CartUp AI

Using product recommendations to
TURN SHOPPERS INTO BUYERS

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Introduction

We're all used to personalized recommendations when we shop at leading e-tail websites like Amazon. Shoppers, therefore, expect that same level of personalization on every retailer site, and they will quickly leave sites that don't meet their expectations. It's the online equivalent of walking into a store, and getting no help or advice to find suitable products. This poor experience makes you head for the door to never come back.

Many studies have been conducted on the revenue impact of sophisticated recommendation engines. A McKinsey study concluded 35% of Amazon's revenue comes from AI-based product recommendations. A survey by Epsilon found that 80% of shoppers prefer buying from e-commerce sites that provide personalized recommendations.

So, if you're not having a proper product recommendation system on your e-commerce store, your shoppers are not getting what they are expecting, and they will walk away. It's that simple.

This e-book covers:

- How AI-based product recommendations turn shoppers into buyers.
- How AI-based product recommendations turn shoppers into buyers.
- How to choose the best AI-based recommendations system for your business.

How AI-based product recommendations turn shoppers into buyers

Good recommendations can make a huge improvement to webshop performance. They increase conversion, average order value, and customer lifetime value. They also make sure that your advertising dollars spent on getting shoppers to your site are converted into revenue. Using them on your site significantly increases ROAS. This section describes how good recommendations are created and why AI-based recommendations are more effective than rule-based systems. The section also covers tips to getting the best from the chosen personalization system and the pitfalls to avoid.

Manual and rule-based recommendations systems

There are different approaches to recommendation systems. The older and outdated systems use rule-based algorithms to determine which product to recommend. Another outdated approach is to hardwire recommendations manually.

Rule-based product recommendations rely on explicitly defined static rules. E-commerce managers build these rules based on what they feel is right. These rules cannot consider individual shopper's preferences. As a result, rule-based recommendations are the same irrespective of whoever is browsing the site. For example, major e-com platforms like Magento and Shopify offer rule-based recommendations out of the box or through plugins. These rule-based recommendations lack conversion power for several reasons:

01 The lack of personalization; all shoppers get the same recommendations

02 The assortment changes over time and rules are then outdated

03 Customer preferences change over time, and rules are then outdated

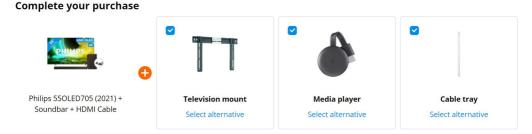**04** They take time to formulate, so they are often not complete

Another major drawback of rule-based systems is the effort needed to define and maintain the rules. It is very difficult to add further rules to an already large rule base without contradicting previous rules which are still active. The time spent on formulating and maintaining these rules can better be spent addressing real customer needs.

AI-based product recommendations systems

AI-based recommendation systems use Artificial Intelligence and Machine Learning (AI/ML) algorithms to determine effective recommendations. The systems use AI/ML to combine and interpret product as well as shoppers' data - such as browsing patterns, purchase history, and demographic data. These systems build personalized product and shopper profiles based on all this data. The algorithms can therefore display cross-sell and upsell opportunities with astounding speed and precision. They make sure that the recommendations match the visitor's intent.

For a new shopper, buying a specific product, the system maximizes the probability of an upsell, by recommending additional products based on data from previous shoppers that have bought that same product, and subsequent additional products.

For a returning shopper, sophisticated algorithms can be applied, recommending products, based on the shopper's past purchases, views, and clicks, as well as their browsing patterns in the current session.

Complete your purchase

Philips 55OLED705 (2021) +
Soundbar + HDMI Cable

Television mount
Select alternative

Media player
Select alternative

Cable tray
Select alternative

AI based Bundling (Cross selling Widget)

Benefits of AI-based product recommendations

a. **Maximize conversion rate and average order value**
   AI-based recommendation systems provide tailored product recommendations and add opportunities to upgrade the purchase while matching shopper intent. When site shoppers see these products, they are far more likely to buy them. In addition to increasing conversion rate, cross-selling and up-selling are effective ways to increase average order value.

b. **Enhance the shopping experience and build shopper loyalty**
   AI-based product recommendation systems will delight your visitors with highly relevant and personalized recommendations. With personalized recommendations, customers see relevant products which make them say, "that's exactly what I'm looking for," leading to shopper satisfaction, a fabulous shopping experience, and improved shopper loyalty. A flawed system will keep recommending products that aren't relevant, or maybe even ones where the shopper clicks and finds it is out of stock. This poor experience will drive your shopper away from your site, to never return.

c. **Manage merchandising better, cut costs and increase efficiencies**
   Many e-commerce sites, even large ones, manually manage recommendations using filters and best guesses. These recommendations deliver poor results because multiple filters and human guesswork cannot predict shoppers' intent. Building rules requires a lot of labor, leading to higher costs. Moreover, this manual process must be frequently repeated, keeping in mind the changing product catalog and shoppers' tastes. The process also doesn't appreciate factors such as recent poor reviews, or low or zero stock. An AI-based recommendation will automate this whole process, thereby saving costs and increasing efficiencies.

Combining AI-based and rule-based recommendations

Sometimes e-commerce managers want to customize recommendations to deliver a specific desired outcome. For example, a supplier may have agreed to give additional commercial support to promote its products and give them more prominence. This is just like paying for display space in a power aisle in supermarkets. Similarly, a product promotion or new product launch may mean you want to put this near the top of recommended products in certain product categories.

In these situations, you'd want to apply rules to push certain products alongside the product assortment that has come out of the AI-based recommendation system. AI-based recommendation systems have differing abilities to incorporate business rules to accommodate these special needs.

Placement of recommendation widgets on the site

Placements of recommendation widgets on the site

E-commerce sites display recommendations across most types of sites pages, the home page, category pages, product detail pages, and shopping cart pages. Each page type offers different opportunities to seduce your visitor.

For example, on the home page, if that's where your shopper lands, you'd want to seduce this shopper to buy what's trending, or to buy something that fits with what he's bought before, or a product that relates to what he's been browsing for before.
On a product detail page, however, you'd want to recommend products that are a suitable alternative for the product he's currently considering. Also, presenting proper accessories to the product on display offer good opportunities to increase the number of items in your customer's basket.

So, there are specific algorithms that fit well on specific locations on your site. This section runs through the various pages and introduces algorithms that fit well on that location.

The diagram below summarises the widgets that are best suited to each type of page:

Homepage	Category page	PDP	Cart Page
	Category inclusion filter		Cashgrab filter
Trending items	Trending items	Content based	Trending items
Bought also bought (likely next sale)	Bought also bought (likely next sale)	Viewed also viewed	
Browsing history	Browsing history	Category based	Bought also bought (likely next sale)
Recent views	Recent views		Cross sell (often bought together)
Wishlist	Wishlist	Cross sell (often bought together)	Wishlist

*Recommendation Placements (*PDP is Product Detail Page)*

Recommendations on the home page

The home page is like the shop window to your site. Having recommendation widgets that match shoppers' intent is critical in conversion and provides a great shopping experience. Some might know what they are looking for, and others are just browsing, and your product recommendations need to cater to both.

Trending items

Works well on a home page for new as well as returning visitors. Products are recommended that are most sold, viewed and clicked on recently. These are based on purchases made by all visitors. The benefits are that they create awareness of new fashionable products, product features (materials, colors, etc.), and 'hot' product releases. They increase average basket size by addressing latent needs that results in more items per session.

We think you'll like...

Lenovo IdeaCentre 3i 27in i5 8GB 1TB FHD All-in-One PC	Facebook Portal Plus Smart Video Calling - Black	Armani Exchange Ladies AX4320 Stainless Steel Bracelet Watch	Acer Predator CG437KP 43in 4K UHD 144Hz Gaming Monitor
£699.99	**£269.00**	**£129.99**	**£1299.99**

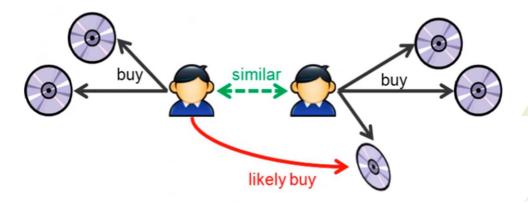*Based on the browsing history*

🛒 CartUp AI

Implementation of a trending items algorithm

🔵 Likely next buy

The likely next buy algorithm takes all historical customers' buying patterns into account. So, when a specific returning shopper visits the site, the algorithm first determines the products that this shopper has bought previously. Then it looks at all other shoppers to which shoppers have also made the same purchases. Finally, it then determines the most likely additional purchases that shoppers have made, on top of the initial purchases, also made by the current shopper. For example, if you have bought two CDs previously, and I have bought the same two CDs, and I subsequently bought a third CD, then you'd also be likely to want to buy that 3rd CD. So, that 3rd CD is then the likely next buy for you.

The logic behind the likely-next-buy algorithm

This highly personalized algorithm works great on the home page because it's like the shop clerk that says to the shopper that enters the store: "Hey Mr. Jones, welcome back! I know which clothes you have in your closet, that is why I think these additional clothes would go great with what you have. I know, because all our other shoppers have liked it as well."

Based on your browsing history

This personalized recommendation algorithm recommends products based on previously viewed and bought products. From these products, the categories, brands, or other product attributes are identified. Products are then recommended that relate best to these attributes. This greatly improves the shopper experience because the search time and effort to discover products associated with the shopper's intent is minimized. It increases the number of products in the basket because it will trigger conversions on latent needs.

It fits well on the homepage because products are recommended based on interests the shopper has portrayed before. It is specifically relevant with a large highly varied assortment.

Table stakes recommendations

Of course, when a shopper lands on the home page, it's a must to assist him in picking up his previous session, by offering an overview of his recent views. Also, when you let your shoppers keep track of the products they like by maintaining a wish list, it's good practice to give them easy access to that wish list. An even better practice is using the information from your shoppers' wish list to personalize your recommendations by taking into account the attributes of these products as shopper signals in the shopper profile.

Recommendations on the category page

When landing on a category page, your shoppers probably know what they are looking for. A category page is basically a homepage for a subset of your assortment. All the principles that apply to the home page also apply to the category page, albeit for a reduced product scope. Sophisticated recommendation systems allow you to filter recommendations into specific categories.

So, the best practice here is to apply the same algorithms to the category page, as you would do to the home page, and then filter the recommendations to that specific category.

A diagram of our console

Recommendations on the product page

The most crucial page of the site is the product page, as this is the gateway to the actual conversion. Recommendations of products that present a" perfect complementary selection to the current product, can lead to additional sales, increasing the number of products in the basket. Recommendations that present the right alternatives to the current product either reinforces the shopper's initial choice or give the customer options to chose from. If these complementary selections and alternatives are also matching the shopper's intent, the probability of conversion is maximized.

Frequently bought together

When a power drill is often accompanied by a specific set of drills, bought together in the same session, and when this combination is bought by a high number of customers, it makes sense to suggest this combination to other shoppers as well. So, on the product page of that power drill, the best practice is to recommend additional products, such as that set of drills, alongside the power drill. So, the approach to presenting complementary selections on the product page, that go well with that product, is to identify which products are often bought together.

These products can then be recommended in a bundle, like the top of the image below, or alternatively in a carousel of multiple recommendations. For example, a carousel can be applied to give the customer the choice from a set of complementary batteries to an electronics gadget. The carousel is visualized at the bottom of the image below.

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Frequently bought together

Total price: $194.88

[Add all three to Cart]

☑ **This item:** DEWALT 20V Max Cordless Drill Combo Kit, 2-Tool (DCK240C2) $149.00
☑ DEWALT Screwdriver Bit Set, Impact Ready, FlexTorq, 40-Piece (DWA2T40IR) $19.99
☑ DEWALT Titanium Drill Bit Set, Pilot Point, 21-Piece (DW1361) $25.89

More items to explore

DEWALT Titanium Drill Bit Set, 21-Piece (DW1342)
★★★★★ 4,321
$24.29

DEWALT Drill Bit Set, Titanium, 14-Piece (DW1354) , Yellow
★★★★★ 56,294
#1 Best Seller in Screwdriver Bit Sets
$14.99

DEWALT Titanium Drill Bit Set, Pilot Point, 21-Piece (DW1361)
★★★★★ 15,049
#1 Best Seller in Jobber Drill Bits
$25.89

DEWALT Screwdriver Bit Set / Drill Bit Set, 100-Piece (DWA2FTS100)
★★★★★ 5,118
$49.99

DEWALT 20V MAX Reciprocating Saw, Tool Only (DCS380B)
★★★★★ 6,058
Click for details

DEWALT Screwdriver Set, 18-Piece (DW2174)
★★★★★ 976
$11.31

Example of frequently-bought-together recommendations in a bundle as well as in a carousel

Frequently viewed together / people also viewed

Proper alternatives to the product presented on the PDP can be identified in several different ways. Viewed also viewed is the first way to do this. When a shopper views products within the same session, it suggests that these products are alternatives to each other. So, when the viewing behavior of all shoppers is analyzed, and combinations of products emerge that are often viewed together, these combinations are proper candidates for alternatives.

The most popular products

SUPER PRICE

39,99 pln
SMART with courier
Mega FISHING SET Fishing Rod Reel + FREEBIES

14,47 pln
SMART with courier
HOOK FISHING LUGGAGE WEIGHT TRAVEL LCD 50 kg

38,90 pln
SMART with courier
Fishing Tourist Chair Folding Armchair Slim

64,90 pln
SMART with courier
Waders Trousers Fishing Pants 43 + Braces

16,99 pln
SMART with courier
HOOK LIFT FOR TRAVEL FISHING LCD 50 KG

The most popular products

Customers who viewed Oval Copper Shape with Hole - 2 Pack also viewed

Sort By TOP SELLERS ▾   30 Items

item: 630448
Mini Wire Nippers
$13.95

item: 3260
Penny Brite Copper Polish - 7 Oz.
$8.95

item: 28911
Small Maple Leaf Copper Shape - 2 Pack
$9.95

item: 28912
Dragonfly Copper Shape With Tab - 4 Pack
$8.95

item: 28913
Butterfly Copper Shape - 2 Pack
$8.95

Example of a viewed-also-viewed widget

Product attribute-based recommendations (content-based recommendations)

Products that are alternatives to each other often share the same brand, specifications, product names, or other attributes. So matching products together based on these attributes is a powerful way to identify alternatives. This is specifically true for categories with products that have a lot of specifications, such as consumer electronics, or power tools.

Cutting edge Natural Language Processing and Natural Language Understanding algorithms can match products based on these attributes. The more the algorithms are trained for a specific category, the better they perform. That is why even Amazon has a hard time applying this approach because of the variety of different categories on sale on its site.

It's also sometimes referred to as content-based recommendations, as it matches combinations of products, based on the content associated with these products.

Category based recommendations

A third approach to recommending alternatives is to simply recommend a product from the same category. While this approach is rougher and simpler than the previous two if categories are defined narrow enough it may work very well. In the example below, smart plugs and lights are the categories from which alternatives to the selected smart plug are presented.

Example of a category based recommendation

Recommendations on the cart page

When you check out at an outlet of a savvy retailer, you will find baskets or even a full maze of products before you reach the counter to pay for what you've bought. Shoppers, while waiting in line and while checking out at that physical store can be easily seduced to throw a couple of cash grabs into their basket. How can we achieve the same result in e-commerce?

How can you reproduce a similar temptation in an e-commerce store?

▬ Cash grab recommendations

To achieve this, of course, you must place recommendations on your cart page. To achieve the cash grabs temptation, you may choose to present specific categories of cheap seductive products, such as cables, batteries, or other accessories. From these categories, the cheap trending items can be recommended for maximum conversion probability.

▬ Accessories on the cart page

It becomes even more powerful when you base the recommendations on the products that are already in the basket. So, when you recommend accessories that are cheap enough to trigger an impulse buy and are a perfect match to what you're buying already, your conversion chances are highest. To achieve this, you can apply a "frequently bought together" algorithm and filter the results to specific categories and or to a maximum price limit. That price limit is dependent on the assortment of the shop.

Add to cart button

Now, you must be careful to not distract your visitor from his journey to the payment gateway. So, your shopper should not be driven backward in the buying journey. So, clicking on the recommendation on the cart page should not result in opening a new product detail page. Instead, your recommendations on the cart page should always be accompanied by an add-to-cart button. For fashion, this brings the additional complication that the add-to-cart button should include an option to select a size variant.

Selecting a recommendation system

Choosing a good recommendations system can be confusing, given that there are so many companies offering these services. There are many considerations to identify the most suitable recommendation system, such as business size, complexity, business objectives, platform integration, and cost. In this section, we discuss six key questions you address in your selection process:

01 **How do I identify a best-of-breed recommendation engine?**

There are many simple recommendation engines, and the concept of AI has many different definitions for many people. So, reading the tagline "AI-based recommendation system" can mean a lot of different things. So how do you distinguish the powerful AI-based systems from the wannabees?

First, let us talk about breadth. A good recommendation engine should allow you to select from multiple algorithms, as opposed to relying on only a few algorithms. This is because, as discussed above, you want to seduce your shopper in different ways in different places on your e-commerce site and in different stages of his visitor journey. Another feature that increases breadth is the ability to combine rules with each algorithm. These combinations can result in a high number of very specific algorithms for very specific use cases.

Secondly, depth is important. This is about the power of the algorithms and the ability of these algorithms to improve their conversion power over time when more and more data is becoming available. The power of the algorithms is for example driving the ability to hyper-personalize. So, different shoppers get

recommendations, based on the profiles related to these individual shoppers? Another way to determine the depth of these algorithms is to determine which AI concepts are applied. Best of breed algorithms apply deep-learning, machine learning, natural language processing, embeddings, and neural networks.

02 Is my e-commerce site big enough for recommendations to work well?

The key factors for personalized product recommendations to work well are shopper traffic and product assortment.

The more shoppers the better, and the more often shoppers come back regularly the better. Returning shoppers allow the system to create and maintain an insightful shopper profile that can drive the personalization of future recommendations.

The more products in the assortment and the more variety within the assortment the better.

As a rule of thumb, e-commerce sites selling at least 1,000 products with traffic of at least 20,000 unique shoppers per month benefit really well from recommendations systems. Of course, this does not mean e-commerce sites with smaller numbers cannot benefit from recommendation systems, but as argued above, the more data there is, the better the recommendations become.

Customers who viewed this item also viewed

Dickies Men's 2-Pack Short-Sleeve Pocket T-Shirts	Hanes Men's Beefy Short Sleeve Pocket Tee Value Pack (2-Pack)	Mens Heavyweight 6.1-Ounce, 100% Cotton T-Shirts in Regular, Big and Tall Sizes	Carhartt Men's Signature Logo Short-Sleeve Midweight Jersey T-Shirt K195	Pro Club Men's Heavyweight Cotton Short Sleeve Crew Neck T-Shirt
★★★★☆ 3,008	★★★★☆ 8,679	★★★★☆ 2,231	★★★★☆ 6,128	★★★★☆ 5,239
$19.99	$10.50	$25.99	$19.95	$9.98
+ $8.13 shipping	+ $16.19 shipping			

Viewed also viewed

03 **Does an AI-based recommendation system act as a black box, or can you control how the system behaves?**

What we hear a lot from the e-commerce managers we speak with is that they do not like systems to act as a black box. To counter this, there is a couple of things to address.

▬ Transparency of the algorithms, and the ability to configure these.

Can the technology vendor be clear and transparent about how the algorithm works? The first step in getting control over the system is understanding how it works. This first step is where a lot of systems fail already.

Once the understanding of how the algorithms works is achieved, what influence can you have, as an e-commerce team, on the configuration of the algorithm? Can you influence the signals the algorithm considers? For example, the optimal configuration of a ranking algorithm can differ from one category to the other. In fashion, for example, you may want to see "newness" as an important factor to rank products for women, but for men "margin" may be more important. And for the category of items on sale "stock levels" may be most important.

▬ Manual insertion and associations of products

Sometimes e-commerce managers want to push certain products within certain recommendations. It is therefore usually important to have the option to manually insert chosen products within a widget to fulfill your business objectives. For example, a toys vendor may decide to sell the game "Zelda" with the newly released PS5 console, in the first 3 weeks after release. Or a retailer may "sell" the first two slots within a widget to a specific brand or supplier. A retailer may also manually insert specific products into a widget to get rid of some remaining inventory.

▬ Steering information to assess the effectiveness of the widgets

Your system should come with a dashboard that tells you exactly how your widgets perform and why. It should provide insights that allow you to determine where the system needs to be tweaked. Which widget's placement should be adapted to get more views? Which algorithms should be adapted to incite more clicks?
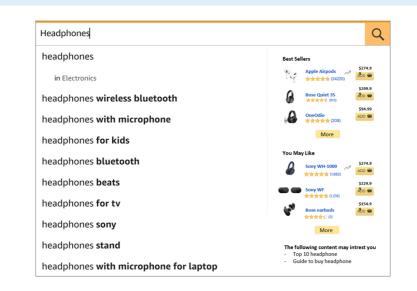
Dashboard metrics to assess effectiveness

04 Can you combine recommendations with site-search and email marketing?

Product recommendations can be integrated into your search bar. It is possible to use search queries as an additional signal to make recommendations even more powerful. Recommendations can be made to appear on the search bar while the search query is keyed in. These personalized product recommendations are effective as they are related to the query. As a result, conversion increases significantly because visitors can find perfectly matched products directly from the search, rather than moving from search through several further pages before they find the ideal product.

Recommendation on the search menu

Similarly, inserting personalized recommendations into your email campaigns allows you to hyper-personalize your campaigns and boost the conversion of these campaigns. Email campaign systems segment visitors' data for campaigning, while hyper-personalized recommendations promote the products that the visitors really care about. This powerful combination assures maximization of conversion.

05 How easy is the integration?

Typically, integration addresses these four areas:

1. Uploading the product catalog onto the recommendation system
2. Uploading historic transactions to jumpstart the recommendation engine
3. Tracking visitor behavior on the site
4. Rendering recommendations to the visitors.

The product catalog needs to be updated very frequently to ensure a proper account of stock levels and prices. API-based integration is best for this, but a frequent sharing of a product feed is also possible.

Historic transactions can be integrated by sharing a simple feed, or through an API key.

Clickstream listening, enabling the tracking of visitor behavior on site is often done through a listener file, that is triggered by an inserted div tag within the e-commerce platform.

In rendering, there are different approaches, where javascript div tag insertion is a no-code easy integration, and GTM based integration of the widget rendering is an even easier way. Div tag insertion performs slightly better than GTM based integration, so that is, in the longer run, often the preferred option.

It's important to ask potential system vendors how long the implementation will take, and if their system already has pre-built integration with your e-commerce platform. Implementation can take between a few hours and a few weeks. The duration and complexity depend on factors like the e-commerce platform, the degree of pre-built integration, and the complexity of the product catalog.

06 Is this vendor going to delight me as a customer?

The interaction you will get with a vendor in the sales process is often a good predictor of the interaction you will get in the service delivery after you sign a contract. What is important to assess is whether the sales team of your vendor and the customer success team of your vendor is the same team or a completely different function. We hear stories from the market where contracts are signed and are barely turned over to operations or customer success, where operations do not even know what exactly was agreed in the sales process.

Better is to find a vendor where sales and customer success is part of the same team, where there is no paid service or consulting, but instead, customer success is quantified and agreed upon within the contract upfront.

Also important is to assess how important you are to your vendor. You need to open your sensors in the sales process to get a proper assessment of this. You need to feel that your vendor cares about your success and will do all in his power to make you succeed.

Wrap-up and conclusion

Having a sophisticated and effective recommendations system is an absolute must for any e-commerce shop. There are many benefits – increasing revenues, enhancing shoppers' engagement, higher average order value, controlling merchandising, and reducing workload. Now that AI-based recommendations systems have become more and more available, this type of system is the best solution for all but the smallest enterprises.

When choosing a recommendations system, the six questions above are a good guide. If you get clear answers to those questions when selecting your solution, the implementation should be successful as well as rapid. Integrating a recommendation system into your e-commerce shop should therefore deliver significant benefits for a small cost, and generate a very strong return on investment.

Hit that button now, to make the next step.

Let us chat