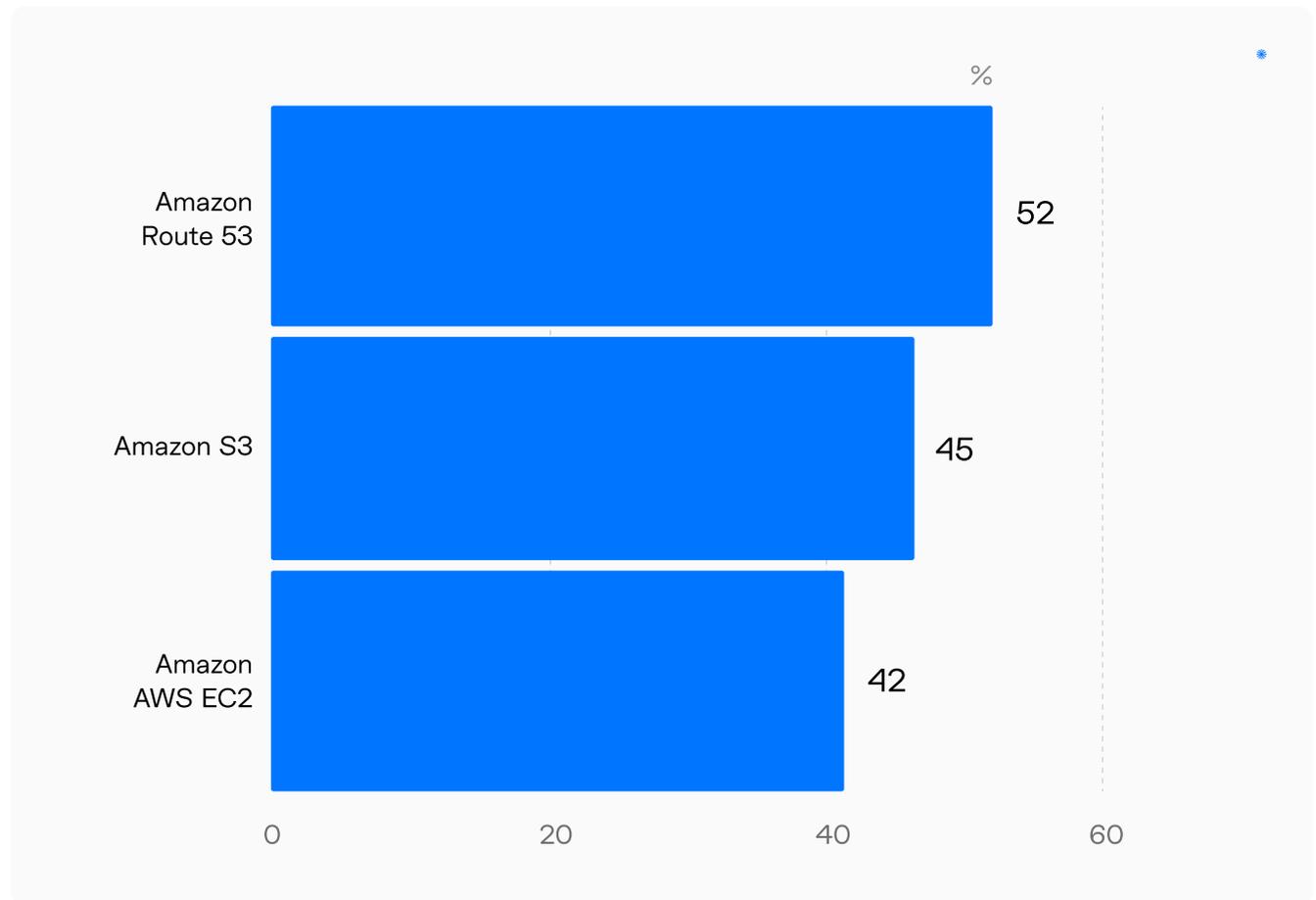


³ Statista, <https://www.statista.com/statistics/277125/share-of-website-traffic-coming-from-mobile-devices/>

Technology stack: Infrastructure

The data shows that companies definitely prefer using a pre-built infrastructure over building DIY solutions, and for good reason. To serve a quality learning experience, they need to be ready to quickly scale their backbone.

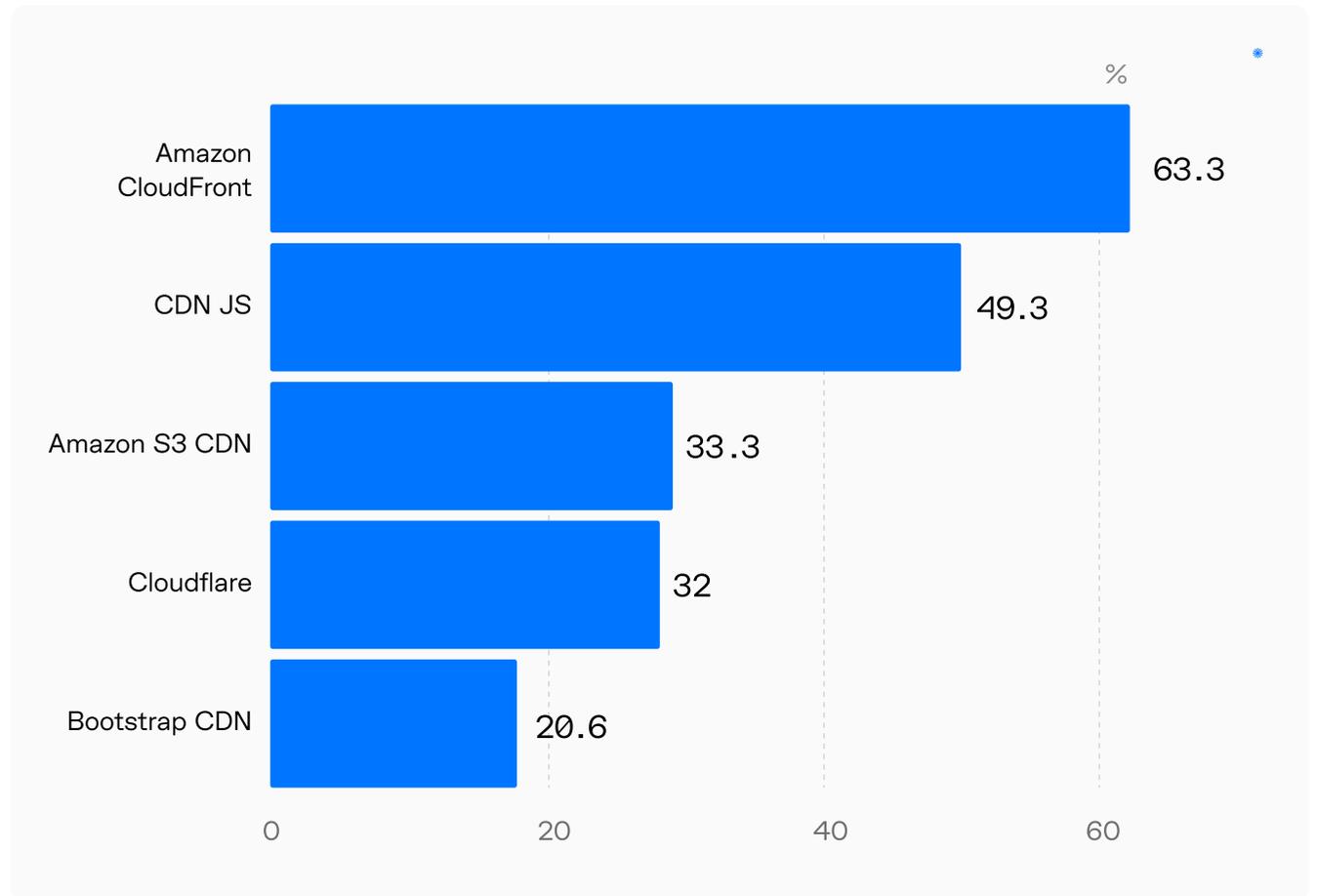
* One platform can use multiple technologies.



Technology stack: CDN

A content delivery network, or CDN, is a network of servers distributed across the globe in order to provide the shortest page load time for users from any location. Given the media-heavy and remote nature of eLearning, using a CDN is a must-have.

* One platform can use multiple technologies.



The picture seems to be pretty good, but we've noticed a potential pitfall.

The number of Amazon CloudFront implementations shows that the companies in the sample may have scalability issues in the future. Generally, CloudFront operates via a complicated API on top of the AWS S3 storage service acting as a CDN origin. Such setups may require extensive engineering effort to scale up.

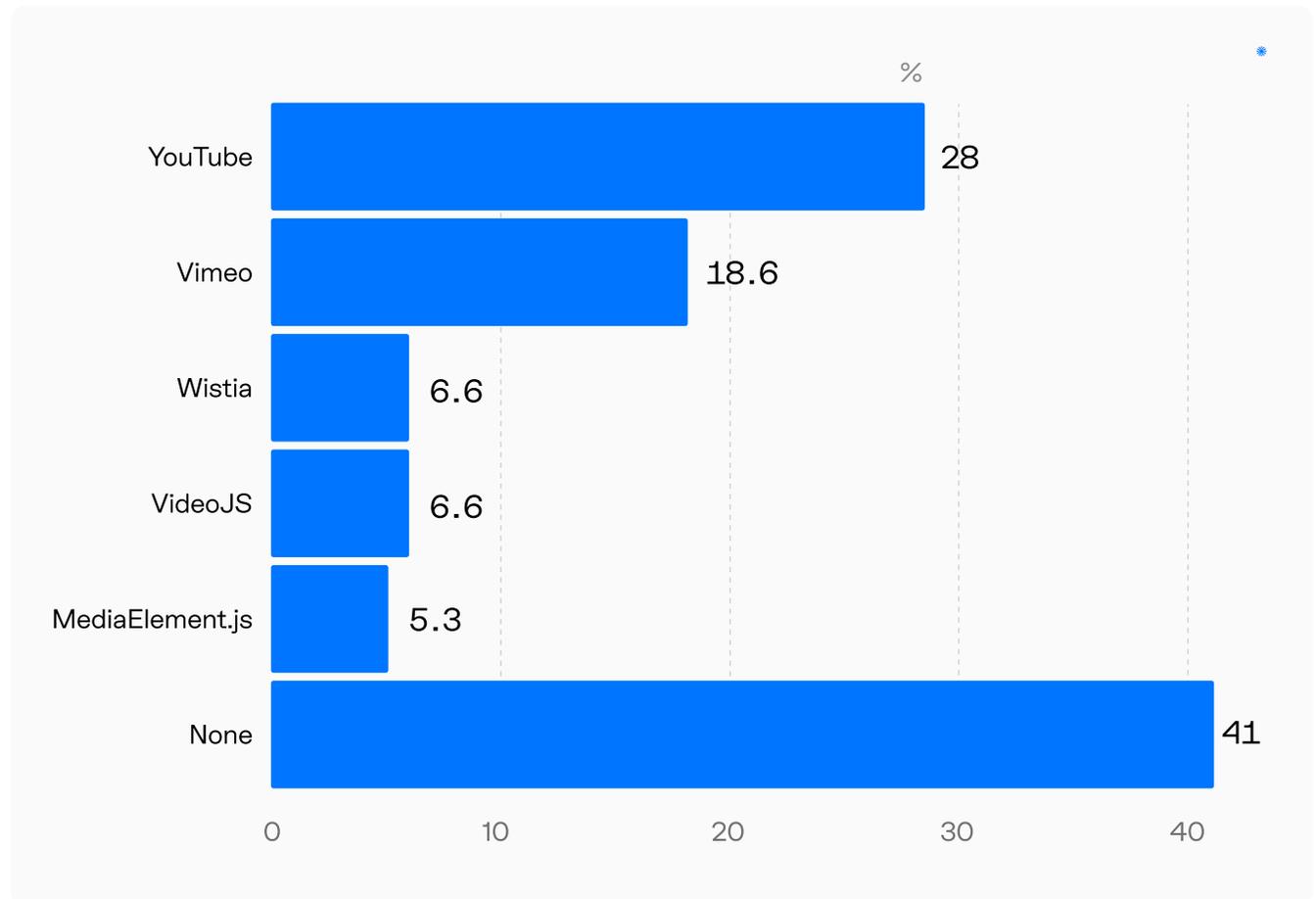
Another observation is that roughly half of the companies are currently serving their frontend assets from a special CDN (e.g., CDN JS or Bootstrap CDN). This indicates they have enough resources and expertise to boost their content delivery operations by serving their media assets from a CDN too. This can dramatically improve the quality of experience (QoE) for their learners by adapting those assets to the user context.

Technology stack: Video streaming

Although having videos on a marketing website is a matter of taste and A/B tests, we've found out that many companies who do have them rely on third-party streaming services. And 41% of the platforms don't use video services at all.

Quite often (in 56% of cases), video streaming services are combined with CDN technology. While video content can be streamed directly from a CDN, combining the technologies may potentially lead to growth in total cost of ownership.

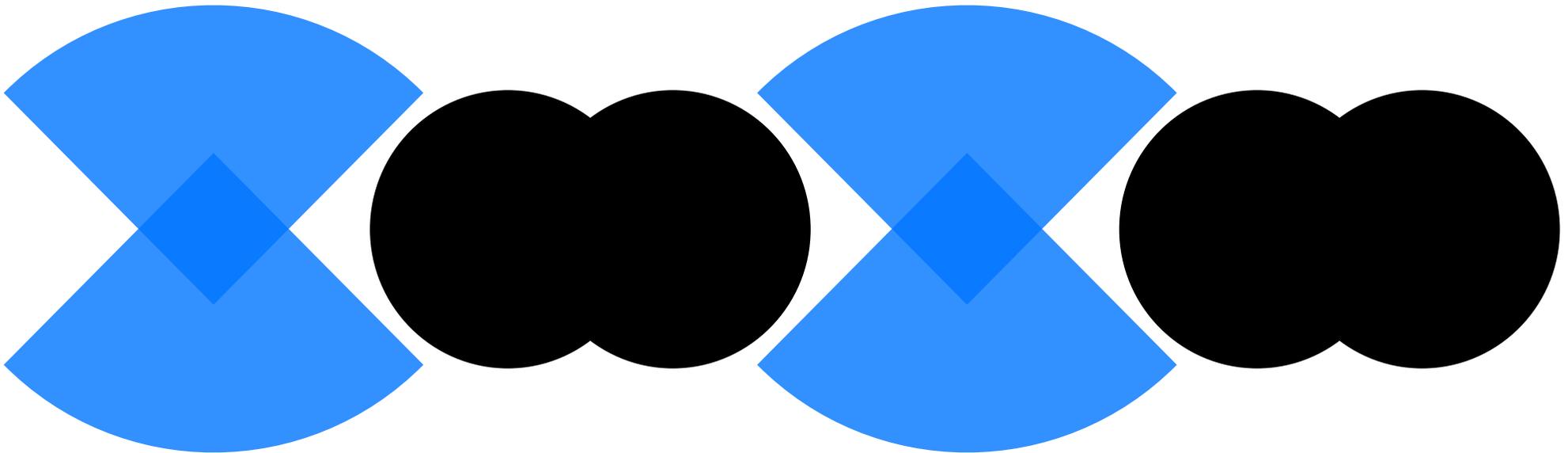
* One platform can use multiple technologies.



- Out-of-the-box infrastructure dominates over building DIY solutions.
- The good news: eLearning companies are investing in implementing a CDN.
- The bad news: some CDN setups can eat up all the benefits by demanding too many engineering resources.*

* We know how to deal with this.

The winners & runner-ups: Two trends



The winners and runner-ups: Two trends

Data from SimilarWeb has shown that the prevailing trend in average monthly visitors in the eLearning industry is positive. 41% of companies in the sample are trending positive, 20% are trending negative, and for 39% there's not enough data to draw a conclusion.

So, the numbers confirm our initial hypothesis that eLearning platforms have been experiencing an increase in traffic and new users. Still, 20% of the companies—a significant share—are dropping in traffic. Why?

The winners and runner-ups: Two trends

To shed some light on the subject, we split the sample according to traffic trends: we assigned a positive value if there was an increase in average numbers of visitors from January to March 2020, and a negative value if there was a decline in average numbers of visitors from January to March 2020.

The positive trend

- + Number of implemented technologies varies from 1 to 14, with an average of 8.
- + Number of images on the desktop version varies from 0 to 58, with an average of 14.
- + Number of images on the mobile version varies from 0 to 68, with 15 images on average.

The negative trend

- × Number of implemented technologies varies from 0 to 12, with an average of 8.
- × Number of images on the desktop version varies from 0 to 65, with an average of 19.
- × Number of images on the mobile version varies from 2 to 49, with 15 images on average.

What conclusions can we draw from these findings?

- 1 eLearning platforms with a rising average number of visitors are likely to have more technologies implemented.
- 2 eLearning platforms with a rising average number of visitors are likely to have fewer images on both desktop and mobile versions.

Is there a way to make good results better? And how can runner-ups fix the issues that hinder them from leading the competition?

Image optimization forecasts

While there's no one-size-fits-all technology solution, we were able to gather quantitative information to predict how the customer experience will change on eLearning websites after they optimize their assets.

As we see from the data, image optimization can help any company, irrespective of its traffic trend; however, for websites with a falling average number of visitors, it's likely to bring a higher margin.

Improvement potential

Websites with a positive traffic trend

Websites with a negative traffic trend

	Desktop (on average)	Mobile (on average)	Desktop (on average)	Mobile (on average)
Page weight	▼ 11.8 %	▼ 16.6 %	▼ 17.4 %	▼ 17.6 %
Image weight	▼ 43.7 %	▼ 58.2 %	▼ 51 %	▼ 54.6 %
Page load time	▼ 7 %	▼ 16 %	▼ 7 %	▼ 16.2 %
Bounce rate	▼ 11.7 %	▼ 11 %	▼ 18.2 %	▼ 9.6 %
Engagement rate	▲ 23.3 %	▲ 43 %	▲ 29.5 %	▲ 43.6 %

Research powered by Uploadcare

Uploadcare is an end-to-end media pipeline that streamlines file handling issues, from uploading to smart processing and delivery. We help companies from tech-based industries (such as eLearning) skyrocket their web performance and quality of user experience.



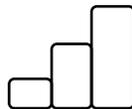
Web pages load in a wink

All media is automatically optimized and delivered lightning fast through the closest server out of 288,000 worldwide.



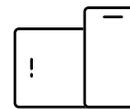
Costs are optimized

No more overwhelming manual hassle, no more developers busy with routine tasks. Set Uploadcare once, and it's got you covered.



Total number of learners (and profits) grow

If you serve a first-class user experience for your website visitors, they're more likely to become your learners. They're also more likely to come back more often and recommend you to friends, which in general leads to a higher lifetime value and overall benefit for them (and for your company).



Learner experience improves

Uploadcare recognizes each learner's context and serves images that are tailored to fit any screen.

Get a competitive edge with Uploadcare

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