

# Machine Learning for Ecommerce

Leverage machine learning solutions  
to make data-driven decisions,  
improve customer experience,  
and increase revenue.

# Table of Contents

<a href="#"><u>Introduction</u></a>	1
<a href="#"><u>How Can I Improve Customer Experience?</u></a>	2
<a href="#"><u>How Can I Lower the Bounce Rate, Increase Average Time on Page, and Attract New Loyal Customers?</u></a>	7
<a href="#"><u>How Can I Increase My Conversion Rate?</u></a>	10
<a href="#"><u>How Can I Optimize Prices to Maximize Revenue?</u></a>	13
<a href="#"><u>How Can I Attract New Users with Killer Features and Pull Them Away from the Competition?</u></a>	16
<a href="#"><u>How Do I Keep My Position on the Market in These Volatile Times?</u></a>	19
<a href="#"><u>How Difficult Would It Be to Add Machine Learning to My Platform?</u></a>	22
<a href="#"><u>Final Thoughts</u></a>	25



## Introduction

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The last year has seen a huge transformation of the way we shop. According to [McKinsey](#), **in 2020 ecommerce achieved a decade worth of growth in just 90 days**. It's estimated that the changes in customer behavior are here to stay, and purchases in brick-and-mortar shops are not likely to return to pre-pandemic levels.

The unprecedented times offer a great opportunity to become more agile, innovative, and future-proof. Machine learning provides a wide range of solutions that allow you to create a nimble and efficient approach to driving growth.

From chatbots to personalization to augmented reality, the technology can help you **increase customer satisfaction, maximize revenue, and stay competitive regardless of external market conditions**.

With this ebook, we aim to guide you through various machine learning solutions to solve the business challenges you are facing. The examples you will find here are merely an introduction to what you can achieve with the help of ML. However, we invite you to take a closer look at them and [get in touch with us](#) if you have any questions.



## How Can I Improve Customer Experience?

*“I want to make sure shoppers are satisfied with their experience on my platform.”*

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Good customer experience leaves people feeling satisfied and appreciated. It builds trust in your brand, creates loyalty, and forges emotional attachment.

All of this translates into tangible and measurable business benefits. Customers who are happy with their interactions with your website are more likely to spend more time browsing it, suggest it to their friends, or repeat their purchases.

The payoffs are real:

- 86% of buyers [will pay more](#) for a great customer experience.
- 63% of consumers are [keen to share](#) more of their personal data with companies that offer a great experience.
- 88% of online shoppers [are less likely](#) to return to a site after a bad experience.

Yet, plenty of online businesses have poorly optimized websites that leave their customers frustrated and disappointed.

Using the right machine learning solutions can minimize friction and frustrations along customer journeys, no matter how large your business or what you sell. It can also make the job of your customer service representatives more efficient and pleasant.

However, **injecting some ML into your platform isn't about replacing contact with human operatives—it's about enhancing it.** And while the technology alone cannot solve experience problems, it can definitely boost your strategies to a considerable extent.

## Personalization

One of the pillars of outstanding customer experience is the speed with which shoppers can access the information or products they need. Unless your website can provide them with what they're looking for, you're likely to lose them.

You might be aware of the [15-second rule](#), which says you have merely a quarter of a minute to generate interest and make an impact. With competition always one click away, it pays to optimize your website in ways that make the customers want to interact with it.

One of the key ways to ensure you capture your shoppers' attention right away is by **personalizing your platform** to make the offer as relevant and enticing as possible to each visitor. You could, for instance, lay out the home screen in a way that prominently displays the elements your user clicks on most often.

According to a [report](#) by Accenture, 91% of surveyed online shoppers said they were more likely to shop with brands that provide them with personalized offers and recommendations. Nearly half admitted they left an online shopping website and went on to make a purchase on another site simply because it was poorly curated.

The most effective personalization methods are based on machine learning. Behavior-based algorithms can analyze vast amounts of data and uncover insights with unparalleled ease and speed. The gathered evidence can then be used to create bespoke offers as well as shopping experiences that appeal to defined groups of customers, allowing for personalization at scale.

One of the techniques is real-time predictive personalization. Using deep learning algorithms, which collect and analyze your shoppers' browsing history and buying habits, you can make the content and the layout of your platform adjust automatically based on these and other factors.

As the customer interacts with the website, they are presented with personalized content that is most likely to encourage them to keep engaging and eventually place an order. Personalizing their experience also helps shoppers find the products they're after more easily and makes them feel welcome and understood.

## Recommender systems

Chris Anderson in his famous book *The Long Tail: Why the Future of Business Is Selling Less of More* asserted that “we are leaving the age of information and entering the age of recommendation.”

Recommender systems have indeed become one of the most useful personalization tools that can maximize customer satisfaction and retention at the same time.

The engines built by [Amazon](#) and [Netflix](#) have become legendary—for instance, [over 80%](#) of what people watch on the movie streaming site comes from its recommendations. However, recommendation can bring considerable results to businesses of any size.

Customers who viewed this item also viewed

Page 1 of 11

Have one to sell?  
Sell on Amazon

amazon book clubs  
early access

Add to book club

Not in a club? Learn more

Customers who bought this item also bought

Page 1 of 13

Source: Amazon

There are three main approaches to building recommender systems:

- 1) Collaborative filtering, based on items selected by other people with a similar taste to the particular user.
- 2) Content-based filtering, which uses characteristics of an item to recommend similar products to those already liked or used by a user.
- 3) Hybrid, which combines the two above approaches.

Whichever approach you use, you need a certain amount of user data and machine learning algorithms that can use it to provide relevant suggestions. They will do so by analyzing your customers' activity and browsing data, and creating product recommendations tailored to their individual needs.



Recommender systems can take various forms, including:

- side panel,
- in-cart, last-minute recommendation,
- pop-up notification,
- email.

Product recommendation can help customers find the items they need more easily and discover other products you stock. As a result, you might be able to upsell while offering excellent customer experience.

## Chatbots

Another machine learning solution that you can deploy in the quest for better customer service is a **chatbot**. They can be divided into three main categories:

### 1) Menu/button-based chatbots

The simplest and the most common kind of chatbots, limited to rather basic scenarios. Often called rule-based, they require users to select from among a number of predefined options.

Even though they have the longest user journey and are the slowest in getting customers to solve their queries, they're still worth a try as they can answer [up to 80%](#) of routine questions.

## 2) Keyword recognition-based chatbots

An extension of menu/button-based chatbots, the keyword recognition-based chatbots allow users to type in freely. After analyzing the text for keywords, these chatbots offer an answer from a selection of predefined ones.

When they're not sure, they work as menu/button based chatbots and ask the user to choose from among a few pre-selected options.

## 3) Contextual chatbots

The most advanced of the three, AI-based chatbots provide the smoothest and most human-like interaction.

In contrast to rule-based chatbots, which are designed to respond to routine customer service requests, ML-powered chatbots can offer significantly more sophisticated and advanced functionalities. They use **natural language processing** and **natural language understanding** to analyze the meaning of what your shoppers type. Interestingly, the more the chatbots interact with your customers, the better they get at it.

What's great about chatbots is that they can use sentiment analysis to detect the tone of the conversation and react appropriately. For instance, if a customer is at their wits' end, your chatbot can both respond in a helpful way and immediately redirect them to a human operative for a priority response.

Chatbots are incredibly versatile—they can be used in a wide range of digital channels, including websites and mobile applications. Thanks to the speed with which they can react to customer's queries, they can significantly improve the user experience.

For your customers, it means no more waiting or being placed on hold. And since many queries are made outside of business hours, none of them will go unanswered.





# How Can I Lower the Bounce Rate, Increase Average Time on Page, and Attract New Loyal Customers?

*“I’m getting more traffic, but shoppers aren’t staying long.”*

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As customers turn to online shopping amid high-street lockdowns, many retailers have experienced increased website traffic. You might have noticed that shoppers leave your site without placing an order, even though the traffic has increased. Luckily, there are steps you can take to lower your bounce rate, increase the average time on page, and widen your loyal customer base.

Before you take any action, it pays to understand the reasons behind your high bounce rate. The ML-powered solutions we listed below can help you both identify the most common problems and resolve them.

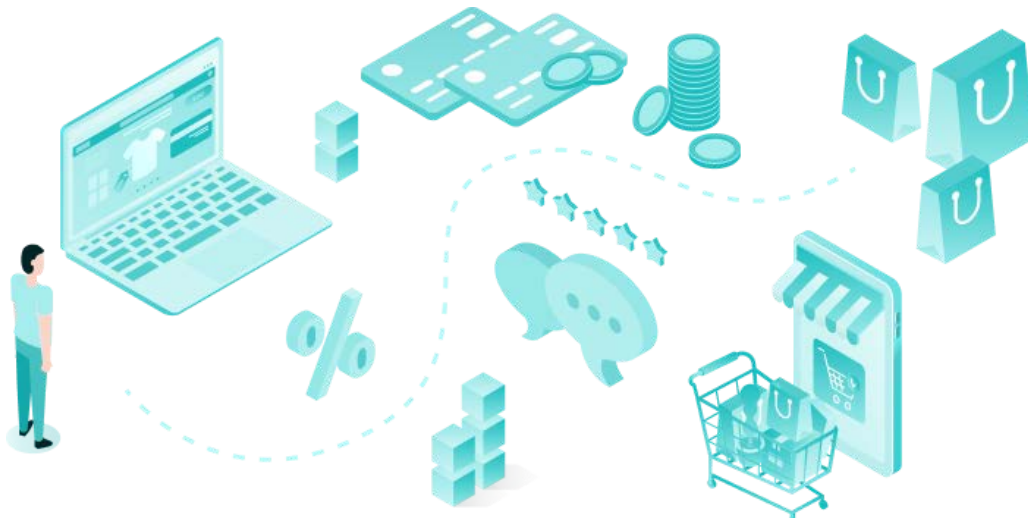
## Digital body language tracking

If you want to encourage your customers to stay longer on your platform and lower your bounce rate, you need to understand the reasons they decide to abandon it without making a purchase. This is when ML-based analysis of your shoppers’ digital body language comes in handy.

Digital body language (DBL) refers to how the user behaves at various digital touchpoints as they navigate your platform. It encompasses the totality of their interaction, including clicks, scrolls, time on page, and the frequency of usage.

Machine learning can help you make sense of it all by identifying patterns and anomalies that might not be visible to human analysts, and using them to make predictions about future behavior.

One of the approaches to DBL analysis consists of applying [association rules](#). This method will help you understand your users' sequence of actions on the platform, including the order of pages opened.



For instance, it can help you understand that when users routinely move from the checkout page back to the product page this could mean that the final stage of their customer journey doesn't provide them with the information they need to finalize the purchase. It could be that the checkout page doesn't list the product size, or the displayed price is different.

As a result, you'll be able to make customer journeys smoother, and reduce bounce rate in the process.

## Content personalization

Content personalization, as we described in the previous chapter, is the cornerstone of great customer experience. However, thanks to the versatile benefits it offers, it can be used to achieve many other business goals, such as reducing the bounce rate.

Every time your customers go online they face an information overload that makes them distracted, impatient, and oriented towards instant gratification. Personalizing the content they see on your website helps you capture their attention and keep them browsing for longer. What you're doing is neatly guiding them through their journey that has been carefully designed with their unique needs in mind.

You don't need complex, all-encompassing personalization techniques. In fact, personalization gone too far can backfire by making your shoppers suspicious of your data-gathering practices.

Some of the elements you can personalize on your platform include:

- customized search results,
- homepage offers,
- newsletters with unique promo codes,
- inline content,
- infobars,
- pop-ups,
- banners.

However, to be able to do so, you need to feed reliable data to machine learning algorithms. It can then provide accurate personalization by taking into account factors such as:

- demographics,
- geolocation,
- stage of customer journey,
- previous purchasing history,
- previous browsing history,
- device used,
- email opens,
- email clickthroughs.

To make sure you're on the right track when personalizing your site, you can always make use of ML-powered A/B tests, which we'll describe in the next chapter.



## How Can I Increase My Conversion Rate?

*“I’m getting more traffic, but it doesn’t translate into more purchases.”*

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Spikes in traffic are great, but they don’t matter much unless they translate into higher conversion rates and more revenue for your business. Just like with unsatisfactory bounce rates, you need to start by identifying the root of the problem. Are you aware of how shoppers interact with your website every step of the customer journey? Do you provide your users with the best possible experience?

There are many machine learning-based solutions to help you understand why your conversion rates remain low despite increased traffic and find the right fix.

### **A/B testing**

A/B testing is a fundamental tool in any digital marketer’s repertoire. This common technique consists of displaying two or more versions of content to similarly structured groups of users and measuring which one performs better. Using A/B tests can give you an idea of which version generates more interest and, by extension, is likely to lead to a higher conversion rate.

Automating your A/B tests with machine learning can make your product self-optimize in real time and deliver the most effective variation to your audience, without the need to manually set up and fine-tune the test. It can also help you analyze its performance accurately, giving you a better picture of what your users want.

Manually analyzing and adding each potential scenario is extremely time-consuming. Therefore, it’s a good idea to use a tool, such as Mixpanel or Optimizely, to speed up the process and make it more efficient.

What's important, however, is that each test requires human input to program it. So, if you'd like to test a number of different hypotheses, you should opt for automation that applies complex mathematical methods. It will help you select users, manage the tests, as well as automatically collect, analyze, and present the results.



You can also automatically manage the test and the winning variant, for instance by using the multi-armed bandit approach.

Using genetic algorithms, you'll be able to optimize test case generation, as well as analyze a large number of tests that use multiple variants. This is particularly helpful if your business consists of several teams which run their own individual tests. With manual implementation, you'd run the risk of the tests excluding one another and producing incorrect results.

## User flow

According to [Imaginnovation](#), almost 80% of users will leave a website if it isn't UX-optimized.

Mapping user flow with a diagram gives you an overall picture of why customers are attracted to your website, how they interact with it, and why they leave, so you can optimize it for higher conversion rates. This makes it easier to spot potential problem areas and identify what is working and what isn't.

Due to its capacity for processing large amounts of data, machine learning is a powerful tool to analyze your user flow diagrams.

Based on user behavior analysis, you can build an alternative application flow and determine which one is most relevant to them using a classifier. Some of the factors you might want to take into account include the user demographics, profession, location, browsing history, and the device used.

When you realize that customers struggle on your platform, you can make their journey smoother by removing troublesome steps or adding others. For instance, you can simplify user experience by making certain options, such as subscription models or payment methods, default.



## How Can I Optimize Prices to Maximize Revenue?

*“I’m always on the lookout for the best price point for my products and services.”*

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When you run an online business, one of the most difficult challenges you might face is how to determine the price of your products. It can be particularly hard when you sell digital goods. Without clear costs of production, you need to know very well how much the market values them.

But setting a right price isn’t about mimicking your competition—it’s about maximizing your revenue while remaining the most competitive you can.

There are many price optimization techniques. Depending on its needs, a business can use these models for various purposes, for instance to boost revenue or modify prices in a way that migrates users across a range of products to increase its market share.

Choosing the most effective model will depend on your business objectives, but regardless of why you’re looking to optimize your pricing, machine learning offers great tools to help you reach your KPIs.

What makes ML particularly useful in this context is that the solutions it offers can learn patterns from data and continuously integrate new information. Usually, managers consider only a handful of factors while crafting pricing strategies.

Machine learning, on the other hand, can process a huge number of pricing and non-pricing factors, as well as spot emerging trends and seasonality cycles, and instantly predict the best price points based on real-time data.

## Dynamic pricing

One of the solutions that can help you optimize prices and boost revenue is dynamic pricing.

The method is commonly used by sellers in industries such as transportation, tourism, hospitality, ticketing, and entertainment, where prices change on a regular basis. According to [Bain & Company](#), top performers across industries are nearly twice as likely to price dynamically.



This sophisticated technique can help you fine-tune your pricing and outsmart the competition. Due to the potentially vast amounts of price points you might want to adjust, the application of machine learning can significantly speed up the process.

## A/B price testing

In the previous chapter, we described A/B testing in the context of UX design, user engagement or conversion optimization. Did you know you can also use it to find the best pricing models for your products?

The technique works in an analogous way here. For instance, you can divide your customers into groups A and B and present each group with different pricing. The results will offer you insight into who acted upon a certain price and those who didn't.



However, you don't need to limit yourself to testing just two price points. By analyzing how many people purchased a product in any given group, you can estimate a demand curve. This will help you find the perfect, profit-maximizing price among many, even if you didn't test it directly.

By running A/B price tests, you will gauge the sensitivity of the target market and understand how to set your prices accordingly. You will also find out if setting a lower price will encourage more users to consider placing an order or whether a higher cost will reduce their willingness to pay. This can be very helpful if you sell digital products.

A/B price testing is one of the best ways to optimize your pricing models and maximize revenue. With a reusable testing framework, you can create different tests and apply them throughout the year whenever your products need a cost adjustment.



## How Can I Attract New Users with Killer Features and Pull Them Away from the Competition?

*“I want to awe my customers with unique features that they can’t find elsewhere.”*

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Gone are the days when having an online shop was enough to make sales. As more and more customers turn to online shopping, you need unique features that will capture your visitors’ attention and pull them away from the competition.

Machine learning solutions are your best shot if you want to stay ahead of the game. Augmented reality, recommender systems, visual search, and natural language processing are good starting points.

Below are some killer features that have been successfully used by ecommerce brands to attract customers to their sites. Even though they don’t have much in common in terms of how they work, these unusual techniques have helped retailers differentiate themselves from the competition and drive more sales.

### Visual search, or shopping with your camera

When it comes to ecommerce, a picture is worth a thousand keywords.

How many times have you seen a photo of someone with a great outfit on and wanted to replicate their style? ASOS, one of the biggest fashion ecommerce brands, launched [Style Match](#), an ML-powered app. It allows its mobile users to upload a picture of their desired style; then, it will fetch items that match or resemble the ones on the photo from the over 850 brands sold through the ASOS site.

Although this technology has caught on mainly with fashion retailers, it's making its way into other ecommerce categories such as [home décor](#) or [food](#).

The [IKEA Place](#) app allows customers to “preview” what the brand's furniture would look like in their homes using their phone's camera. The app scans the room to measure it and then, with an accuracy of 98%, shows how the selected piece of furniture would fit in there.

Alibaba's visual search engine, launched in 2014, was [used](#) by an average of ten million daily unique shoppers in mid-2017. And Pinterest Lens has been reporting 100% year-over-year user growth, with up to [600 million visual searches monthly](#).

The benefits of applying deep learning techniques to provide visual search on your platform are clear. With shoppable images, users who know what they're after no longer need to sift through search results to find the right product, and they're likely to be more satisfied with their experience. For your business, that means they're one step closer to making a purchase.

Augmented reality, which can increase user engagement by 66%, is the answer to plummeting retail sales during lockdown according to [TechCrunch](#). As many as 40% of customers are willing to [pay more](#) for a product if they can experience it first with AR.

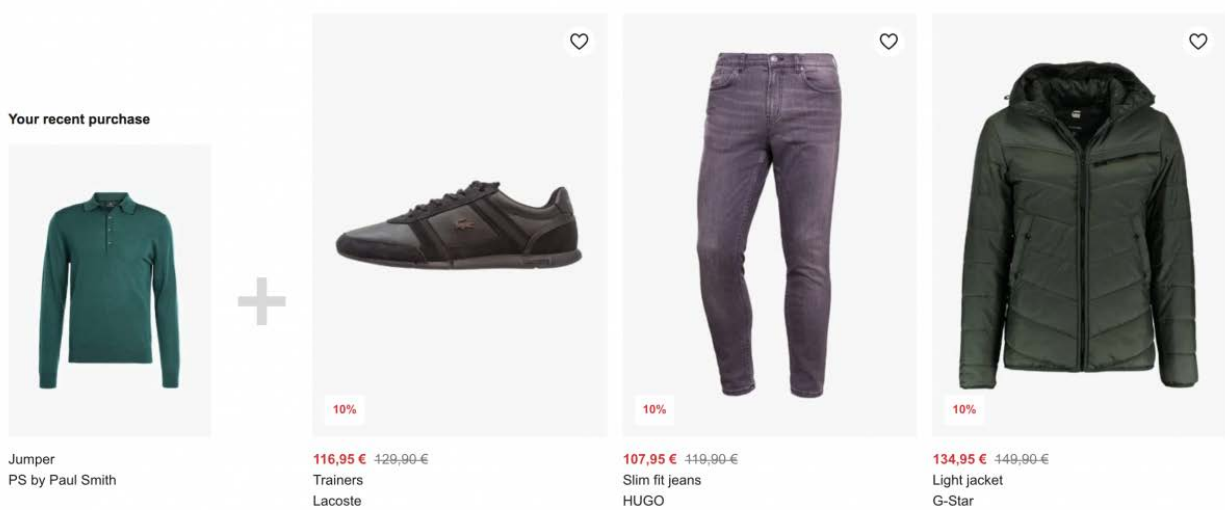
## Real-time outfit recommendation

Zalando's philosophy is that the platform is not just a marketplace for purchasing fashion, but a platform for getting inspired by it.

Europe's leading online fashion platform makes extensive use of machine learning to provide over 31 million of its customers with personalized user experience. Its [Algorithmic Fashion Companion](#) sifts through the 400,000 available items to generate individual outfit recommendations in real time based on the products the customer recently bought. The algorithm was trained to recognize what makes a good style; according to surveys, 50% of its recommendations were rated as “good outfits.”

According to the company, the recommendation system increases the average basket size by 40%. Artificial intelligence is one of Zalando's focus areas, and the retailer employs 120 machine learning researchers. This goes to show that Zalando sees ML as the future of ecommerce.

## Top to toe Complete the look



Source: Zalando

## Virtual try-on feature with augmented reality

Pinterest partnered with cosmetic giants such as Estée Lauder, YSL Beauté, and Lancôme to launch a [shoppable AR feature](#) that allows users to “try on” different makeup colors using the app’s built-in camera. The platform also displays similar product shades on skin tones that match the user’s and lets them explore related looks. Photos of the products can also be pinned to a wall and bought later.

In a press release, the company said that it “heard from Pinnerers who wanted a way to try on new looks for happier purchases they won’t want to return while mobile shopping. They also wanted ways to explore looks without the anxiety that may come with trying something new at a store or buying a new product online they haven’t tried.”

Even though the technology used by Pinterest isn’t ground-breaking, the feature is a game-changer in the online beauty industry. It has helped the platform attract new users who are simply curious to try on new things from the comfort of their own homes.

From a business point of view, an augmented reality feature that allows shoppers to “test” products before they purchase them can help slash delivery and return costs, as well as increase engagement and average time on site.



## How Do I Keep My Position on the Market in These Volatile Times?

*“I want to stay ahead of the competition and increase my market share.”*

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After months of shopping online for everything from furniture to groceries, consumers are more equipped than ever to compare deals and make informed choices about where they spend their money. And with so many online businesses looking to emerge as market leaders, it can be challenging to maintain your position.

How can you make sure that you're prepared to face the volatile times and retain or even increase your market share? Below we present some sure-fire strategies that will help you use machine learning to keep competition at bay and remain a leading force in your industry.

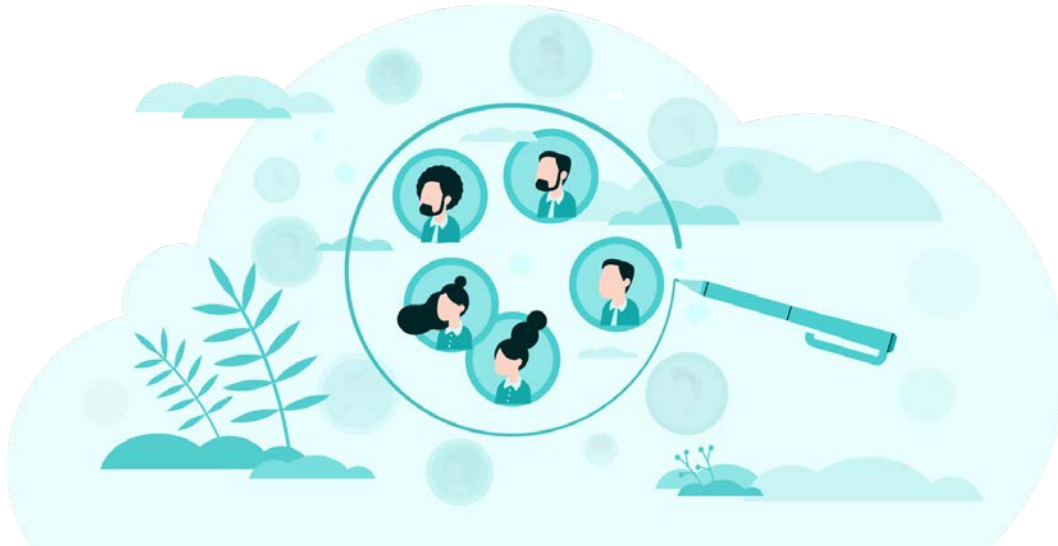
### Understand your audience with customer segmentation

The best way to ensure you maintain your market dominance is by giving your customers exactly what they want based on what you know about them and their preferences. It might sound easy, but in practice it means processing and analyzing vast amounts of customer data.

This task is hardly feasible without the help of state-of-the-art methods of processing and analyzing data, such as machine learning. In fact, the more data you have, the more effective ML algorithms become as they're able to detect more patterns and suggest more solutions.

One of the tools that can aid your understanding of your audience is **customer segmentation**. It consists of creating groups of people who have similar characteristics. When it comes to analyzing the behavior of various groups of users, we need a **cohort**

**analysis.** Both approaches have a common goal: to find groups of similar users, understand who they are, how they behave, and how to influence them to act in a certain way on the platform.



There are many factors to take into account while forming groups, which makes it a very difficult task for a human. You can use algorithms such as k-means and dbScan to automatically generate groups of users that are similar to each other. Based on the data, you'll be able to see what different users have in common, and the ways they are similar to one another.

Cohort analysis allows you to compare the behavior and metrics of each cohort over time. In ecommerce, this method is one of the most effective ways to gather information about your audience and its relationship with your brand. It's a must if you want to gain a deeper understanding of why people buy from you and how to encourage them to spend more.

You can use the wealth of data you gathered with a cohort analysis in many ways to maintain your market position.

## **Optimize marketing campaigns**

Based on the shopping history of your customers, you can draw conclusions about the effectiveness of your marketing campaigns to date. Did you send out promotional codes via the newsletter a few weeks ago? With cohort analysis, you'll be able to group users who acted upon the email by making a purchase or visiting the website and personalize the communications further.

Knowing what works and what doesn't will also help you optimize future marketing campaigns. Perhaps a certain demographic group is more likely to click on paid ads rather than open your emails. You'll be able to target these customers by adjusting your efforts accordingly.

Additionally, machine learning will help you predict which user in a particular cohort will act upon the communications you send so you can limit them to those who are most likely to make use of them.

## **Increase customer retention**

Since cohort analysis will provide you with a broader view of how specific customer groups are behaving, you'll be able to measure their engagement and proactively prevent it from decreasing. Tackling issues such as cart abandonment, low average time on page, and unsatisfactory customer experience, which you'll be able to easily track, is key to ensuring a loyal client base.

A dedicated discount campaign for a particular user segment can help you move them between groups or, quite the contrary, prevent them from migrating. For instance, a discounted price can entice a user to spend more money to stay in the "premium users" category.

Additionally, you can amplify the effect by the communication you send out—it should make the customer feel special, appreciated, and encouraged to keep up their activity on the website.

## **Improve A/B testing**

The level of detail you will gain with a cohort analysis will allow you to create better A/B tests, learn even more from their conclusions, and increase your ROI as a result. The tests should, however, be very well crafted to match the interest of the target group.

## **Personalize user experience**

With cohort analysis, you will realize that your platform doesn't provide the same customer experience to every user. Depending on who the shopper is, their expectations of the website might vary considerably. Dividing the users into homogenous groups will help you zoom in on how to best address the needs of each specific group.



## How Difficult Would It Be to Add Machine Learning to My Platform?

*“It seems like ML would be a good idea to implement for my ecommerce business. How do I get started?”*

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Even though machine learning has been making serious inroads into ecommerce and 85% of retailers [believe](#) it has a positive impact on organizational efficiency, some businesses remain reluctant to fully embrace the possibilities it can offer.

There are many barriers to widespread adoption, including a perception that introducing the technology will be a difficult and a costly process.

However, it doesn't need to be hard if you prepare for its adoption well. Below we listed some steps that can help you make the process easier and more efficient.

### **1) Identify the business problems you want to solve**

Machine learning is an extremely useful tool for online retailers that can totally transform their businesses. Still, not all problems require the use of the technology and sometimes there are simpler ways to address them.

Before you start investing into building a machine learning solution, draw up some specific business goals, such as increasing conversion rate by 10% or improving customer satisfaction. Next, identify if and how ML can help you reach them.

Oftentimes, the technology offers more than one way to achieve the desired outcome, so it pays off to look for the most cost-effective solution.



After reading this ebook, you will have an understanding of how machine learning solutions can benefit your business. Depending on what your objectives are, you can use it as a starting point for further research.

## 2) Prepare your data

Does your organization have the necessary data that will allow you to build an ML solution? How time-consuming will it be to collect it? If, for some reason, you can't gather the data internally, can you obtain it elsewhere?

Often, if the problem you're dealing with is fairly common, you might be able to find the data you need in open-source databases. Other times, however, the challenge you're facing is specific to your business, so you need to make sure you can collect enough good-quality, clean data from within your organization before you begin to work on the solution.



In either case, the characteristics of the data you use needs to correspond to the data you have on your system. Pay attention to aspects such as consistency, value distribution, edge cases, etc. Any inaccuracies or mistakes at this stage could mean that the solution will not work as intended in the future.

### 3) Reach out to ML experts

Before you decide to look for an external expert, it's a good idea to find out what skill sets you can tap into within your organization. There is a chance you might already have some machine learning talent in-house.

In our experience, building multidisciplinary in-house teams is a challenging task—and building AI teams is even more difficult. There is a scarcity of suitably qualified ML engineers on the market; even if you do hire one, there are plenty of job offers around, so you need to be prepared to offer very competitive conditions to your in-house staff. When you outsource, however, you often have access to various skill sets and you're not bound by long-term employment contracts.

To help you make up your mind, consider the following questions:

- How complex is the task at hand?
- How many ML experts will you need to implement the solution?
- What's the expected duration of the project?
- What's your budget?
- Is this your core business?
- How will the ML engineers fit in with the rest of your team?
- What's your definition of done, and how will you enforce it?
- What's the risk of failure?
- Should the project fail, how will you manage the staff responsible for it?
- How expensive will it be to maintain the solution?

### 4) Implement the solution

Applying the Agile methodology can be very helpful when you work on machine learning projects. Its iterative approach and focus on quick feedback make it perfect for complex solutions, such as the ones involving ML.

What's important is that you don't need to deliver the complete solution at the first attempt. It's okay to start small—the priority is to release a product with just enough features to see if it has the potential to succeed.



## Final Thoughts

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We hope that this ebook has helped you gain insight into some of the ways you can use machine learning to improve your ecommerce platform.

While all of the solutions can be successfully implemented in-house if you have the right skillset, here at STX Next, we are happy to assist you at [any stage of your machine learning journey](#).

Whether you need advice or end-to-end product development, we can help you out. We've been trusted by companies such as Informed Solutions, Enroly, Buildfax, and dMass to build their data solutions.

What else do we bring to the table?

- 16+ years of market experience
- 400+ projects delivered under our belt
- 200+ clients served from all over the world
- 370+ professionals on board (including 200+ developers)

If there are any aspects of your machine learning project that you'd like to discuss, feel free to [reach out to us](#). We'd be delighted to hear from you!

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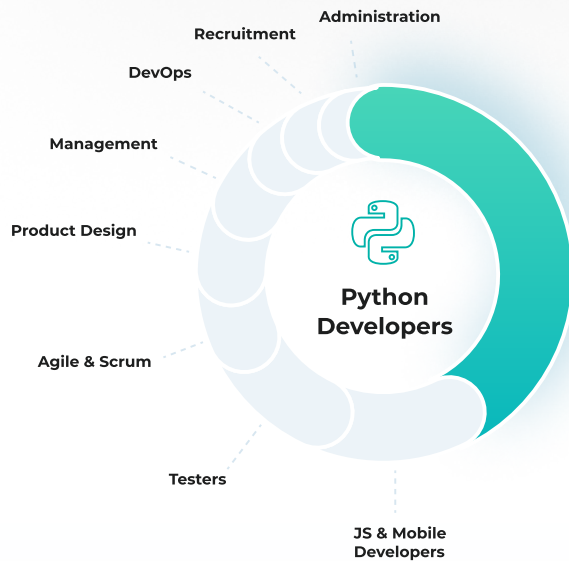
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market experience



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projects delivered



3.5+ years

average partnership



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clients served



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professionals on board



6.5+ years

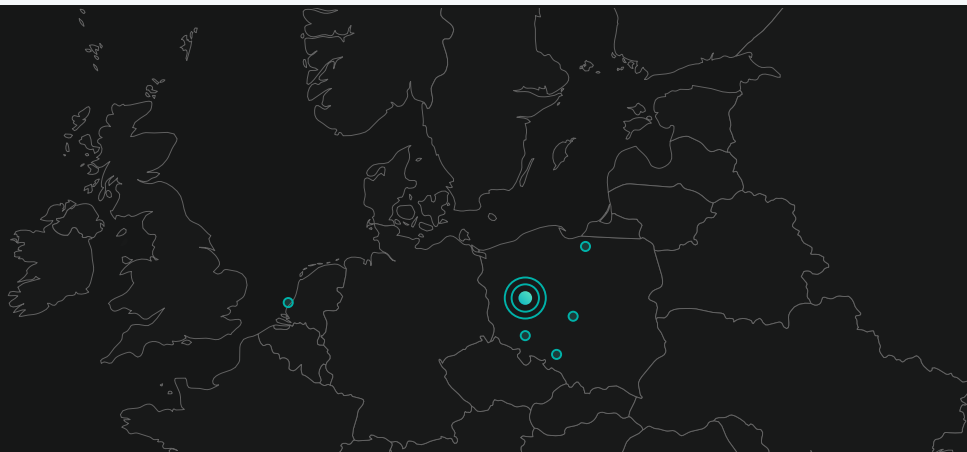
average experience of our developers

## Locations

Poznań (HQ)

Mostowa 38  
61-854 Poznań, Poland  
+48 61 610 01 92

- Wrocław
- Olsztyn
- Katowice
- Łódź
- Hague (Netherlands)

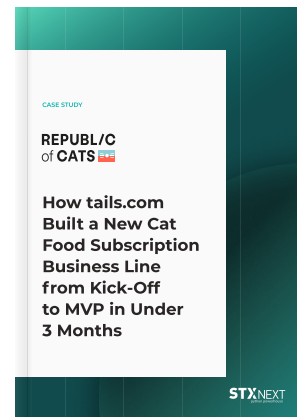
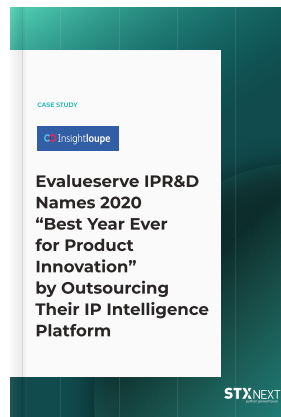
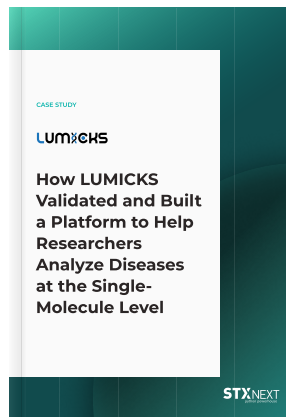


# Resources

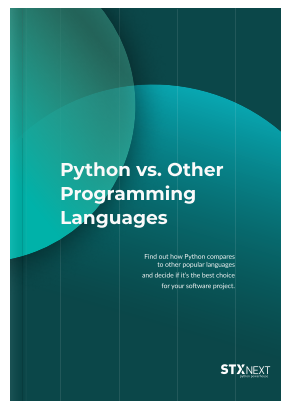
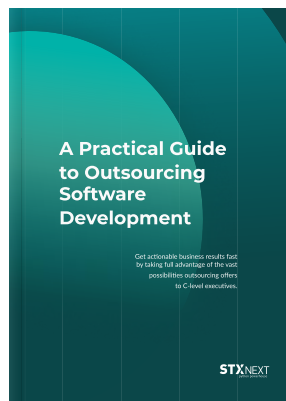
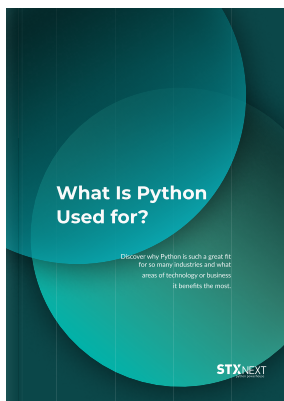
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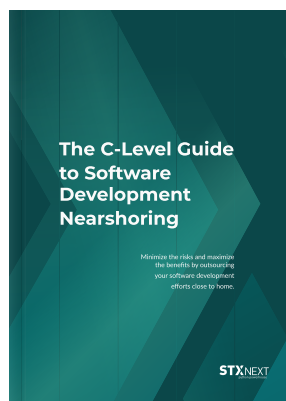
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