E

How To Create Selling E-Commerce Websites

Vol. 2

SMASHING
MAGAZINE

Imprint

ISBN: 978-3-945749-05-0 (PDF)
Cover Design: Veerle Pieters
eBook Strategy and Editing: Vitaly Friedman
Technical Editing: Cosima Mielke
Planning and Quality Control: Vitaly Friedman, Iris Lješnjanin
Tools: Elja Friedman
Syntax Highlighting: Prism by Lea Verou
Idea & Concept: Smashing Magazine GmbH

About This Book

With more and more people reaching out for their smartphones and tablets to shop online, mobile e-commerce is set to reach $86 billion by 2016 — a development that brings along entirely new demands on e-commerce websites. After our first e-commerce eBook was published four years ago, we wanted to take a fresh look at the challenges that crafting online shopping experiences bring along today, and equip you with the necessary know-how on how to deal with them effectively.

Along the way, our expert authors will guide you through the vital steps of planning a successful e-commerce website and explore the design decisions that have to be considered in order to achieve a pleasant and compelling user experience. We'll also take a deeper look into the peculiarities of mobile e-commerce usability and cover tips on designing a better checkout process. Reducing abandoned shopping carts is also one of the topics that we'll dig into. With real-life examples and insights into a large-scale usability study that dissects some of the biggest e-commerce websites out there, this eBook will prove to be a valuable and practical source for all your e-commerce needs.

— Cosima Mielke, Smashing eBook Producer

TABLE OF CONTENTS

How To Plan Your Next Mobile E-Commerce Website 5
Exploring Ten Fundamental Aspects Of M-Commerce Usability 31
An E-Commerce Study: Guidelines For Better Navigation And Categories 79
The Current State Of E-Commerce Search 115
Better Product Pages: Turn Visitors Into Customers 155
Designing A Better Mobile Checkout Process 176
Creating A Client-Side Shopping Cart 191
Reducing Abandoned Shopping Carts In E-Commerce 254
About The Authors 283

How To Plan Your Next Mobile E-Commerce Website

BY LAWRENCE HOWLETT ❧

The O'Neill Clothing store had a nearly 600% revenue increase[1] from going responsive, and Skinny Ties saw a 377.6% increase[2] in revenue for iPhones after going responsive as well. Even Think Tank Photo's transactions on smartphones and tablets increased by more than 96%… go figure!

In this chapter, we'll walk through all of the vital steps when planning a highly converting mobile e-commerce website. The most important questions you need to ask are:

1. Who are we building this mobile website for?
2. How will we measure conversion success?
3. What design factors affect mobile e-commerce conversion rates?
4. What is the ideal product page?

Let's get started.

---

1. http://electricpulp.com/notes/you-like-apples/
2. https://econsultancy.com/blog/62260-five-brands-that-reaped-rewards-after-adopting-responsive-design

So, Who're We Building This Mobile Website For?

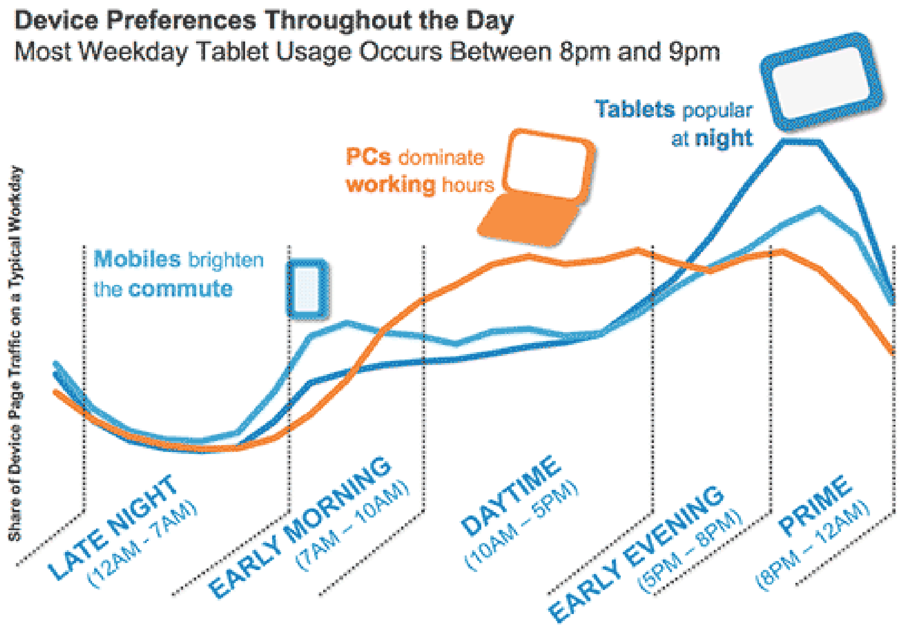
The mobile customer is someone we are constantly learning about as mobile adoption becomes more widespread and filters into everyday life. To plan a mobile e-commerce store, we need to put ourselves in the mindset of the mobile customer and understand their intentions and mood.

PHONE USAGE LOCATIONS

The mobile device is a life-invading piece of equipment. We use it in diverse situations:

- while watching TV;
- while shopping or on a night out;
- in bed or in the bathroom;
- while eating a meal (a pet hate of mine!);
- when bored or waiting at our desk, at a train station or as a car passenger.

In each situation above, the person's mind will be in a different state and may or may not be in "purchasing mode." We also use mobile at different times of the day.



(*Large preview*[3])

How does this help us? Well, for example, you could strategically place different banners on the home page of your mobile e-commerce website, such as price promotions, discounts or coupons, perhaps offering early-morning discounts for commuters, while offering TV dinner viewers something else in the evening (something like "Bored of watching soaps? Grab a DVD bundle now!").

THE MAIN TYPES OF MOBILE SHOPPERS

Columbia Business School identified five types of mobile shoppers in showrooms and stores: exploiters, savvys, price sensitives, experience-seekers and traditionalists. I have gone one step further by thinking about how people

---

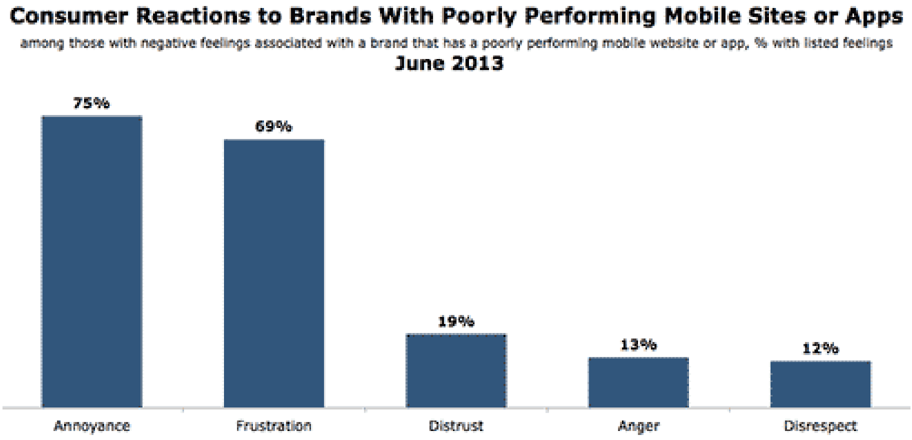
[3] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/1-purchasing-mode-large.png

use their phones outside of the showroom to decide whether to purchase products.

- **The comparer**
  The comparer browses products in brick-and-mortar stores while price-checking on their mobile device. They might buy in-store, using the online price as negotiation leverage. However, if the online offer is strong enough and the product is available, they will purchase on their phone there and then or when they get home later.
- **The deal lover**
  This person loves a bargain, and when they are in store, they'll look for an online voucher, a Groupon deal or something to save them from buying at the high street price. They differ from the comparer in that they want to believe they are getting a special deal, a limited offer or an exclusive promotion (think Secret Escapes's exclusive deals or Booking.com's lowest-price guarantee).
- **The social shopper**
  Constantly connected to a range of social channels, the social shopper follows celebrities, industry leaders and brands on Instagram, Twitter and Pinterest, seeking out the latest fashion trends, gadgets and the like. Clicking through everything from vintage-filtered photos to heavily liked dresses, they just have to buy to be ready for the weekend.
- **The time passer**
  This person just needs to pass the time while waiting for someone or something. They are normally an impulse

buyer, browsing stores they already know (a form of direct traffic) for the latest products. They might subscribe to news feeds or email lists and click through from direct promotion in social channels, too.

All of these types of mobile shoppers have high expectations of mobile e-commerce stores.



(*Large preview*[4])

Why is this important? You need to ensure that you're catering to all of the different types of shoppers who might visit your store on a mobile device. You've got to identify them, give them the options they seek and present information in a format they are comfortable with. If not, you'll end up annoying them, rather than increasing your client's bottom line.

---

[4] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/2-mobile-eccomerce-stores-large.png

How Will We Measure Conversion Success?

We need to define what conversion success looks like. Typically, a conversion falls into one of the following categories:

- **Purchase**
  The visitor has completed a purchase transaction.
- **Social promotion**
  The visitor might follow your social channel; share, tweet or like your product or brand; write a review; subscribe to a newsletter; etc.
- **Complete a task**
  The visitor has completed some task, whether playing a game, filling out a poll, entering a competition, etc.

We then need to set ourselves some SMART goals[5] (as defined by Paul J. Meyer) to track and measure our success. These goals will also help us focus on the project and not get carried away with over-spec'ing or over-designing the website. So, what are SMART goals?

- **S**pecific
  The goal should be unambiguous and should define what we are trying to achieve.
- **M**easureable
  How are we going to measure this? By what method? We

---

[5] http://en.wikipedia.org/wiki/SMART_criteria

could go further by saying who will be responsible for reporting this and whom they will report to.

- **A**ttainable
  How will this goal be achieved? What needs to be done to make this happen? Do we have the budget, skill and time?
- **R**elevant
  Is this in line with our overall vision? Is the market ready? Are we the right people to do this?
- **T**ime-bound
  How quickly can this be achieved? When are we going to start and finish?

Below are three sets of goals we've set in the past. These would directly affect how one goes about designing and developing a mobile e-commerce store.

SMART GOALS 1

- **Specific**
  Increase mobile e-commerce conversions by 35%.
- **Measurable**
  Segment sales report in Magento.
- **Attainable**
  Do this by creating a responsive e-commerce store.
- **Relevant**
  This aligns with our overall conversion targets and goals to adopt mobile technology.

- **Time-bound**
  Accomplish it within three months of the website's launch.

SMART GOALS 2

- **Specific**
  Increase the average order on mobile by £5.
- **Measurable**
  Combine the segmented sales report in Magento to give an average daily order value.
- **Attainable**
  Improve upselling and cross-selling on product pages, and recommend complementary products in the shopping cart.
- **Relevant**
  This aligns with our overall conversion targets.
- **Time-bound**
  Accomplish this within 30 days, and then continually improve through testing and iteration.

SMART GOALS 3

- **Specific**
  Reduce bounce rates to below 56% for top-level categories.
- **Measurable**
  Analyze the report of page visits within a set time period in Google Analytics.

- **Attainable**
  Improve loading time to below four seconds on a 3G network, and improve the landing page design.
- **Relevant**
  Although not a direct conversion itself, this would improve all other conversion rates by keeping users on the website for longer and increasing the number of pages visited by each user.
- **Time-bound**
  Test over a 14-day rolling period, iterating on the design until we hit the target.

Tip: Print these goals in a large font size and put them where the whole team can see them. Ask the team members how their work will contribute to the shared goals. If a task doesn't contribute at all, then question whether it's needed.

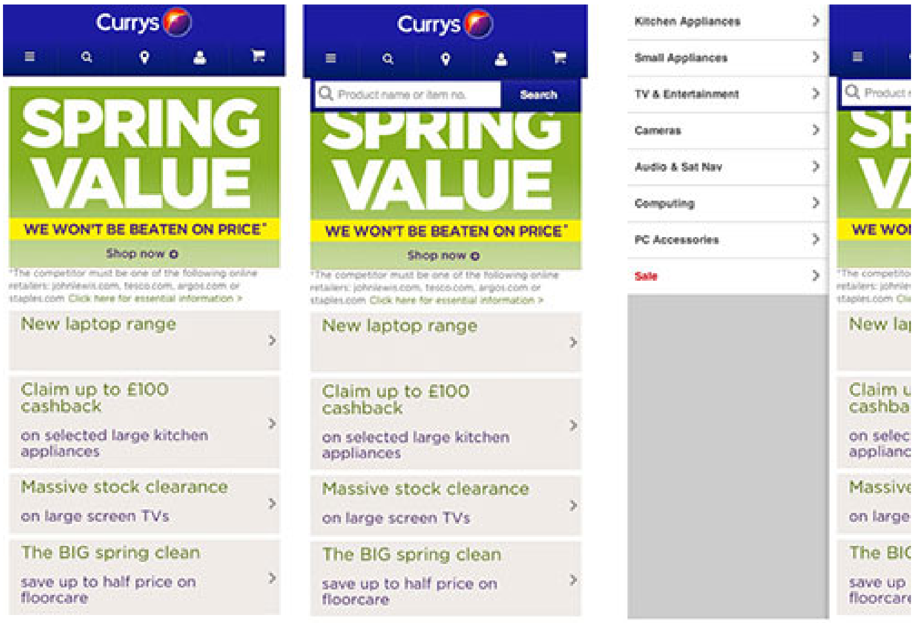
What Design Factors Affect Mobile E-Commerce Conversion Rates?

Let's go through the factors that affect how customers browse an e-commerce website, from a mobile perspective.

HIERARCHY AND NAVIGATION

Space is at a premium on mobile. We don't have the luxury of providing mega menus for users to browse multilevel categories. Therefore, we need to prioritize key features and content and provide a search box that's easily accessible in a consistent location. The adoption of off-canvas navigation[6] is becoming widespread as users start to understand how to use it.

Currys' responsive website does this very well by providing off-canvas top-level navigation, a search drop-down box, instant cart and account access, and a store finder, all in a very small space that remains consistent throughout the customer's entire journey.



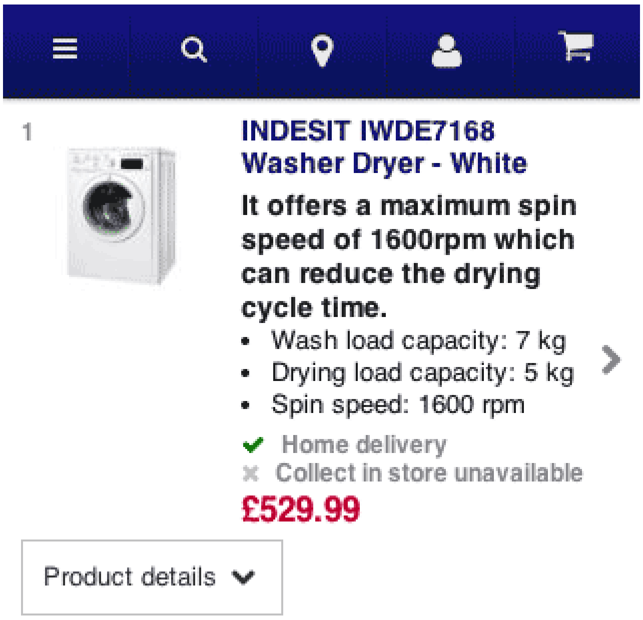
(Large preview[7])

When you scroll further down, the logo area disappears and the five main menu items move up, decreasing the space taken up by the header and giving priority to the content that the visitor is interested in.

---

[6] http://www.smashingmagazine.com/2013/01/15/off-canvas-navigation-for-responsive-website/

[7] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/3-spring-value-large.jpg



1

INDESIT IWDE7168 Washer Dryer - White

It offers a maximum spin speed of 1600rpm which can reduce the drying cycle time.

- Wash load capacity: 7 kg
- Drying load capacity: 5 kg
- Spin speed: 1600 rpm

✓ Home delivery

✗ Collect in store unavailable

£529.99

Product details

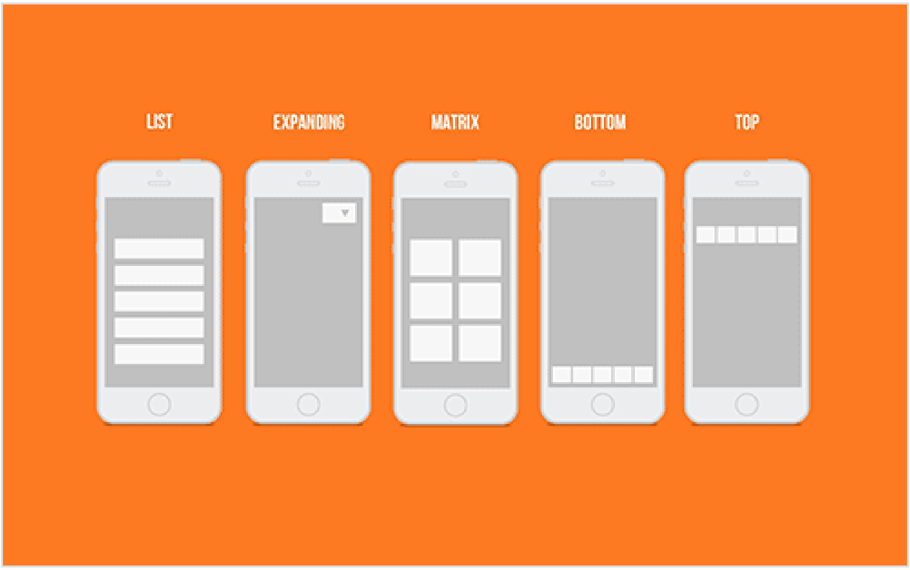
(*Large preview*[8])

TRADING USABILITY AND LOADING TIME FOR BRANDED NAVIGATION

Sometimes you need to make a tradeoff. When we developed Crockett & Jones' mobile website, our branding guidelines and the company's heritage and reputation for quality led us to a more pictorial menu system, to reinforce the brand. We experimented with five intuitive navigation methods:

---

[8] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/4-visitor-interest-opt.png

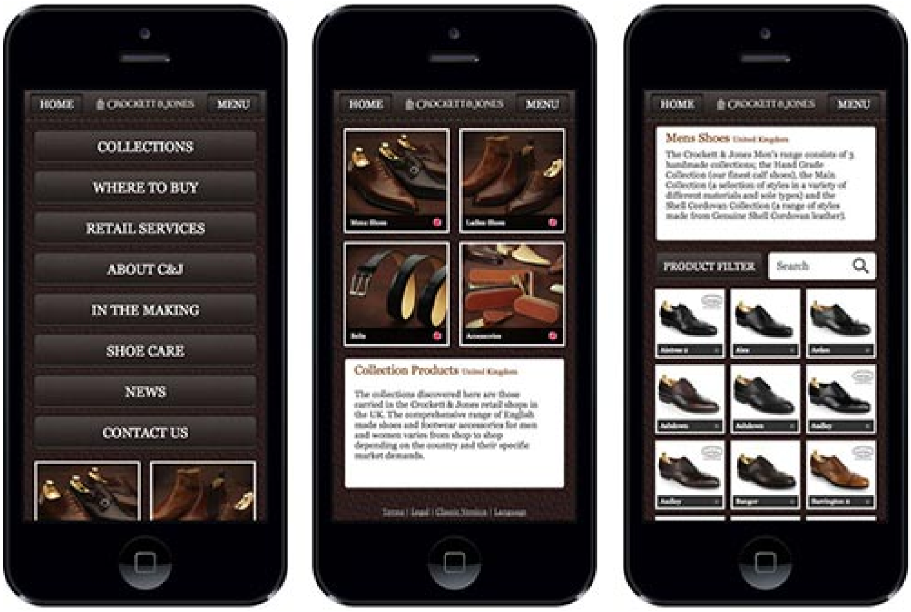


(Large preview[9])

From our research into the leading mobile e-commerce websites, we felt that a fixed menu at the top would offer the best usability. Icons like the ones on Currys' website wouldn't be right for Crockett & Jones' audience. Instead, we used a menu button that expands down to a navigation list, with subpages that load via a matrix menu. This allowed us space to add imagery, to give that look and feel of British heritage.

---

[9] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/5-methods-large.png



The collections discovered here are those carried in the Crockett & Jones retail shops in the UK. The comprehensive range of English made shoes and footwear accessories for men and women varies from shop to shop depending on the country and their specific market demands.

The Crockett & Jones Men's range consists of 3 handmade collections; the Hand Grade Collection (our finest calf shoes), the Main Collection (a selection of styles in a variety of different materials and sole types) and the Shell Cordovan Collection (a range of styles made from Genuine Shell Cordovan leather).

From left to right: (1) the expanded navigation; (2) the matrix submenu; (3) the product search results with matrix navigation for finger-friendly tapping, plus another expanding menu for the product filter.

FIXED NAVIGATION VS. NON-FIXED NAVIGATION

Fixed navigation sits in place, always visible to the user whether they scroll up or down. Non-fixed navigation is the opposite, visible only when user is at the top of the page.

Based on the e-commerce websites of major brands I have followed, the trend is towards fixed navigation, which I think is justified. For me, fixed navigation wins hands down; having to scroll all the way back to the top of the page to find the menu bar is annoying. With fixed navigation, you are only ever a quick finger movement away from accessing deep sections of the website. Achieving this is easy with the MeanMenu[10] jQuery plug-in or with Bootstrap's NavBar[11].

IMAGERY AND PRODUCT PHOTOGRAPHY

We all know that photography can make or break a website's look and feel. The mobile consumer wants to see imagery that captivates them and inspires them to make a purchase, whether it's a vacation or a saucepan. The fundamentals of product photography are ever critical here, so make sure to get all of the pictures that a customer requires to make a decision.

- **Individual shot**
  This is a shot of the product at its best angle, normally against a white background.

- **Detail shot**
  This is a closeup showing the product's special features or details of design — for example, the quality of the stitching, the materials used, the label or the handcrafted detail.

---

10. http://www.meanthemes.com/plugins/meanmenu/
11. http://getbootstrap.com/components/#navbar

- **Components shot**
  If it's a home cinema system, then take shots of its individual parts, including the DVD player, speakers, remote control and accessories.

- **360° shot**
  This is an animated set of images that allows the user to spin the product through 360° of rotation. It's normally

comprised of 36 shots, each 10° apart. We used this to fantastic effect with the shoes on Crockett & Jones' website[12]. We shot with Eme Digital's Large 360 Photography System[13], and then writing custom jQuery to control the rotation effect.

- **Group shot**
  This is normally used at the category level or for bundle offers. Group shots – whether for a range of saucepans or for a pizza, side and drink – show complementary products and help the vendor upsell to customers.

---

[12] http://www.crockettandjones.com/product/aintree-2-black

[13] http://www.emedigital.co.uk/imageCapture/PhotoBox_Studio_models360.htm

- **In-use shot**
  An important but often forgotten shot is one of the product being used. For example, clothes look very different when laid flat than when shown on a live model. These shots are aspirational and can highly motivate a customer to purchase.

On mobile, speed is a hurdle, so remember to optimize images to load quickly, without compromising on quality. Of course, a lot of effort is being put into developing a responsive image solution[14], but whatever approach you

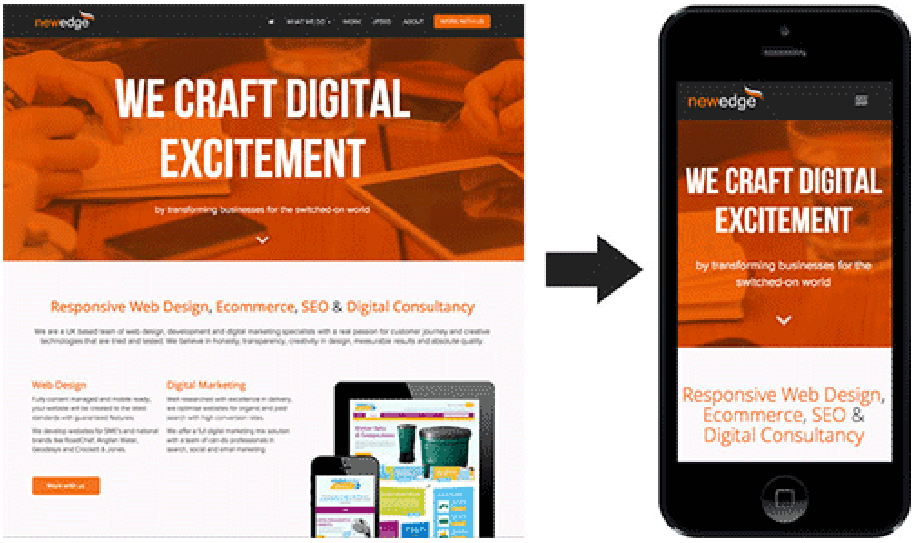
---

[14] http://www.smashingmagazine.com/2013/07/08/choosing-a-responsive-image-solution/

take will only be as good as your photography. Peter Crawfurd goes over how to "Improve Your E-Commerce Design With Brilliant Product Photos[15]."

TYPOGRAPHY

Wondering how to turn off mobile users very quickly? Make them have to pinch and zoom to read text! Having to zoom in to make text legible on a phone is very annoying, so ensure that your typography is readable, contrastive, responsive and well spaced. There are techniques for responsive typography[16] that we can follow.


newedge
WE CRAFT DIGITAL EXCITEMENT
by transforming businesses for the switched-on world
Responsive Web Design, Ecommerce, SEO & Digital Consultancy
Web Design
Digital Marketing
newedge
WE CRAFT DIGITAL EXCITEMENT
by transforming businesses for the switched-on world
Responsive Web Design, Ecommerce, SEO & Digital Consultancy

(Large preview[17])

---

[15] http://www.smashingmagazine.com/2010/08/24/improve-your-e-commerce-design-with-brilliant-product-photos/

[16] http://tympanus.net/codrops/2013/11/19/techniques-for-responsive-typography/%20

[17] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/03/13-responsive-typography-large.png

We achieved the typography above with a simple CSS media query, based on Bootstrap 3's breakpoints for device widths, to ensure consistency across all devices.

```
@media screen and (max-width: 320px) {
  .hero h2 {
  color: white;
  font-size: 2em;
  font-weight: 100;
  font-family: "bebas-neue"; }
}
```

FINGER FRIENDLY

All of those critical calls to action should be large enough to be pressed by a finger. According to "Finger-Friendly Design: Ideal Mobile Touchscreen Target Sizes[18]," that's about 57 pixels wide for a finger and 72 pixels wide for a thumb. The article also notes, "This is consistent with Fitt's Law[19], which says that the time to reach a target is longer if the target is smaller. A small target slows users down because they have to pay extra attention to hit the target accurately." I would say that most of us have overlooked this fact for many years, especially as we adjust out of our 1024 × 768 mindset.

This is very important for all areas that are common to mobile e-commerce websites:

---

[18] http://www.smashingmagazine.com/2012/02/21/finger-friendly-design-ideal-mobile-touchscreen-target-sizes/

[19] http://en.wikipedia.org/wiki/Fitts_law

- navigation of category tree;
- search buttons and filters (especially checkboxes that require precise touch);
- all buttons, including “Add to cart” and “Pay now securely”;
- form fields to enter billing and shipping details;
- thumbnail pictures of products;
- swiping for product photos, instead of tapping left and right arrows.

CONTRASTIVE COLOR AND LIGHT CONDITIONS

Whatever color palette you choose, strong contrast is imperative for buttons and calls to action. If an object blends in, users will likely miss it.

Consider the lighting conditions of your mobile users and how to accommodate them in the look and feel of the website. Try turning off the lights, going out into bright sunlight and huddling under a reflective lamp to see how your color palette performs. You can adjust the CSS to account for different lighting conditions with what are known as light-level media queries[20].

```
@media (light-level: normal) {
  p {
  background: url("texture.jpg");
```

---

[20] http://dev.w3.org/csswg/mediaqueries4/#light-level

```
  color: #333 }
}

@media (light-level: dim) {
  p {
  background: #222;
  color: #ccc }
}

@media (light-level: washed) {
  p {
  background: white;
  color: black;
  font-size: 2em; }
}
```

Although no browser currently supports these, light-level media queries are a cool feature that will hopefully be adopted soon because mobile devices really are used in different lighting conditions. This sort of technology could improve conversions with mobile usage in dark and bright sunlight. One could even imagine swapping promotional banners for daytime and nighttime!

Tip: Don't be afraid of red buttons. Conversions have increased on a ton of websites that switched to red for strong contrast. Test and iterate!

WHITE SPACE AND ENCAPSULATION

White space gives content room to breathe, aids eye flow and declutters. It can relax the visitor when making a purchasing decision.

Use encapsulation to draw the visitor's attention to an element, such as an "Add to cart" button. Create a container for the button with a contrasting background color. Unbounce does a great job of explaining encapsulation[21].

COPYWRITING

The majority of clients will supply you with copy for their products, categories and generic pages, because we designers and developers don't always know the products as well as our clients (hopefully!). However, we do know about persuasive wording and how to use it in calls to action. For example, "Pay securely now" is more motivating and instills more trust than just "Check out."

Long descriptions can be annoying on a small screen. Consider a "Read more" link to reveal more text, or split up a description into a few tabs to allow mobile users to flick through for the information they are looking for.

Tip: If your client is writing the product descriptions, get them to read Craig Anderson's "E-Commerce Copywriting: The Guide to Selling More[22]," which walks through the basics of writing good copy.

FORMS

Forms slow everyone down. The user has to stop and think about filling it in, provide the right data, scan for accuracy, check and uncheck boxes and so on. Forms can be

---

[21] http://unbounce.com/conversion-rate-optimization/design-principles-increase-conversions/

[22] http://www.smashingmagazine.com/2010/12/20/ecommerce-copywriting-the-ultimate-guide-to-selling-more/

especially cumbersome on a mobile device, so make sure yours are finger-friendly and legible. Remember to use the right input type (URL, email, telephone, etc.) so that the mobile browser displays the appropriate keyboard.

Indicate to users their position in the checkout process, too, so that they see their progress and see the light at the end of the tunnel. Derek Nelson puts it well in "Designing a Better Mobile Checkout Process."

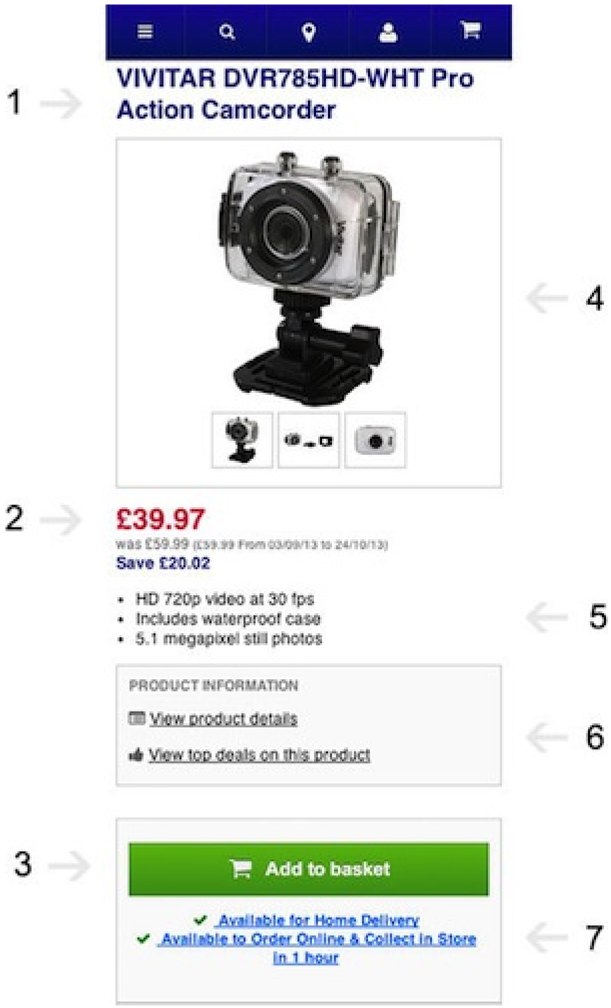
The Ideal Product Page

I don't think you could ever get the "perfect" product page because a lot is left to the eye of the beholder. However, Currys' product page gets pretty darn close. Let's break it down.

Currys' has the following attributes:

- clear product title, with responsive typography in corporate color palette;
- price in contrasting color and responsive typography that stands out and is readable above all other pricing information;
- very clear call to action that stands out above all other links on the page (with simple form encapsulation and finger-friendliness);
- great photography, with all of the shots a user needs to make a purchasing decision (including individual, component and detail shots);

- short description giving a quick overview of the product's features;
- more detailed information about the product for researcher-type customers;
- indication of availability, showing where and when the customer can get it (with simple form encapsulation).



VIVITAR DVR785HD-WHT Pro Action Camcorder

£39.97
was £59.99 (£59.99 From 03/09/13 to 24/10/13)
Save £20.02

- HD 720p video at 30 fps
- Includes waterproof case
- 5.1 megapixel still photos

PRODUCT INFORMATION
View product details
View top deals on this product

✓ Available for Home Delivery
✓ Available to Order Online & Collect in Store in 1 hour

Overall, the page is well spaced, with 20 pixels of white space between block-level elements. Corporate branding is present without cluttering the page, and the goal funnel is clearly defined. If the visitor is interested in the product and the price is right, then they would have no barriers to purchasing it.

Is It All Worth It?

CROCKETT & JONES

The results for Crockett & Jones were overwhelming, with increased time on pages, increased views of the 360° photos (which we set as a conversion goal in Google Analytics to measure their effectiveness) and a reduced bounce rate for mobile users, which I strongly believe is due to the quality of the content, images and videos. The pages visited has also gone up, which I attribute to the navigation layout. The expanding menu fixed to the top makes it very easy for the user to jump around the website and find their way back, while upholding the heritage of the brand. Page speed could certainly be improved, but we had to balance optimization with high-quality images that reflect the brand, and this is certainly something we are still working on.

Summing Up

Putting together a mobile e-commerce website is a multidisciplinary task that encompasses business management, design, development and marketing. Whatever your agency's size, create a boilerplate process that you can follow for all websites but that you can adapt to each project's specifics. In the planning stage of this process, cover the following:

- Who are you designing for (i.e. your customers)? What are their buying habits, and what drives them to buy?
- Put together SMART goals that give you and the client a common vision.
- Create a style guide that is suited to mobile devices, including button design, font size and so on.
- Generate wireframes with details for all key pages (home page, category page, product page, search and shopping cart).
- Bring together all digital assets (photography, video and copy).

Planning in this way will help you deliver an e-commerce website that is well optimized for mobile, that is targeted at your client's customers and that converts more visitors into buyers.

BONUS TAKE-AWAY MATERIAL

You can download the "Mobile E-Commerce Conversion Rate Optimization Checklist[23]" (PDF), with 80+ points to help you get your mobile e-commerce store in ship shape. ❧

---

[23] https://drive.google.com/file/d/0B5Pw58thLGGgLWJJRWRHT05FUjQ/edit?usp=sharing

Exploring Ten Fundamental Aspects Of M-Commerce Usability

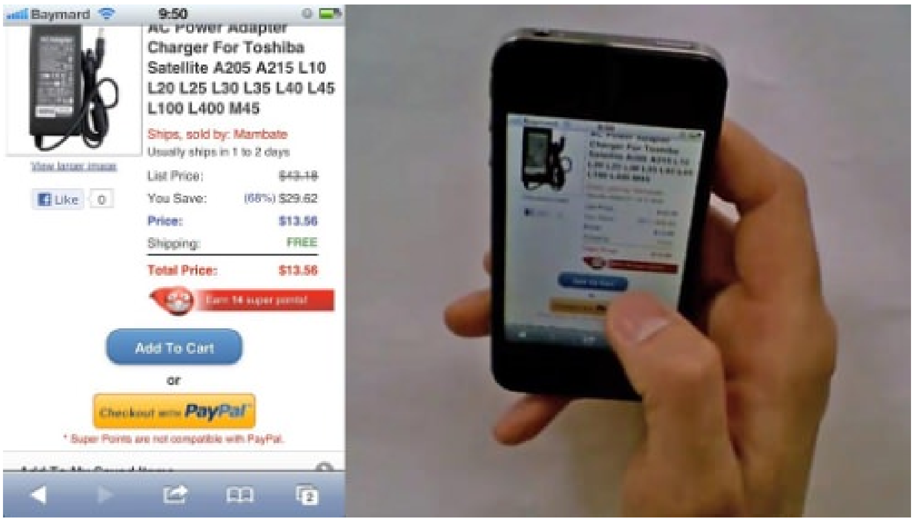
BY CHRISTIAN HOLST ❧

Everyone is talking about mobile. Some e-commerce websites are venturing into it. Mobile commerce (also known as "m-commerce") has immense potential, exhibiting a 86% growth rate and hitting $25 billion in 2012 (set to reach $86 billion by 2016, according to eMarketer).

It's also a whole new platform, with new interaction methods and usage contexts that introduce a host of limitations and pitfalls to watch out for when designing and running an m-commerce website. With few best practices yet established, m-commerce is, to a large degree, unchartered territory when it comes to actual implementation.

This is why we decided to invest the better part of a year at Baymard Institute to conduct a large-scale usability study focusing specifically on m-commerce (following the "think aloud" protocol). We set out to explore the entire mobile shopping experience, including users' conceptual understanding of m-commerce websites and how users interact with form fields, category navigation, search, product pages, the checkout process, etc.

The 18 m-commerce websites that we tested were: 1-800-Flowers, Amazon, Avis, Best Buy, Buy.com, Coastal.com, Enterprise.com, Fandango, Foot Locker, FTD, GAP, H&M, Macy's, REI, Southwest Airlines, Toys "R" Us, United Airlines, Walmart.



(*Large preview*[24])

Despite testing the mobile websites of some of the largest e-commerce players in the world, our subjects encountered 1,000+ usability-related issues during the testing sessions. These usability issues have been analyzed and distilled into 147 design recommendations in a report titled "M-Commerce Usability." In this chapter, we'll share 10 recommendations from that report with you.

While following some of the guidelines would improve the usability of desktop websites, too, there is a major difference in the severity of breaking them. Whereas these guidelines are largely "nice improvements" on desktop, they are among the "vital basics" to get right on an m-commerce website. Thus, most of these usability guide-

---

[24] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/into-mcommerce-usability_mini.jpeg

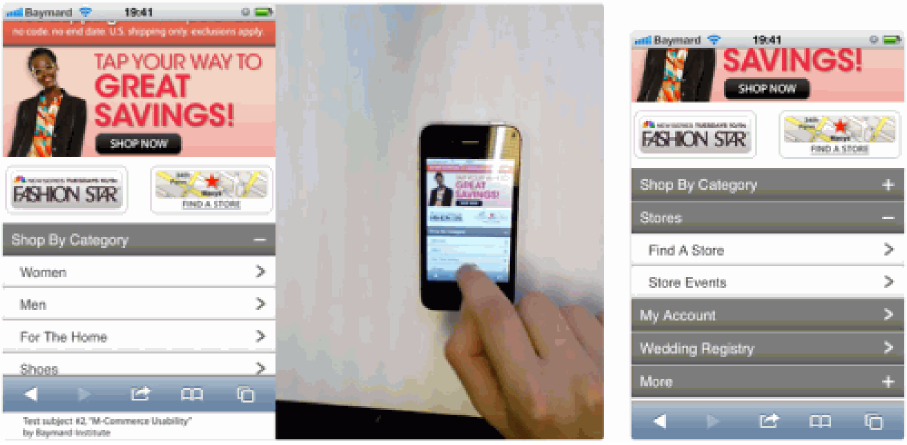
lines are not exclusive to mobile, but they are much more critical to get right in the m-commerce context.

1. Make The Home Page Easily Scannable

Issue: *When users are not able to get an overview of the entire website by quickly scanning the home page, they will feel less confident with the website and often end up choosing the wrong path for their task.*

70% of the test subjects scrolled up and down the entire page when first landing on a home page or a category list, in what most described as "getting an overview of my options." These subjects wanted to see their options before deciding which to choose. Even when they knew how they wanted to find a given product, some subjects still chose to get an overview of the home page, presumably to get a better feel for the website on which they were going to shop. In some instances, when a subject found the category they were looking for, they continued to look through one or two other categories to get a better sense of the other options on the website.

Therefore, making the home page easily scannable is important because this will be the first point of contact for a very large portion of your mobile visitors. This initial impression will have a significant impact on the types of products they expect your website to carry and, just as importantly, not carry. While "easily scannable" might sound a bit vague, three instances of "what not to do" became clear during testing.



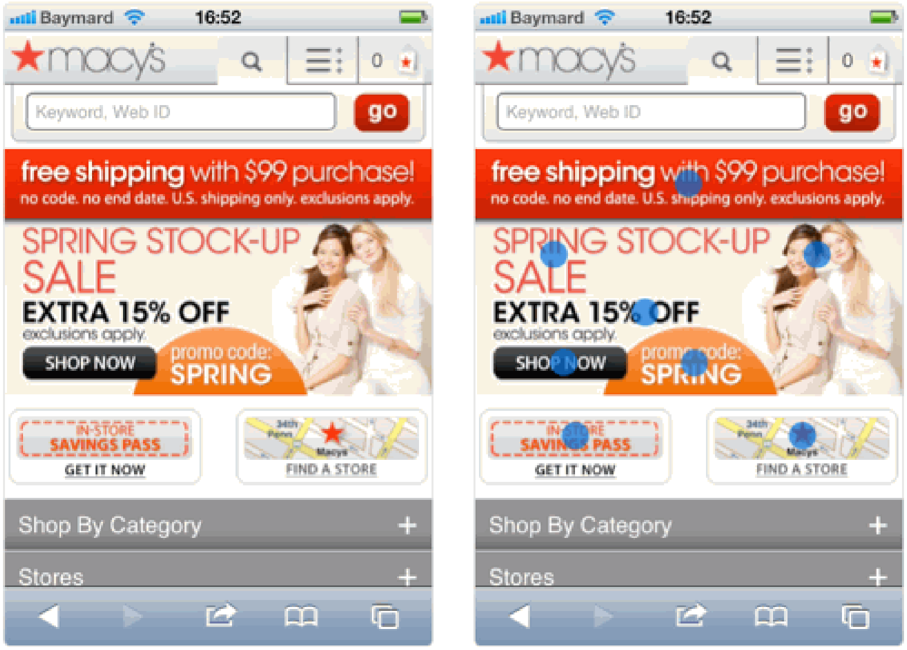
Most subjects scanned the whole home page to get an overview of their options and to better understand what they could do on a particular website. Here, one subject continued to explore the home page options, even after having found his desired navigation path of "category" → "men." (Large preview[25])

HAVING TOO MANY VISUAL ELEMENTS

Avoid the confusing eye path that results from placing multiple highly graphical elements that demand attention high up on the home page. This was the case on Macy's, where approximately 60% of the first viewable part of the home page is plastered with highly graphical content, with at least eight different elements calling for attention:

---

[25] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/scannable-homepage-1_mini.png



Multiple subjects were overwhelmed by Macy's home page because it was very difficult to scan. As one subject expressed it, "I'm desperately trying to get an overview here. There's so much crap being shoved at my face." The right-hand image shows typical eye fixations. (Large preview[26])

This is not to say you cannot have graphics – but limit their size if they are above the fold on the home page, and design them to have a clear eye path.

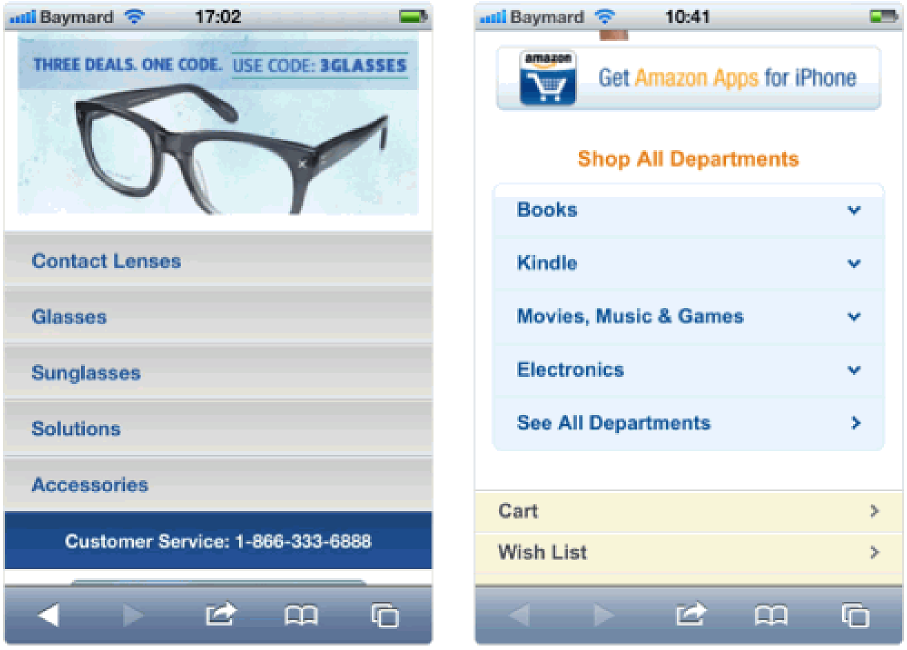
NOT SHOWING THE FIRST LAYER OF CATEGORIES

Another mistake is unnecessarily hiding the category navigation. Some websites have a single "browse categories" option, which takes the user to a new page with the first layer of category choices. If you have a website where the user cannot browse with any method other

---

[26] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/scannable-homepage-2_mini.png

than category and search (i.e. not by "brand" or "store" directly from the home page) and the number of main category options is of a somewhat manageable size, then this is an oversimplification. Instead, show the first level of category options directly on the home page so that users can start scanning the list immediately upon landing on the home page.

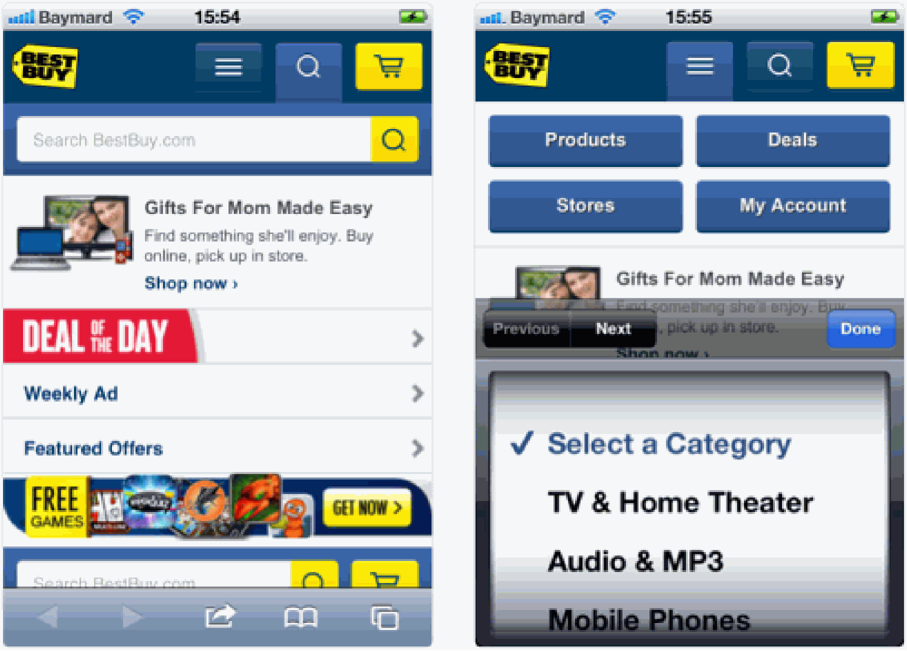


On the left: On Coastal.com, all the category options are displayed directly on the home page, which not only allows direct access, but gives users an accurate idea of the types of products they can expect to find on the website. For stores with multiple ways of browsing the catalog (e.g. by both "category" and "brand"), displaying the category options directly on the home page might not be feasible. On the right: For stores with a very high number of first-layer categories (typically mass merchants), a curated list with the most popular options might prove to be a better option, because displaying all categories would impede scannability. (Large preview[27]*)*

---

[27] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/scannable-homepage-3_mini.png

Moreover, do not present the categories in a drop-down dialog. Multiple subjects explicitly stated that they had to scroll through the entire list to choose the category in which they expected to find a particular product. The problem with a drop-down quickly became clear, then: because it takes up only 50% of the available screen, getting an overview of the available categories became needlessly difficult (see Best Buy below).



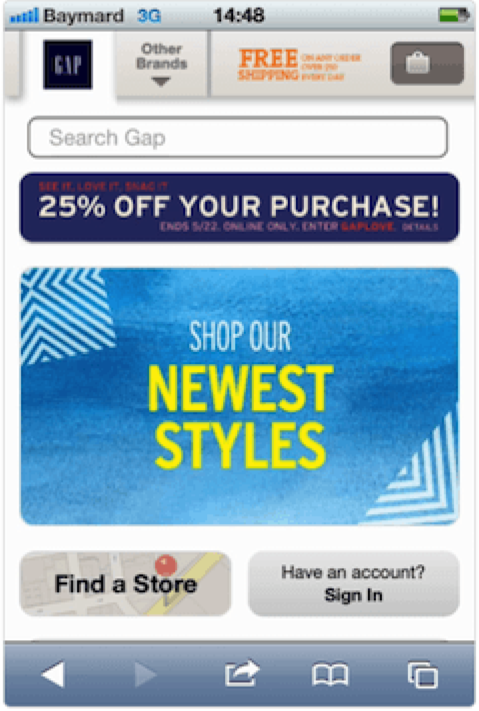
Do not follow the example of Best Buy, which does not have a category option in the main body of its home page content. Instead, a "three bars" icon takes the place of a category option in the page's header. This not only requires all users to understand the meaning of the three bars icon, but also makes it impossible to get an overview of the store by scanning the home page. And, of course, using a drop-down to actually select a category is not ideal either. (Large preview[28])

---

[28] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/scannable-homepage-4_mini.png

Because the gesture area is also only half the size, the subjects also had a much harder time accurately controlling the scrolling speed. Lastly, the drop-down interface element was confused with a filter selection by some subjects and not recognized as the main website category navigation.

PERFECT FOLD ALIGNMENT



One subject, a bit surprised, asked, "This is it? This is the entire page?" believing this was GAP's entire home page. When elements are spaced with pixel-perfection alignment around the viewport fold, users are more likely to misinterpret the top part as being the entire home page (in this case, missing out on the category navigation below). (Large preview[29])

---

[29] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/scannable-homepage-5.png

Finally, do not design your website to have perfect alignment or white space exactly at the fold. This happens on GAP's website, where it is easy to doubt whether the home page contains more than a search field and a few graphics (i.e. no category navigation), because these home page elements align precisely with the viewport fold (on an iPhone at least).

To indicate more content, simply align the elements so that some are only partly viewable within the viewport on the most popular mobile devices.

Therefore, when designing a scannable home pages:

- Put very few (if any) very visually stimulating graphics above the fold on the home page, and make sure the ones that are there have a clear eye path so that the user can quickly get an overview.
- Try to ensure that the fold (on the most popular mobile devices) partially cuts off some content, to indicate more options below.
- Display navigation options on the home page as a list (not in a drop-down).
- If you have only one category navigation type (such as "product type" or "department," and not also "brand" or "store"), then show the first level of the category hierarchy directly on the home page either in full or, if there are too many options, as a curated and collapsed list of the most popular choices.
- Only display highlighted or featured products below the search field and the category navigation options.

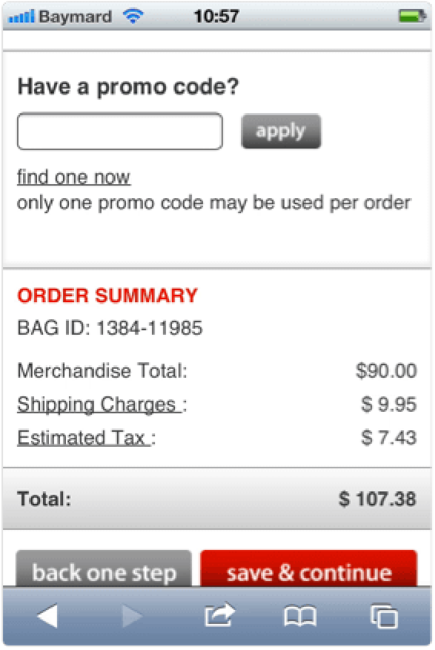
2. Be Sensitive To People's Fear Of Losing Their Data

Issue: *Typing on mobile devices is clumsy, so users are constantly worried about losing their inputted data.*

"Argh, no! Do I have to start over? Now I'm getting angry. Doesn't it have my shit already?," a subject moaned, referring to his previously typed address and credit-card information, which suddenly disappeared. "Now I'm leaving. This isn't a serious store."

Data persistence is not something to take lightly. Your users certainly don't. Of course, the recommendation is simple: always persist the user's data, which requires investing in solid technology, testing thoroughly, and storing inputted data temporarily on the user's device (most mobile browsers support localStorage). In practice, of course, this is easier said than done, and numerous websites have failed miserably, to the great frustration of users.

Because users have already suffered through many horrible experiences of lost data, they often exhibit extreme caution around certain types of elements and avoid certain interactions when possible. The following screenshot shows the types of actions and elements that particularly worry users. Either avoid these elements altogether or soothe users' fear with the smart use of microcopy, icons and animations.

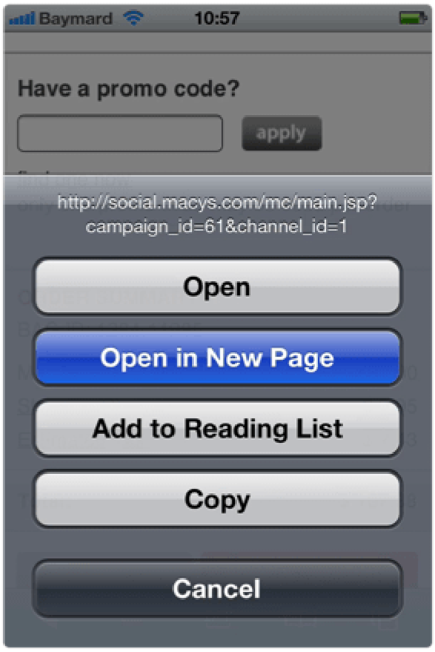


Have a promo code?

find one now
only one promo code may be used per order

ORDER SUMMARY
BAG ID: 1384-11985

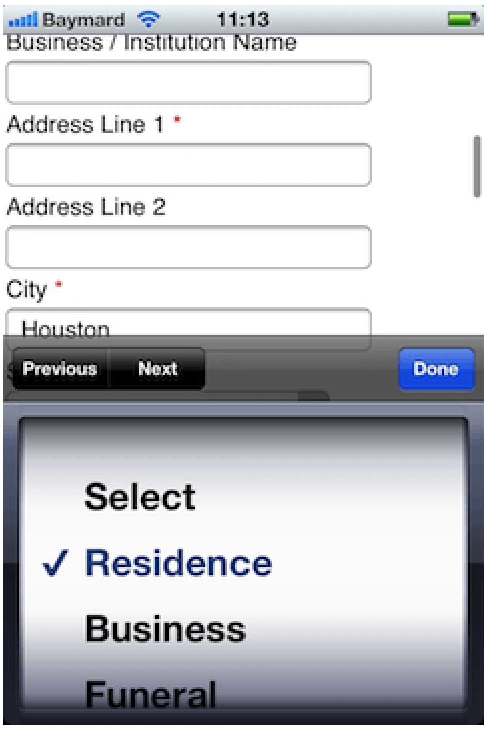
Merchandise Total:	$90.00
Shipping Charges :	$ 9.95
Estimated Tax :	$ 7.43
Total:	**$ 107.38**



Have a promo code?

http://social.macys.com/mc/main.jsp?campaign_id=61&channel_id=1

During checkout, the subjects consistently opened links in a new window because they were afraid their data would be lost if they opened links in the current window.



Business / Institution Name

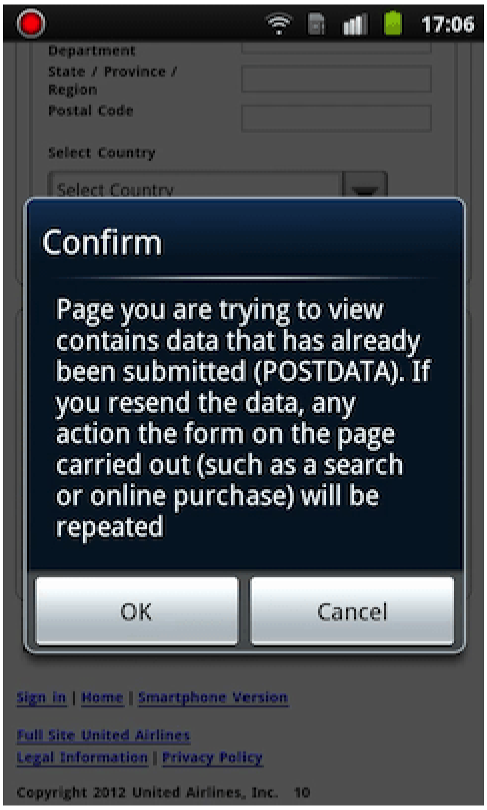
Address Line 1 *

Address Line 2

City *
Houston

(*Large preview*[30])

Subjects were almost always disturbed by unexpected page reloading (i.e. any page reloading that is not a direct consequence of clicking a link or button). In the image above, a subject selected a "Residence type," which reloaded the page, causing the subject to immediately scroll up and down to ensure that none of their data was lost. We observed this type of unease with page reloading among subjects time and again throughout testing.


17:06
Department
State / Province / Region
Postal Code
Select Country
Select Country

Confirm

Page you are trying to view contains data that has already been submitted (POSTDATA). If you resend the data, any action the form on the page carried out (such as a search or online purchase) will be repeated

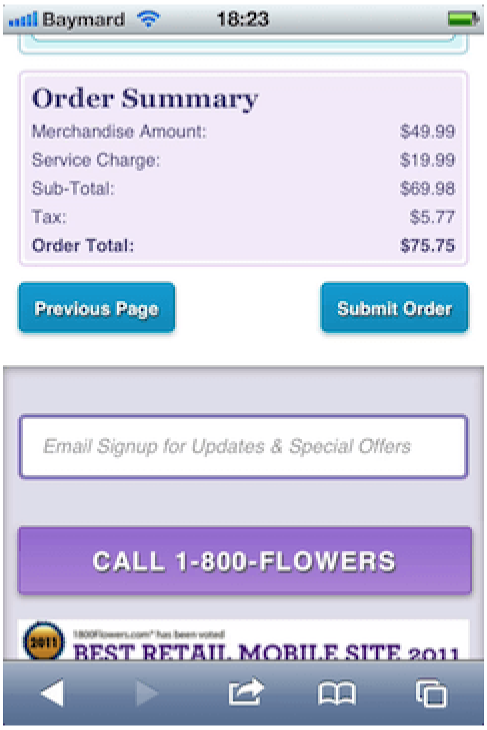
OK
Cancel
Sign in | Home | Smartphone Version
Full Site United Airlines
Legal Information | Privacy Policy
Copyright 2012 United Airlines, Inc. 10

(*Large preview*[31])

---

30. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/fearing-data-loss-2.png
31. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/fearing-data-loss-3.png

Many subjects were scared by system dialogs and often assumed that they would lose data by clicking “OK,” even though few of them actually read the message. The subject in the test shown above wanted to go backwards in the process to pick another ticket but was met with this dialog, which he cancelled — assuming that he would have to re-enter everything if he wanted to select another ticket.


Baymard
18:23
Previous Page
Submit Order
Email Signup for Updates & Special Offers
CALL 1-800-FLOWERS
2011
BEST RETAIL MOBILE SITE 2011

Order Summary

Merchandise Amount:	$49.99
Service Charge:	$19.99
Sub-Total:	$69.98
Tax:	$5.77
Order Total:	**$75.75**

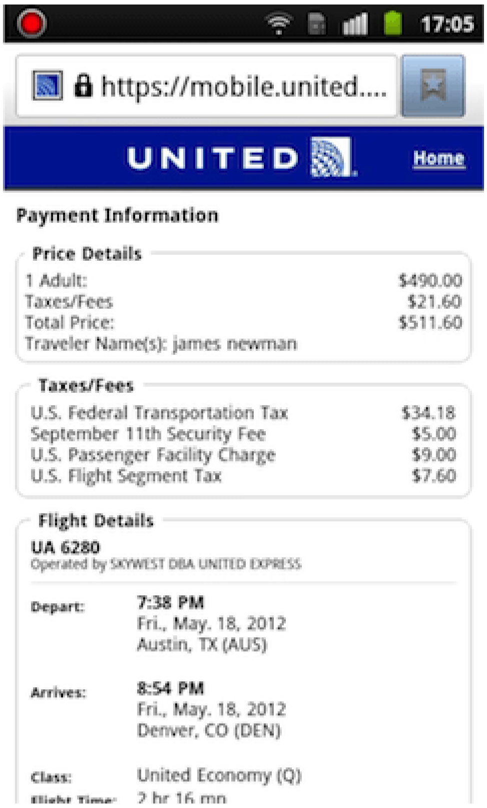
(*Large preview*[32])

A good number of the subjects believed that leaving the checkout process would destroy their data and so refused to go back and check for other products. The subject in

---

[32] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/fearing-data-loss-4.png

the test above contemplated going back to find another bouquet of flowers, but decided against it because he did not want to re-enter all of his data. This happened despite many of the test websites actually remembering the users' details, even if the users left the checkout process midway — the keyword, of course, being "many" websites, rather than "all." Given this inconsistency, users have no way to know beforehand, so their only safe choice is to just assume the worst on all websites.



Payment Information

Price Details

1 Adult:	$490.00
Taxes/Fees	$21.60
Total Price:	$511.60

Traveler Name(s): james newman

Taxes/Fees

U.S. Federal Transportation Tax	$34.18
September 11th Security Fee	$5.00
U.S. Passenger Facility Charge	$9.00
U.S. Flight Segment Tax	$7.60

Flight Details

UA 6280
Operated by SKYWEST DBA UNITED EXPRESS

Depart:	**7:38 PM** Fri., May. 18, 2012 Austin, TX (AUS)
Arrives:	**8:54 PM** Fri., May. 18, 2012 Denver, CO (DEN)
Class:	United Economy (Q)
Flight Time:	2 hr 16 mn

(*Large preview*[33])

---

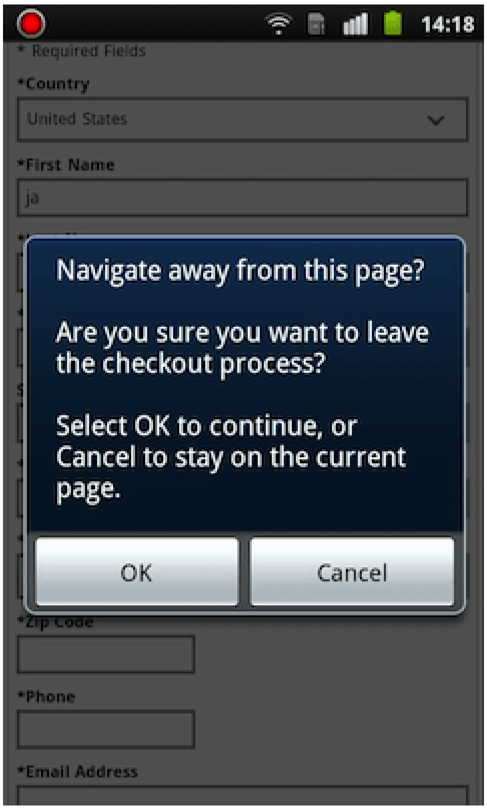
[33] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/fearing-data-loss-5.png

During checkout, the “back” button was generally perceived by the subjects to be dangerous, and subjects used it during checkout only when they felt they were out of all other options. In many cases, this perception was justified: numerous websites did indeed fail to persist the user’s data when they used the “back” button. However, equally important is that process step links and other “back” links and buttons that were part of the website’s UI were generally considered by the subjects to be “safe.”

Therefore, including either process steps or “back” links in the checkout is crucial so that users do not feel they have to gamble by using the browser’s “back” button and can instead use your website’s dedicated UI element(s) for the purpose. In the test shown above, the subject hunted up and down to find a link or button that would take him back to the previous step, but was unable to find one. Finally, he tried the browser’s “back” button.

These were the most significant insights relating to users’ fear of lost input. In general, the subjects were vastly more pessimistic about websites on which they had once lost data. For example, clicking the keyboard’s “next” button cleared one subject’s input on a website, which made her consistently avoid that button throughout the rest of the checkout. As she said, “Here, I don’t dare click ‘Next’ anymore because I don’t want to start over again.” Not only that, the subject also became overly cautious when interacting with any fields on the website, fearing that even the slightest hiccup would destroy her data.

A single bad experience set low expectations for the rest of the website. So, how do we avoid bad experiences in cases where we are unable to persist the user’s data due to technical limitations? In these instances, clearly warn the user that they are about to do something destructive.



*Country: United States

*First Name: ja

Navigate away from this page?

Are you sure you want to leave the checkout process?

Select OK to continue, or Cancel to stay on the current page.

As the subject left the incomplete checkout, the website warned her that her data would be lost. “This is very good,” the subject remarked, “because if I did something wrong by accident, I would be extremely annoyed if they deleted everything. So, it’s good that they warn me like this if the data would otherwise be lost.” (Large preview[34]*)*

Persisting data is always the ideal, of course, but warning the user and giving them the option to back out before destroying their data is a good secondary solution, and it

---

[34] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/fearing-data-loss-6.png

sure beats simply destroying the user's data without warning; moreover, it gives the user a chance to cancel the destructive action. This type of fallback solution could be especially useful for less common navigation paths, where persistent data is too time-consuming to implement, considering how few users it affects.

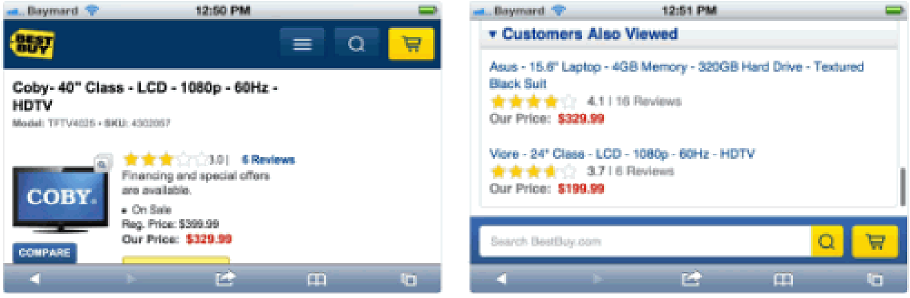
This could also entail something like persisting the user's cart or checkout data when switching between the full website and mobile website. In these instances, it is acceptable to simply warn the user that they will lose their data if they proceed, and then give them the option to proceed (and lose their data) or stay (and keep their data).

Data persistence is clearly a complex matter, especially when one considers the user's expectations towards data persistence. We observed subjects creating accounts merely to ensure persistence, and witnessed data lost due to accidental clicks, and we watched with as much surprise as the subject when an entire form was remembered perfectly by autofill, turning potentially horrible data loss into a small moment of joy. Data persistence is tricky, but getting it right is crucial.

3. Add A Primary Button At The Bottom Of Product Pages

Issue: *Users are likely to misinterpret cart buttons in the page's footer if there is no "Add to Cart" button at the bottom of every product page.*

A wide range of the tested websites had multiple identical primary call-to-action (CTA) buttons on product pages (i.e. two “Add to Cart” buttons), one at either the top or middle of the product page and a second one at the bottom.

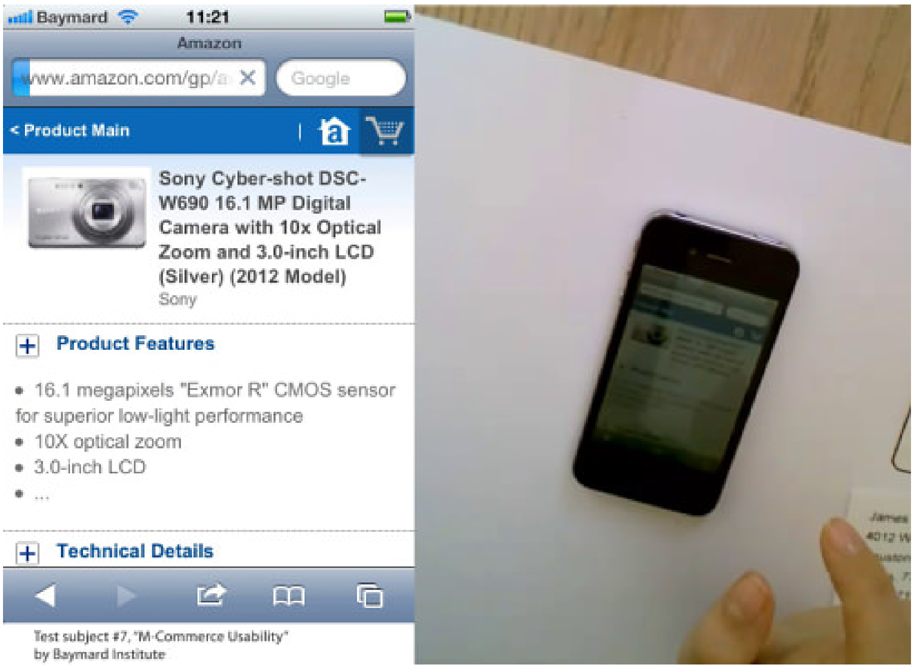


On Best Buy, one subject read this product’s entire specification sheet and was in the mindset of “Yes, this is the product I want to purchase.” He saw the website’s shopping-cart icon at the bottom of the page (second image above) and clicked it, believing it was an “Add to Cart” button. Logically, he assumed the product would be added to his cart and so continued browsing for more products, only to notice much later in the shopping session that the website had “deleted” his cart’s contents (the TV was never added in the first place). (Large preview[35])

It turned out that on the websites with only one CTA button on a product page, subjects often ran into severe problems even with adding a product to their cart — which, in some cases, ultimately led to abandonments. Cart icons in the page’s header or footer were often mistaken for an “Add to Cart” button.

---

[35] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/3-1-two-primary_mini.png



Sony Cyber-shot DSC-W690 16.1 MP Digital Camera with 10x Optical Zoom and 3.0-inch LCD (Silver) (2012 Model)
Sony

- 16.1 megapixels "Exmor R" CMOS sensor for superior low-light performance
- 10X optical zoom
- 3.0-inch LCD
- ...

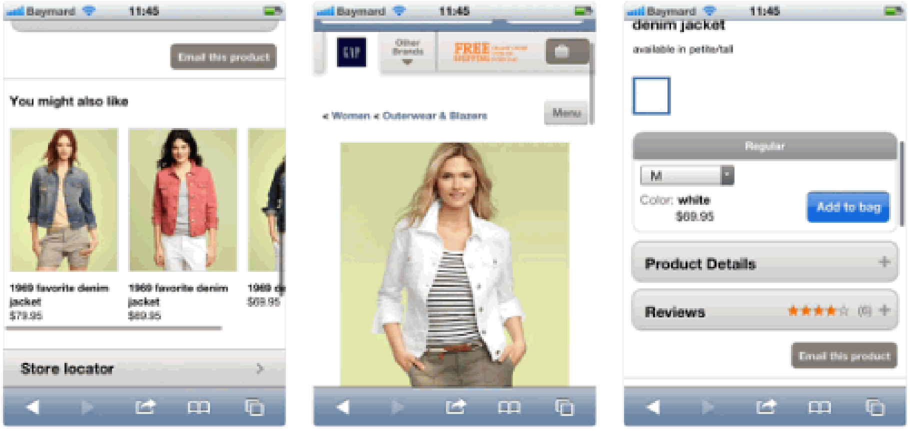
The subject here on Amazon thought the shopping-cart icon was the button for adding the displayed product to her cart. (Large preview[36])

Both Best Buy and Amazon failed to make the primary buttons immediately obvious and generally available, which led subjects to start interpreting various icons on the page, including the cart icon, as shown in the two examples above. Subjects often scrolled to the bottom of a product's page when looking for the "Add to Cart" button (a behavior confirmed in another study[37]).

---

[36] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/3-2-amazon_mini.jpg

[37] http://www.sirvaluse.com/en/case-studies/single/the-500-million-button-roi-from-user-experience-research.html



This subject started looking for the "Add to cart" button by scrolling to the bottom of the page, then scrolling back to the top of the page, thinking she might have missed it, and finally scrolling down again patiently, until finding the "Add to bag" button in the middle of the page.
(Large preview[38])

To accommodate this behavior and reduce misinterpretation of any cart icons, add a second "Add to Cart" button to the bottom of all of your product pages. A second button there will also support a more natural interaction flow, as the user first reads the product description, then the specification sheet, then the reviews and so on, and then, at the end of the page, decides whether to buy or not. Only if the product page is extremely short (one to two mobile viewports tall) would a single button suffice.

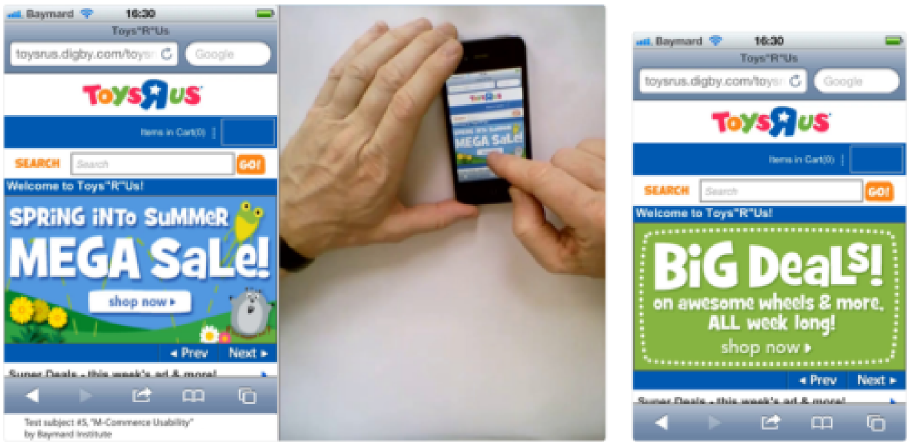
---

[38] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/3-3-middle-of-the-page_mini.png

4. *Be Very Careful With Animated Carousels*

Issue: *Users fail to discover vital features that appear only in a carousel, and they have a hard time interacting with carousels themselves.*

Animated carousels caused interaction problems for half of the test's subjects. The carousels simply changed too quickly for some subjects to both read and select an option.



A subject was about to click the "Mega Sale" slide (left image), but the carousel animated to the next slide at the very same moment, forcing the subject to wait for that slide to reappear. (Large preview[39])

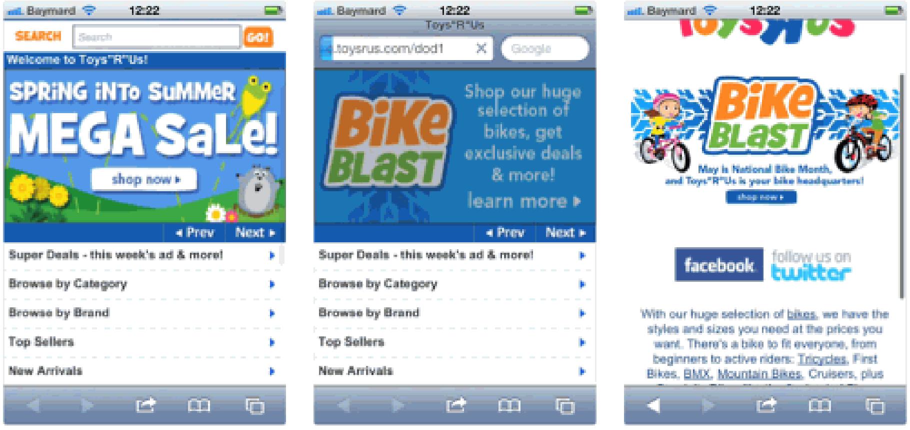
In multiple instances, a subject found a carousel slide interesting and attempted to tap it. However, the carousel changed to the next slide at the very same moment, causing the wrong slide to load. Sometimes the subjects noted

---

[39] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/animating-carousels-1_mini.png

this, but sometimes they did not and left the landing page immediately because they did not find it relevant to what they were looking for.

Interestingly, the “Prev” and “Next” buttons in the Toys “R” Us carousel were not used by a single subject during testing, despite these issues:



With our huge selection of bikes, we have the styles and sizes you need at the prices you want. There's a bike to fit everyone, from beginners to active riders: Tricycles, First Bikes, BMX, Mountain Bikes, Cruisers, plus

The carousel changed the very second this subject tapped it, registering a click for “Bike Blast” instead of the “Mega Sale” she wanted. The subject never noticed and assumed that “Bike Blast” was the sale. (*Large preview*[40])

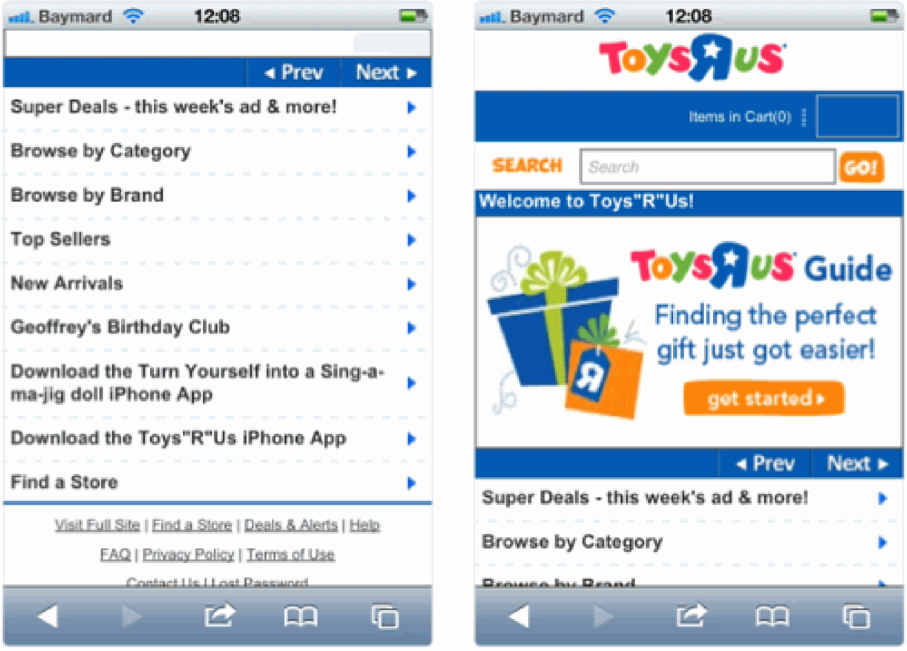
Both of these interaction issues were also encountered (and still exist) in the early versions of carousels on full websites, but as carousels have become increasingly popular on e-commerce home pages over the last several of years, they have evolved, so most now stop animating when the user hovers over an option with the mouse.

And most also have an indicator that enables the user to see how many slides a carousel has and, just as impor-

---

[40] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/animating-carousels-2_mini.png

tantly, to jump to a particular slide (such as back to the one that piqued their interest but changed too quickly). These interaction issues cannot be easily solved on mobile because there is no hover state and much less screen real estate.


Baymard
12:08
◂ Prev
Next ▸
Super Deals - this week's ad & more!
Browse by Category
Browse by Brand
Top Sellers
New Arrivals
Geoffrey's Birthday Club
Download the Turn Yourself into a Sing-a-ma-jig doll iPhone App
Download the Toys"R"Us iPhone App
Find a Store
Visit Full Site | Find a Store | Deals & Alerts | Help
FAQ | Privacy Policy | Terms of Use
Contact Us | Lost Password
Baymard
12:08
Toys R Us
Items in Cart(0)
SEARCH
Search
GO!
Welcome to Toys"R"Us!
Toys R Us Guide
Finding the perfect gift just got easier!
get started ▸
◂ Prev
Next ▸
Super Deals - this week's ad & more!
Browse by Category
Browse by Brand

On Toys "R" Us' home page, the subjects pored over the menus to find a "Gift Guide" wizard but could not find one (image on left). It turns out there is a wizard but is accessible only via a particular slide in the rotating carousel at the top of the page. (Large preview[41])

Perhaps an even more critical usability issue is that most test subjects simply ignored the carousel after quickly glancing at the first slide. Some waited and looked at two to three slides before focusing elsewhere. This proved critical on some websites, such as Toys "R" Us', because

---

[41] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/animating-carousels-3_mini.png

the majority of subjects were desperately looking in the traditional navigation for certain features (such as the “Gift Finder”) that were accessible only via the carousel. Some subjects spoke at length about how the website really should have some sort of “gift guide,” ultimately abandoning the website because they could not find one.

Users ignore animated carousels for multiple reasons. First, a carousel’s content might look like advertising, depending on how it is styled, greatly increasing the chance of banner blindness (a subgroup of subjects tended to focus much more closely on text-based navigation than on graphics-based navigation). Secondly, when using a large laptop or desktop monitor to browse a full website, the user is able to check out other options on the home page while still glancing at the carousel slides as they change.

On mobile devices, however, the screen is so small that a carousel would take up a significant portion of the viewport, making it practically impossible to scan any navigation or category options while monitoring the carousel slides (one of them will always be partly or completely out of sight). Therefore, if users are to see all options in a carousel on a mobile device, they will have to watch the carousel for its full duration (like a video clip).

Regardless of the cause(s), what is really important is that the vast majority of subjects ignored the animated carousels completely and, on the home page, focused instead on the category navigation and search features. For this reason, be very cautious about relying on carousels for important content, and never have it as the only path to a particular feature.

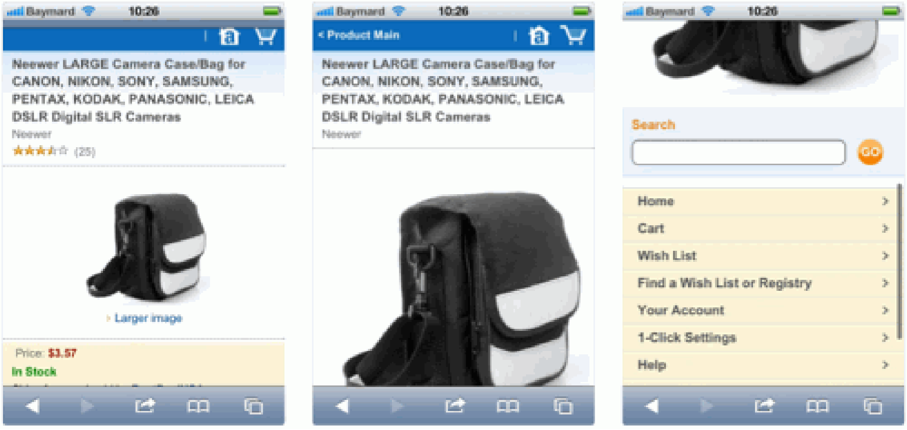
5. Be Careful Of Showing Product Information Or Images On Separate Subpages

Issue: *Users have incredible difficulty understanding the scope of product subpages.*

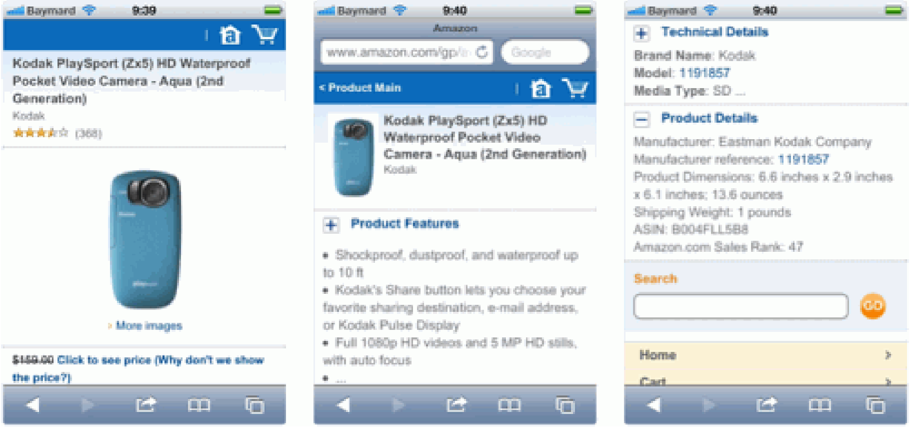
On a mobile device, understanding the scope of the current page is vastly more difficult for users, due to the very small display. Mobile pages often lack the subtle yet vital page-scope cues that are present on full-size pages, such as a full set of breadcrumbs, an overview of the current page, and full URL paths viewable throughout the browsing session.

This lack of scope on mobile makes having any kind of substeps or subpages that refer to a main page very risky, because the user would have to fully understand the scope of the current page in order to appreciate the difference between the subpage and main page.

This became immediately apparent when testing websites that offer a “larger view” option of their images, taking users to a separate product subpage, as seen on Amazon on the next page. Because of the apparent lack of access to vital content, such as “Product Description,” “Product Specs” and “User Reviews” (which are available only on the main product page), the subjects who did not notice this change in scope assumed that such content simply did not exist for the given product and continued looking for other products with such information, discarding perfectly matching ones.


Baymard
10:26
Neewer LARGE Camera Case/Bag for CANON, NIKON, SONY, SAMSUNG, PENTAX, KODAK, PANASONIC, LEICA DSLR Digital SLR Cameras
Neewer
(25)
Larger image
Price: $3.57
In Stock
Product Main
Search
GO
Home
Cart
Wish List
Find a Wish List or Registry
Your Account
1-Click Settings
Help

When users want to see larger versions of images of an Amazon product (left), they are taken to a subpage (middle). Our test subjects clearly noticed that they were still within a product's particular scope (because of the large product image), but they did not understand where the rest of the product page went (right). (Large preview[42])

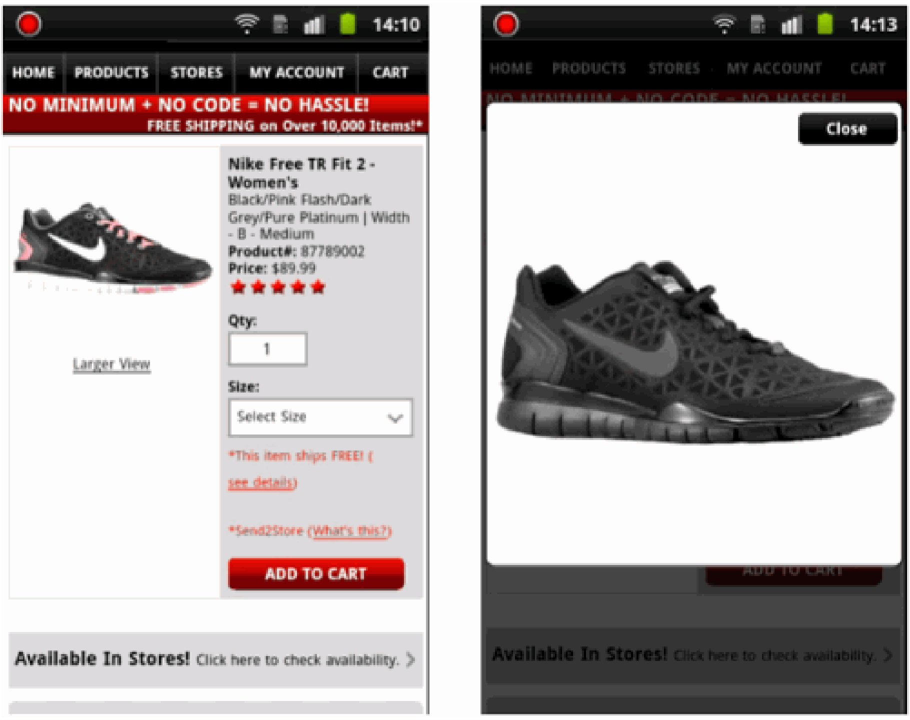

Baymard
9:39
Kodak PlaySport (Zx5) HD Waterproof Pocket Video Camera - Aqua (2nd Generation)
Kodak
(368)
More images
$159.00 Click to see price (Why don't we show the price?)
9:40
Amazon
www.amazon.com/gp/
Google
Product Main
Kodak PlaySport (Zx5) HD Waterproof Pocket Video Camera - Aqua (2nd Generation)
Kodak
Product Features
Shockproof, dustproof, and waterproof up to 10 ft
Kodak's Share button lets you choose your favorite sharing destination, e-mail address, or Kodak Pulse Display
Full 1080p HD videos and 5 MP HD stills, with auto focus
...
Technical Details
Brand Name: Kodak
Model: 1191857
Media Type: SD ...
Product Details
Manufacturer: Eastman Kodak Company
Manufacturer reference: 1191857
Product Dimensions: 6.6 inches x 2.9 inches x 6.1 inches; 13.6 ounces
Shipping Weight: 1 pounds
ASIN: B004FLL5B8
Amazon.com Sales Rank: 47
Search
GO
Home
Cart

Amazon also uses subpages to show full specification lists, causing the exact same issue, except that this time subjects were unable to locate something as vital as the "Add to Cart" button. (Large preview[43])

---

42. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/no-product-sub-pages-1_mini.png
43. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/no-product-sub-pages-2_mini.png

On a mobile device, and especially on subpages, understanding the current scope is simply much more difficult. Instead, display your "larger views," image galleries, detailed specification sheets and the like (i.e. all relevant content) directly on the product's main page. You could also use progressive disclosure by collapsing each content section by default, to avoid overly long pages; but then be sure to have clear trigger indicators. A strategy such as this minimizes the need to display additional information and images on subpages and the resulting scope issues.


14:10
HOME
PRODUCTS
STORES
MY ACCOUNT
CART
NO MINIMUM + NO CODE = NO HASSLE!
FREE SHIPPING on Over 10,000 Items!*
Larger View
ADD TO CART
14:13
Close

Nike Free TR Fit 2 - Women's
Black/Pink Flash/Dark Grey/Pure Platinum | Width - B - Medium
Product#: 87789002
Price: $89.99

Qty: 1

Size: Select Size

*This item ships FREE! (see details)

*Send2Store (What's this?)

Available In Stores! Click here to check availability.

(Large preview[44])

---

[44] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/no-product-sub-pages-31_mini.png

Especially with image galleries, you also have the option of an overlay, as shown above on Foot Locker. With an overlay, the user can still see the product page beneath and have a simple way to get back to it.

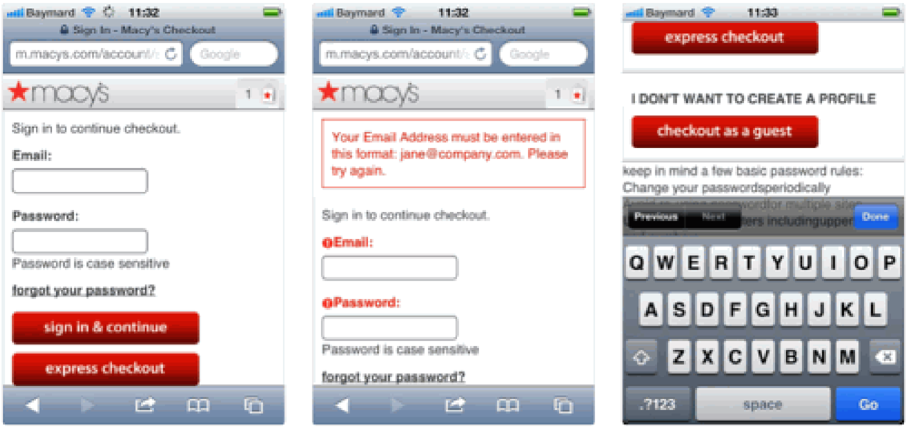
6. Be Thoughtful In The Design And Sequence Of Your Three Account-Selection Options

Issue: *Users had difficulty figuring out how to initiate "Guest Checkout" and understanding field relationships, selection options and buttons in the account-selection steps.*

On mobile, the user's selection of a checkout type — "create an account," "sign into account" or "guest checkout" — will be a separate step (unlike on full websites, where it could be integrated into the first step). More than half of the test subjects (60%) had serious trouble identifying, seeing and selecting the guest-checkout option at the account selection step during checkout.

Multiple times, the misunderstandings led subjects to believe that registration was required, despite it being optional, and carried all of the downsides of forced account registration (including abandonments). Therefore, the design of your account-selection screen for mobile is just as important as having a guest-checkout option at all.

Several different design schemes led to these serious misunderstandings, as the following screenshots illustrate.



Sign in to continue checkout.

Password is case sensitive

Your Email Address must be entered in this format: jane@company.com. Please try again.

keep in mind a few basic password rules:
Change your passwordsperiodically

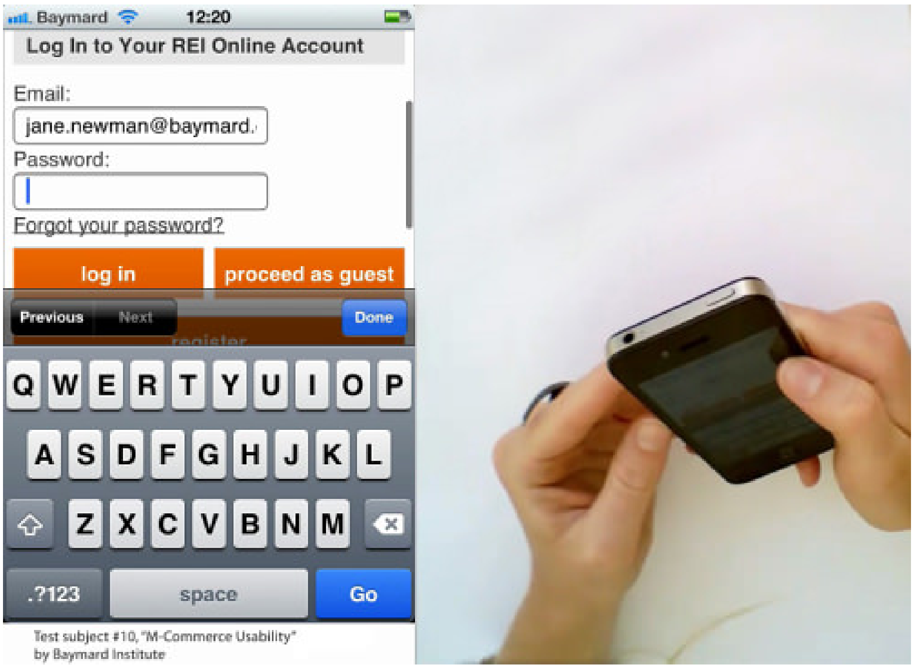
(*Large preview*[45])

On Macy's, subjects saw the account-selection step (above left) after selecting the cart. Some clicked "Express Checkout," believing they would have a fast checkout (as a guest), only to get form-field validation errors for the two fields because "Express Checkout" requires a Macy's account (above center). Some only discovered the "Checkout as a Guest" option further down the page (right), after getting this validation error, while others never noticed the guest-checkout option and registered for an account, believing it was required.

On multiple websites (Amazon, Toys "R" Us, REI, GAP, Best Buy), subjects started to interact with the fields, such as by providing their email address (above). On REI, every single subject interacted with the email field before looking for, or figuring out that there was, a guest-checkout option.

---

[45] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/account-selection-1_mini.png



Log In to Your REI Online Account

Email: jane.newman@baymard.

Password:

Test subject #10, "M-Commerce Usability" by Baymard Institute

(*Large preview*[46])

In most cases, the subjects spotted the error before submitting the form (typically upon reaching the password field and deducing that they were on an account sign-in or creation form). In such cases, not even detailed analysis of your Web statistics and error logs would reveal these issues because no validation error ever occurs.

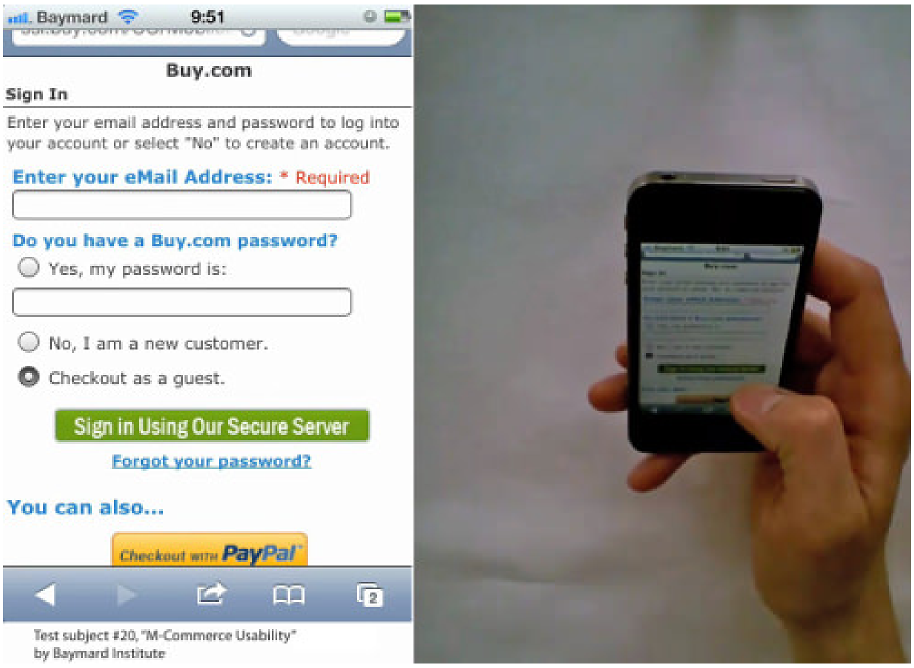
On Buy.com, things are even worse. The vast majority of subjects simply could not figure out the relationship between the four checkout methods (sign-in, create account, guest checkout and PayPal checkout), the two form fields, the three radio buttons and the two primary buttons. All tapped the “Checkout as a Guest” option after spending some time trying to understand the page.

---

46. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/account-selection-2_mini.jpg

Then, the naming of the “Sign in Using Our Secure Server” button utterly confused subjects because they were trying to check out as a guest (and, therefore, actively opted not to sign into anything). This particular naming has been used by Amazon for years and has even been highlighted as a best practice to indicate a secure checkout, so how could it lead to such major misinterpretation?

The reason is that it indicates the user will sign in, which makes sense only if they have an account or will create one, but not if they are checking out as a guest. (Amazon does not offer a guest-checkout option, so the wording makes sense in that context.) Given the button’s name, one subject assumed that the only other prominent button on the page, “Checkout with PayPal,” must be the one to pick to initiate the “Checkout as a guest” selection.



Buy.com

Sign In

Enter your email address and password to log into your account or select "No" to create an account.

Enter your eMail Address: * Required

Do you have a Buy.com password?

○ Yes, my password is:

○ No, I am a new customer.

● Checkout as a guest.

You can also...

Test subject #20, "M-Commerce Usability" by Baymard Institute

(Large preview[47]*)*

Others finally clicked the oddly named button — but nothing seemed to happen. It turns out that inline text reading “Required” appeared next to the “Enter your eMail Address” label (seen above), but no one noticed it initially. The subjects typically waited for a little while just in case the website did not load, and then clicked again, at which point most realized that they needed to fill in more data. By this point, some, especially those who did not notice the validation error, concluded that they were not allowed to check out as a guest and proceeded to create an account instead.

One explained his experience thusly, “Normally I would think ‘guest checkout’ would let me through without having to create an account. But here I have to fill in my mail, so I have no idea what that option is for, then. To be on the safe side, I’ll then pick the ‘No, I’m a new customer,’ because if I’m forced to create an account, I might as well just do it properly anyways.”

Making the account-selection process clear is as important as offering a guest checkout option. Following two main design principles will help to prevent these serious problems:

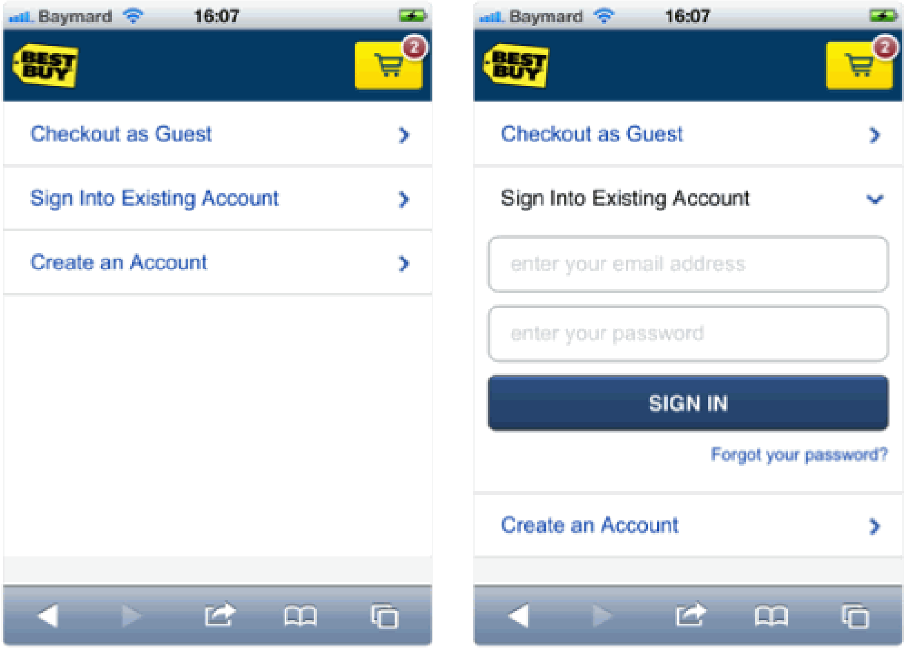
- **Always place the guest-checkout option at the top**, with its own button to proceed, so that the user does not need to fill in an email field in this step. (If needed, you can look up whether the user has an account in the next step, when you ask for their email address, to ensure that

---

47. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/account-selection-4_mini.jpg

they have not selected the guest checkout just because it is the first option in the list.)

- **Collapse all of the fields and descriptions for all three options** — “guest checkout,” “sign in” and “create an account” — bringing each option down to a single line, making it possible to get an overview in the viewport without having to scroll or expand. Dynamically expand them when tapped, revealing the fields and descriptions. This will also make clear which fields are related (and required) for each option.



All three account-selection options are displayed in collapsed state (with guest checkout at the top), so that the user can instantly see all available options. The options can either expand inline (image on right) or redirect to the next step in the checkout process. Progressive disclosure also makes the relationship between an option and its fields much clearer. (*Large preview*[48])

On the previous page, we have created a simple mockup to illustrate how account selection can be clarified by combining these two principles:

7. *Disable Autocorrection When The Dictionary Is Weak*

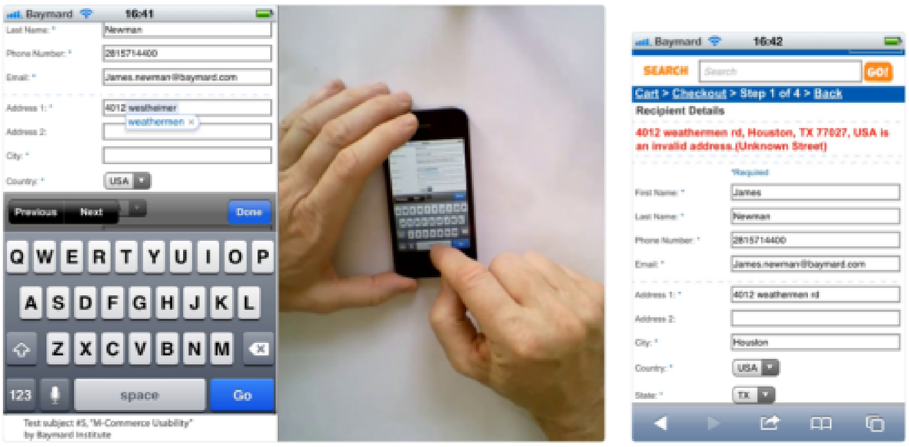
Issue: *Poor autocorrection is frustrating when users notice it, and can be detrimental when they do not.*

Autocorrection usually works poorly for abbreviations, street names, email addresses and similar words that are not in the dictionary. This caused significant problems throughout testing and resulted in a great deal of erroneous data being submitted as subjects completed their purchases.

One of the major issues of autocorrection was that the subjects often failed to notice the correction (because they were often focused on what they were typing, instead of what they had typed). This is fine if the "correction" is correct, but it can be detrimental if it is wrong. For example, in multiple instances, a valid address was autocorrected to an invalid one and submitted because the subject failed to notice it.

---

48. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/account-selection-5_mini.png



Baymard 16:41
Last Name: * Newman
Phone Number: * 2815714400
Email: * James.newman@baymard.com
Address 1: * 4012 westheimer
weathermen ×
Address 2:
City: *
Country: * USA

Test subject #5, "M-Commerce Usability"
by Baymard Institute

Baymard 16:42
Cart > Checkout > Step 1 of 4 > Back
Recipient Details
4012 weathermen rd, Houston, TX 77027, USA is an invalid address.(Unknown Street)
*Required
First Name: * James
Last Name: * Newman
Phone Number: * 2815714400
Email: * James.newman@baymard.com
Address 1: * 4012 weathermen rd
Address 2:
City: * Houston
Country: * USA
State: * TX

When this subject typed in his street name, "westheimer," the phone incorrectly autocorrected this to "weathermen" (left). However, the subject did not notice this, submitted the form and received a validation error (right). (Large preview[49])

On websites without address validators, this resulted in wrong addresses being submitted, unless the subject was particularly attentive on the order review page. After all, the user's address will often be replaced with something that looks very similar, although incorrect. In addition to the "weathermen" example, official address abbreviations, such as "Rd," were autocorrected, to "Ed."

That being said, autocorrection did prove very helpful when it worked. So, don't disable it in all fields. Use it discreetly, and disable it on fields for which autocorrection dictionaries are weak. This typically includes names of various sorts (street, city, user) and other identifiers (such as email address).

---

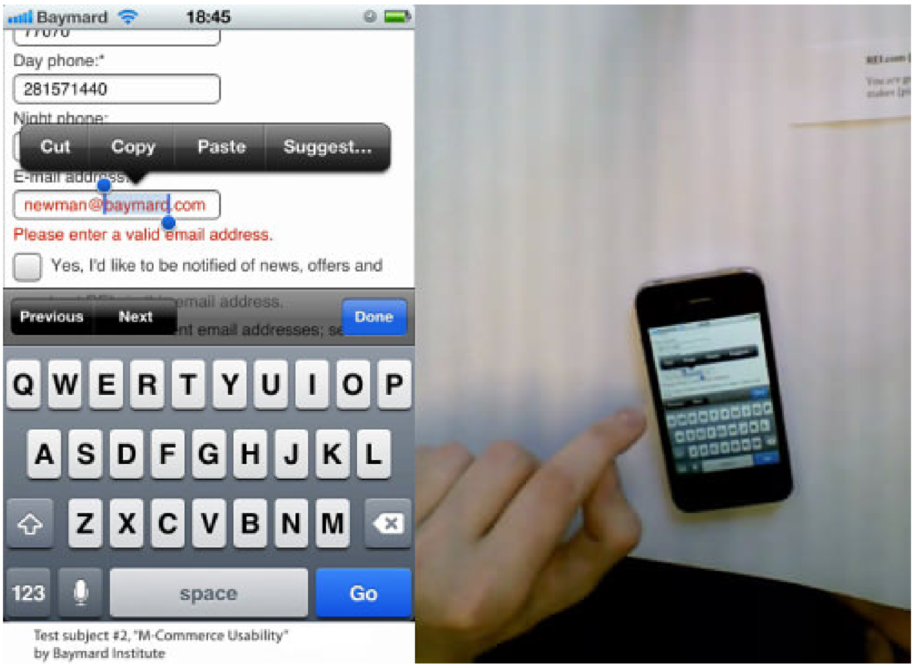
[49] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/disable-auto-correct1_mini.png

You can disable autocorrection by adding an `autocorrect` attribute to the input tag and setting it to `off`, like so:

```
<input type="text" autocorrect="off" />
```

8. Make Fields Long Enough To Fully Display Common Data (And Put Labels Above Fields)

Issue: *Users cannot easily spot errors, let alone correct them, when the field is too short to display the entire inputted data.*



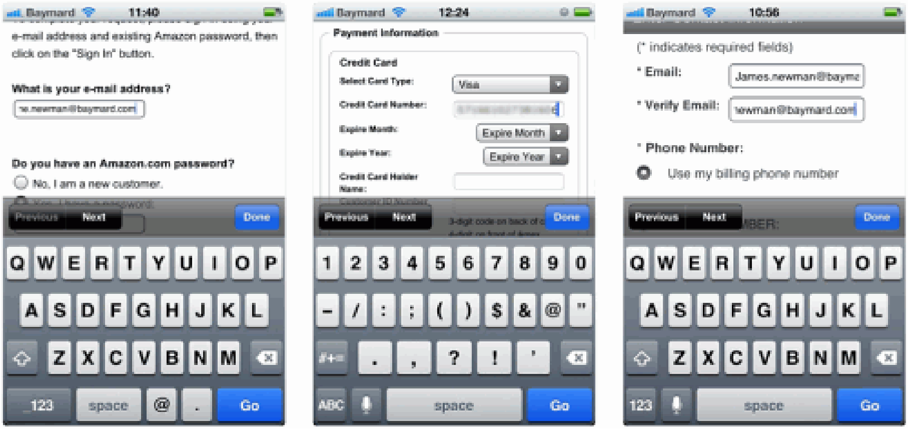
Day phone:*
281571440
Night phone:
E-mail address:
newman@baymard.com
Please enter a valid email address.
☐ Yes, I'd like to be notified of news, offers and

Test subject #2, "M-Commerce Usability" by Baymard Institute

"I can't see what I've typed. Argh. Then I'll delete everything and retype it." On REI, a validation error for an email field that was too short to be displayed in its entirety made it impossible for the subject to see what the actual error was. In trying to pan the inputted text, the subject accidentally enabled both the iOS text-selection tool and the text-replacement tool. (Large preview[50])

Due to the small size of mobile screens, form fields often get so short that users cannot self-validate before submitting their data, and users have a very difficult time correcting any validation errors because they cannot see the inputted data in its entirety.

Form fields that are too short presented problems for many subjects who tried to confirm the validity of their data before submitting it. They often made complaints such as, “I can’t see if the emails are the same when the email field isn’t long enough.” Some examples are seen below.



e-mail address and existing Amazon password, then click on the "Sign In" button.

What is your e-mail address?

ne.newman@baymard.com

Do you have an Amazon.com password?

○ No, I am a new customer.

Payment Information

Credit Card

Select Card Type: Visa

Credit Card Number:

Expire Month: Expire Month

Expire Year: Expire Year

Credit Card Holder Name:

(* indicates required fields)

* Email: James.newman@bayme

* Verify Email: ewman@baymard.com

* Phone Number:

● Use my billing phone number

On the left: Amazon’s email field is too short, despite the abundance of white space. In the middle: United’s credit-card field shows only 15 characters, even though most card numbers are 16 digits. On the right: Macy’s email fields are too short for users to verify whether the two addresses they’ve inputted match. (Large preview[51])

---

[50] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/field-labels-above-1_mini.jpg

[51] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/field-labels-above-2_mini.png

Given how easy it is to make a typing mistake on a mobile device, fields that are not long enough to allow users to validate their data before submission are very harmful to the typing experience. Even worse, they make correcting any validation errors unnecessarily difficult.

Note that in the case of Amazon and the earlier example from REI, the white space is sufficient to make the field much longer, while the other two examples have no additional space to make the fields longer because the labels are all left-aligned. For this very reason, labels should be placed above form fields to allow full use of the space and to display all of the user's data (at a decent font size). Displaying labels to the left of the fields would be acceptable only when the device is in landscape mode (as explained in detail in "Mobile Form Usability: Place Labels Above the Field[52]").

An adequate width for email and address lines is the full screen. Then, adjust the font size of the fields to allow for the full display of reasonably long data, such as `first.lastname@my-company.com`. (The character-length distribution of our own newsletter list shows that 96% of email addresses are 30 characters or fewer.)

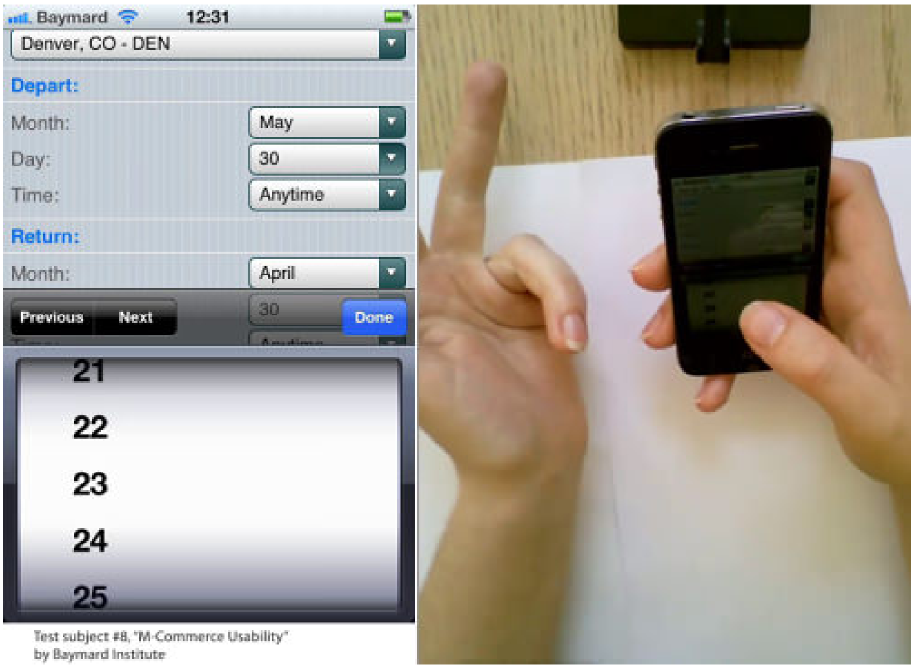
9. *Enable Users To Verify The Inputted Day And Date*

Issue: *Using text fields for dates requires unnecessary mental processing of the user and can cause serious selection errors.*

---

[52] http://baymard.com/blog/mobile-form-usability-label-position

During testing, websites that had only a simple text field or drop-down dialog for date selection presented problems for 80% of the subjects.



Denver, CO - DEN

Depart:

Month: May

Day: 30

Time: Anytime

Return:

Month: April

Test subject #8, "M-Commerce Usability"
by Baymard Institute

This subject was among the 80% who were unsure which date "this Friday" was. So, she decided to count the days on her hand, wanting to make sure she picked the right one. (*Large preview*[53])

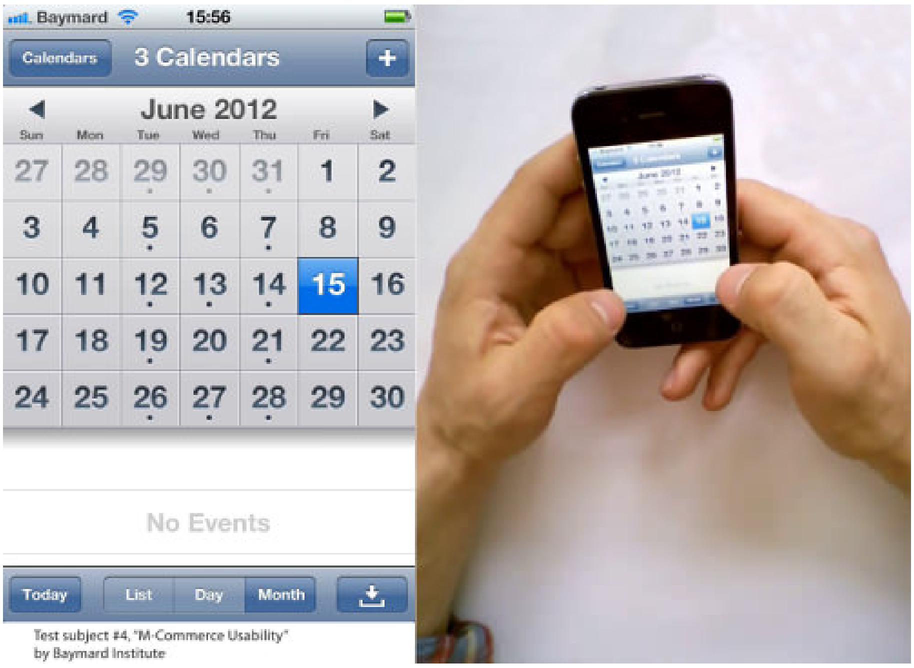
This happened with both Southwest (which uses drop-downs for the month and day) and United (which shows a text field for writing `MM/DD/YYYY`). On both of these websites, the following scenarios occurred:

- A handful of subjects had to count the days on their hand (as explained above).

---

[53] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/date-inputs-1_mini.jpg

- Half of the subjects went off-site and opened the phone's native calendar app to double-check the date for their weekend trip (to confirm "this Friday"). In the instance seen above, this calendar verification goes completely awry because the subject checked the day of June 15th, instead of July 15th, and ended up purchasing a flight ticket for his "weekend" trip that left on a Sunday and returned on a Tuesday.

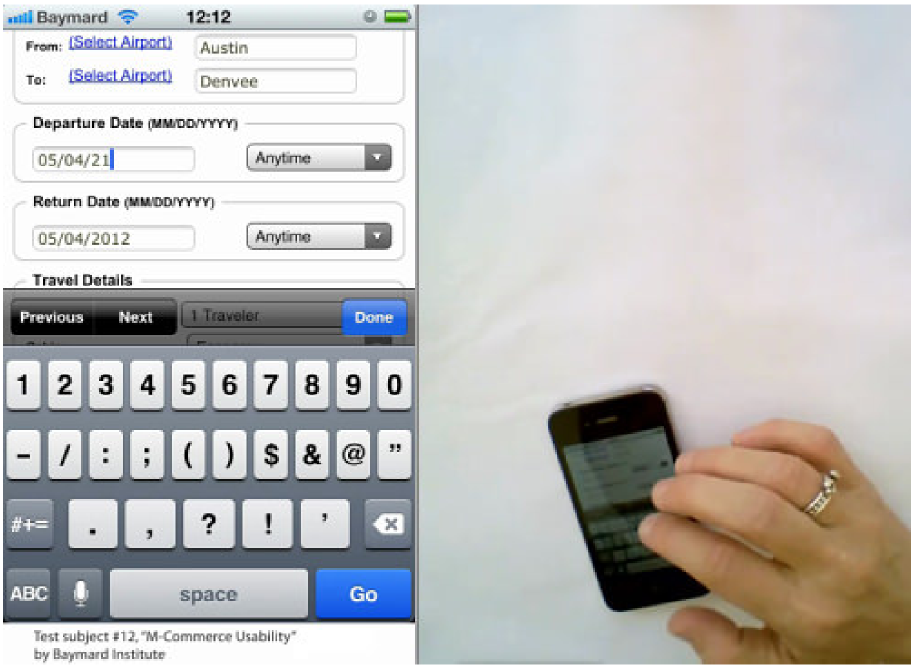


(Large preview[54]*)*

- Lastly, a few struggled with typing and using the text-selection tool to enter the correct date on a website that uses a text field for date selection.

---

[54] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/date-inputs-2_mini.jpg



From: (Select Airport) Austin

To: (Select Airport) Denvee

Departure Date (MM/DD/YYYY) 05/04/21 Anytime

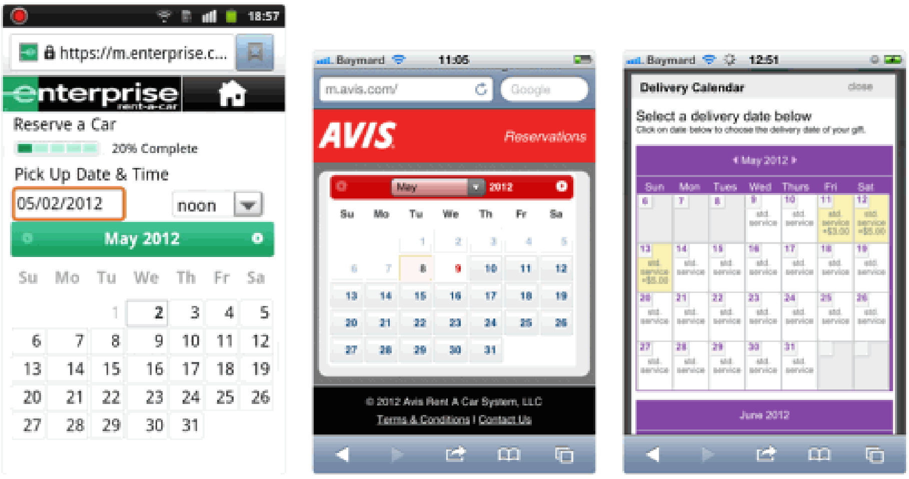
Return Date (MM/DD/YYYY) 05/04/2012 Anytime

Travel Details

1 Traveler

Test subject #12, "M-Commerce Usability" by Baymard Institute

(Large preview[55]*)*



Reserve a Car

20% Complete

Pick Up Date & Time 05/02/2012 noon

May 2012

Reservations

May 2012

© 2012 Avis Rent A Car System, LLC

Terms & Conditions | Contact Us

Delivery Calendar

Select a delivery date below

Click on date below to choose the delivery date of your gift.

May 2012

June 2012

(Large preview[56]*)*

---

[55] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/date-inputs-3_mini.jpg

[56] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/date-inputs-4_mini.png

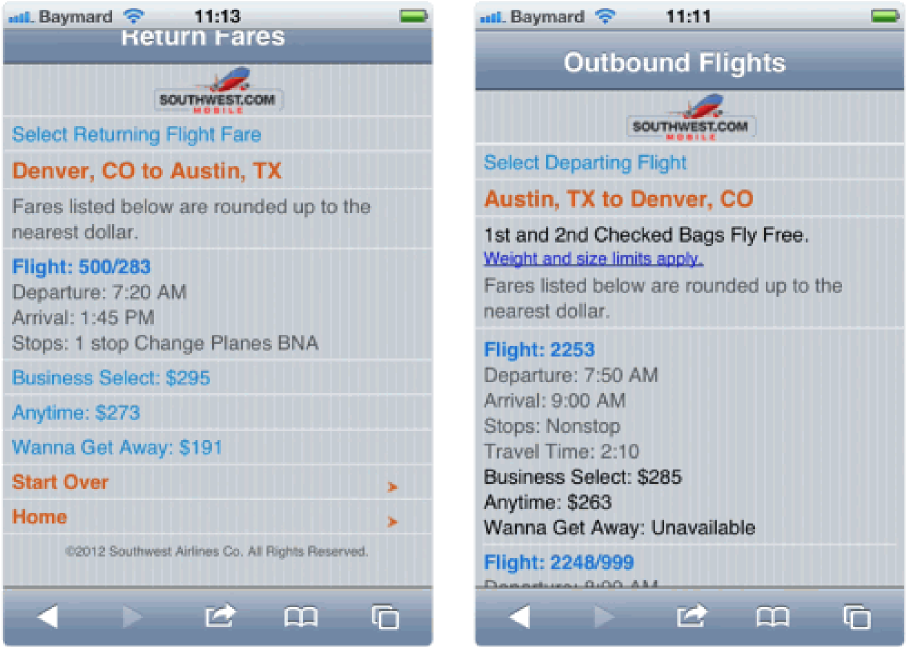
By contrast, on the three test websites that provided a graphical interface for inputting dates in the form of a calendar view (namely, Enterprise, Avis and 1-800-Flowers, seen above), not a single one of these issues arose, and the subjects generally liked being able to verify the day and date they were selecting. This could potentially save customers from incorrectly counting or “verifying” the wrong weekday (as mentioned earlier) and thus booking the wrong date.

While this is an annoyance on desktop as well (since the user would be no better equipped to spot the errors there), the severity and impact on the user’s experience is much greater in mobile when it comes to correcting the erroneous data, because panning and editing truncated data on a three- or four-inch touchscreen is much more cumbersome than using a mouse or keyboard arrows on a desktop. Furthermore, ordering tickets on the wrong day is much less likely on the desktop because the booking form and a separate calendar application can be displayed next to each other — whereas on mobile, only one can be viewed at a time.

Therefore, always provide an interface that enables users to verify the day of their selected date. One option is to display a calendar interface in which the user explicitly selects the date they want. That would simplify the actual selection interface and, more importantly, gives users a chance to verify the day. If you already use a drop-down for date inputs and do not want to replace it, you could instead append the day after each date option (for example, “March 15 – Monday”); although that would require the month to be included in each drop-down day value or, in case a separate drop-down is used to select the month, you would need to dynamically update the day names depending on the currently selected month.

10. Make The Hit Area For Each List Item Distinct

Issue: *With some lists, users simply have no idea where to tap in order to select an item.*



Select Returning Flight Fare

Denver, CO to Austin, TX

Fares listed below are rounded up to the nearest dollar.

Flight: 500/283
Departure: 7:20 AM
Arrival: 1:45 PM
Stops: 1 stop Change Planes BNA

Business Select: $295

Anytime: $273

Wanna Get Away: $191

Start Over

Home

©2012 Southwest Airlines Co. All Rights Reserved.

Select Departing Flight

Austin, TX to Denver, CO

1st and 2nd Checked Bags Fly Free.
Weight and size limits apply.
Fares listed below are rounded up to the nearest dollar.

Flight: 2253
Departure: 7:50 AM
Arrival: 9:00 AM
Stops: Nonstop
Travel Time: 2:10
Business Select: $285
Anytime: $263
Wanna Get Away: Unavailable

Flight: 2248/999

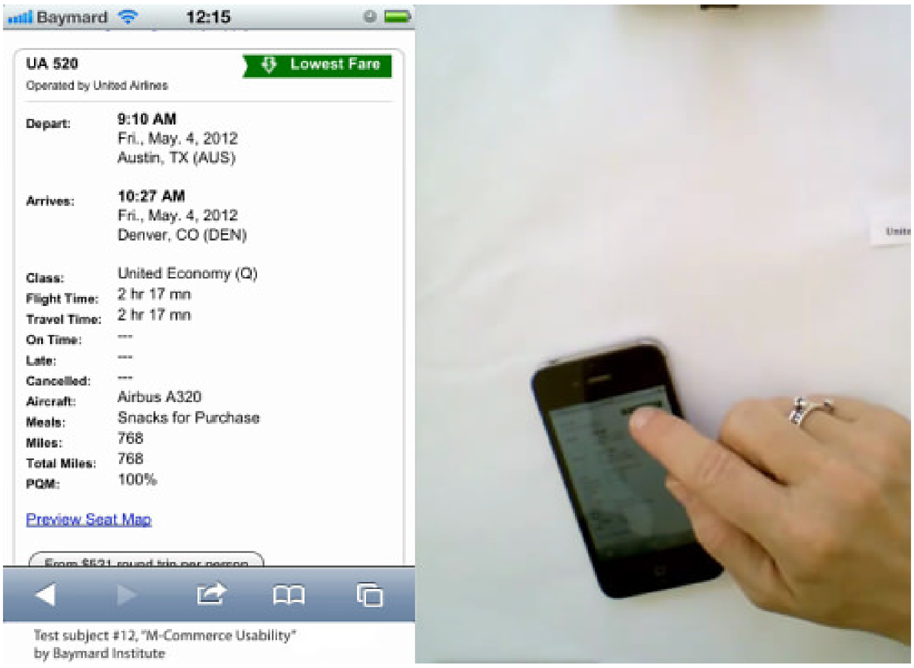
It simply was not clear to subjects what can and cannot be clicked on this page. Note the very inconsistent link styles. Orange is sometimes used for the header, other times for a list item. Separators are sometimes used to set off list items, other times to set off elements of text. Some text is one shade of blue, which sometimes indicates a link, while other links are styled in a darker blue and underlined. Confused yet? The subjects were, too. (Large preview[57])

---

[57] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/1-southwest_mini.png

Can the entire "element" be tapped? Or only the product title? And what about the thumbnail? During testing, multiple issues arose as subjects were unsure of where to tap in order to select an item in a list. This was by far the worst on websites where list items were above the recommended half-screen height. In fact, one subject got completely stuck and was unable to complete her purchase.

The problem was by no means limited to websites with list items that were too tall; it was just worse on those websites. The issue also extended to websites whose list items were normal in size but whose hit areas were unclear, which severely limited the subjects and even resulted in abandonments.



UA 520
Operated by United Airlines

Depart: 9:10 AM
Fri., May. 4, 2012
Austin, TX (AUS)

Arrives: 10:27 AM
Fri., May. 4, 2012
Denver, CO (DEN)

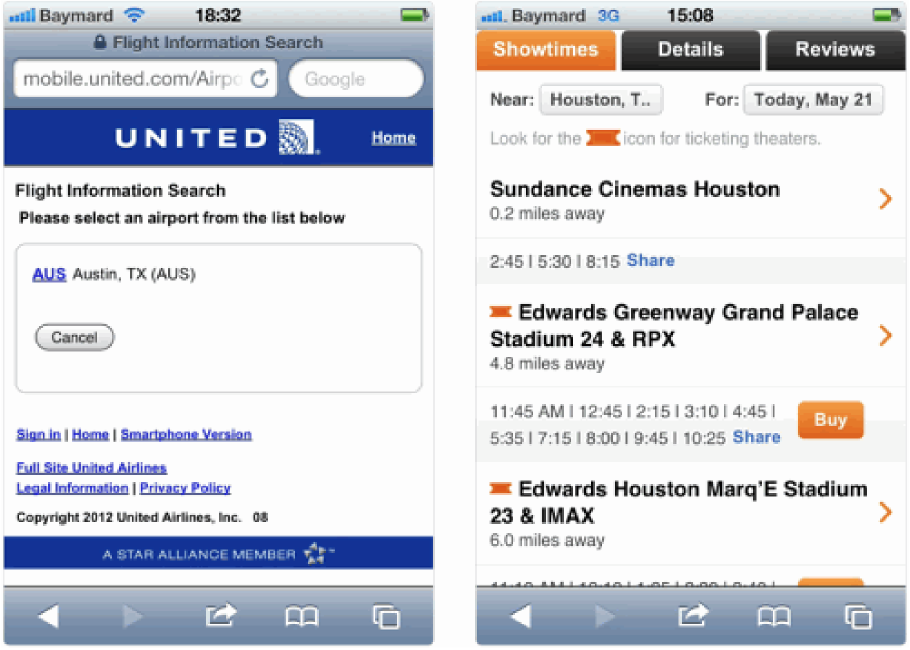
Class: United Economy (Q)
Flight Time: 2 hr 17 mn
Travel Time: 2 hr 17 mn
On Time: ---
Late: ---
Cancelled: ---
Aircraft: Airbus A320
Meals: Snacks for Purchase
Miles: 768
Total Miles: 768
PQM: 100%

Preview Seat Map

From $521 round trip per person

Test subject #12, "M-Commerce Usability"
by Baymard Institute

Note how the subject was trying to click the "Lowest Fare" label, believing this was the button to choose the displayed flight. Besides the primary button being unclear, the list item is also very long. Combined, these two design choices are a surefire way to leave some users in doubt on how to even proceed. (Large preview[58])



Flight Information Search

Flight Information Search
Please select an airport from the list below

AUS Austin, TX (AUS)

Sign in | Home | Smartphone Version

Full Site United Airlines
Legal Information | Privacy Policy

Copyright 2012 United Airlines, Inc. 08

A STAR ALLIANCE MEMBER

Near: Houston, T.. For: Today, May 21

Look for the icon for ticketing theaters.

Sundance Cinemas Houston
0.2 miles away

2:45 | 5:30 | 8:15 Share

Edwards Greenway Grand Palace Stadium 24 & RPX
4.8 miles away

11:45 AM | 12:45 | 2:15 | 3:10 | 4:45 | 5:35 | 7:15 | 8:00 | 9:45 | 10:25 Share

Edwards Houston Marq'E Stadium 23 & IMAX
6.0 miles away

On the left: This subject did not know what to click in order to proceed on United's website. Presumably, this was caused by the single result. With no options to compare and choose between, it was not clear to the subject what to select. On the right: Many subjects did not pick up on the ticket icon and its meaning on Fandango's website. Instead, they assumed that the movie was playing only in theaters where a "Buy" button was shown (which was not the case). (Large preview[59])

The images above show only some of the many instances where it was unclear to subjects what elements are clickable, what the differences are between the different hit areas and, most importantly, where to click in order to select an item in a list. The websites with the far fewest problems with hit areas embraced multiple of the following recommendations:

---

58. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/2-united_mini.jpg
59. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/05/3-united-and-fandango_mini.png

- Make the entire element area clickable. In particular, the thumbnail, product header and price should be clickable and should lead to the product page.
- Style the title as a link (using your primary style for text links).
- Indicate the virtual space with an arrow or similar visual cue, showing that the entire list item will move the user to the next step in the process.
- Consider separate "Buy Now" or select buttons for very long list items — i.e. when a list item could be easily mistaken as pieces of information, rather than a collective entity to be clicked.
- Avoid multiple hit areas within the same visual element — in particular, links or buttons within a list item that lead to different pages.

Designing M-Commerce Websites

Aside from their practical use, these 10 recommendations have hopefully given you a glimpse of just how complex designing an m-commerce website really can be. It's not simply a matter scaling and adding media queries; it's an entirely new platform, and the balancing act is particularly difficult to get right due to the complex tasks involved, such as product finding and product comparison and multi-step processes such as checking out. In many ways, designing and optimizing an m-commerce website is much more difficult and often requires more "intelligent" website features than a traditional desktop e-commerce website. It comes as no surprise that IBM reports average m-commerce conversion rates that are roughly half of its desktop e-commerce conversion rates.

In general, the more complex a mobile website's features, the more likely the experience should be significantly different from the desktop experience. The greater the difference between the two, the stronger the argument for having a standalone mobile website. Of course, maintaining two versions of the same website comes with many issues, especially with maintenance (of content, code and design). A responsive design is a better solution in some cases, but it depends very much on the size and complexity of the website, as well as on your organization's strengths and weaknesses. It's a nuanced issue, with many gray areas and with good arguments both for and against having a standalone mobile website.

If you can achieve this by designing for mobile first, then a responsive design could be truly great — not just in its maintainability, but also its user experience. Be clear, however, that if your existing website is complex, merely scaling it down to different devices won't be enough to offer a great mobile experience. And if messing with the full website's existing structure and content isn't an option, then you might be forced to create a standalone mobile website in order to provide a decent experience — although maintaining content and code on the two separate platforms in parallel could turn out to be both expensive and messy.

Thus, getting an m-commerce website right tends to be very resource-demanding, as you account for all of the nuances. But the opportunities are great. This is a new world, and it will take time before best practices stabilize. Spending time and money on a mediocre m-commerce website is wasteful. Yes, making the website great will require significant investment, but the potential payoff is high, too. M-commerce is a window of opportunity; it enables you to distinguish yourself from competitors and to position yourself well to grab a share of this market, which is expected to reach $86 billion by 2016. ❧

Note: You can find out more about m-commerce usability guidelines in the (non-free) report "M-Commerce Usability[60]*" by the author of this chapter.*

---

[60] https://baymard.com/mcommerce-usability

An E-Commerce Study: Guidelines For Better Navigation And Categories

BY CHRISTIAN HOLST ❧

Product findability is key to any e-commerce business — after all, if customers can't find a product, they can't buy it. Therefore, at Baymard Institute, we invested eight months conducting a large-scale usability research study on the product-finding experience. We set out to explore how users navigate, find and select products on e-commerce websites, using the home page and category navigation.

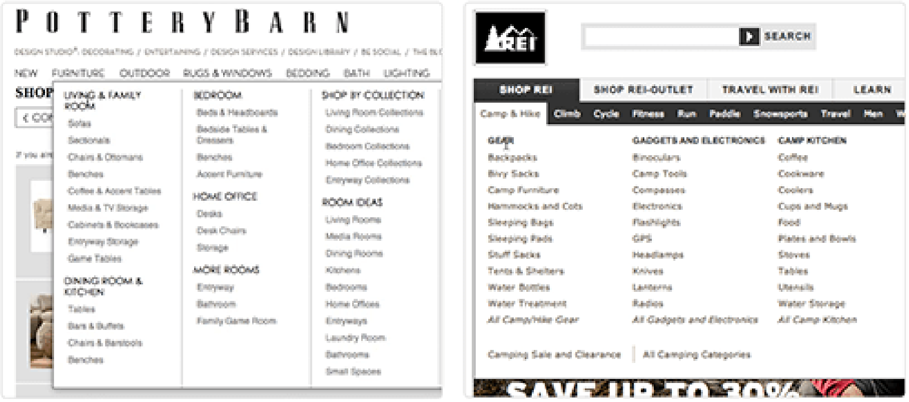
The one-on-one usability testing was conducted following the "think aloud" protocol, and we tested the following websites: Amazon, Best Buy, Blue Nile, Chemist Direct, Drugstore.com, eBags, GILT, GoOutdoors, H&M, IKEA, Macy's, Newegg, Pixmania, Pottery Barn, REI, Tesco, Toys'R'Us, The Entertainer, and Zappos. The pages and design elements that we tested include the home page, category navigation, subcategories, and product lists.

Throughout the test sessions, the subjects would repeatedly abandon websites because they were unable to find the products they were looking for. Indeed, the subjects encountered over 900 usability-related problems, despite the websites having been built for multi-million dollars. All of these usability issues have been distilled into 79 concise guidelines in a report titled "Homepage & Category Usability." In this chapter, we'll go over seven of the guidelines.

1. *Don't Make Parent Categories Shallow. (Also, Have Parent Categories.)*

Issue: *When the hierarchy of categories is just labels and headers, it breaks the expectations of users and forces them into narrower sections than they desire, preventing explorative product browsing.*

Grouping subcategory options in drop-down menus and other areas is a vital part of making them both manageable and scannable; and most websites have done so. Surprisingly, though, on many of the websites tested, the top level of the drop-down categories was only text labels, not actual clickable elements. This conflicted with the expectations of the majority of the test subjects, who anticipated that the headers would be clickable.



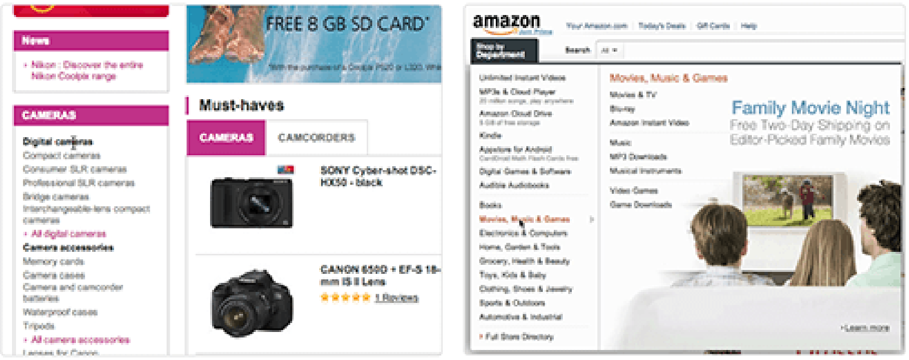
The Pottery Barn website. (Larger view[61])

"I'd think that you can click all of it," said a subject of Pottery Barn's website (above left) when looking at the drop-down menu, "and that the black items will take me to a general page with all 'Living room' items." Alas, upon hovering over the black heading, the mouse cursor changed to a text-selector rather than a pointing hand, and the subject concluded that it wasn't clickable after all. The same type of shallow parent headings was found on REI's website (above right).

Most subjects expected that these headings would be clickable and often tried clicking them, despite the cursor indicating unclickability. The subjects wanted to keep a fairly broad scope of products, in the hope of landing on a page that displays a curated set of subcategories that would assist them in selecting a more defined scope (as opposed to a page listing products). Making parent categories a part of the product hierarchy (and not just be shallow text labels) is critical in supporting explorative product browsing, so that users who haven't fully decided what they want or who are looking for inspiration on what to purchase can dip their toes in broader categories before diving into narrowly defined ones.

---

61. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/potterybarn-rei.png



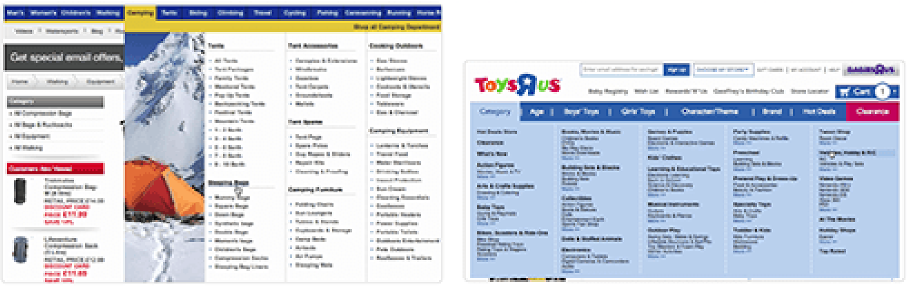
Pixmania.com (left) and Amazon.com (right). (Larger view[62]*)*

On Pixmania's website (above left), a subject tried to select the generic "Digital Cameras" category, instead of specific camera types. He didn't want to specify a camera type subcategory yet because he was still unsure about the exact differences and hadn't decided on his particular needs. On Amazon (above right), another subject hovered over "Shop by Department" and tried to click "Movies, Music & Games," which is orange when hovered over (Amazon's hover style for links in the drop-down menu is orange and underlined), but nothing happened. She tried again before realizing that she had to choose one of the subcategories on the left.

On websites in which headings are actually selectable parent categories (i.e. part of the website's taxonomy), the subjects often ended up relying on them for an initial overview of an entire category, and from there made informed decisions about which subcategories to select.

---

62. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/pixmania-amazon.png



Larger view[63]

This critical guideline isn't limited to drop-down menus, but applies to any representation of a hierarchy of categories. Examples would be the categories displayed in the sidebar or in the site map of a product catalog, as well as permanently visible main navigation bar options (i.e. very top-level categories). In all of these cases, a parent category should exist and be selectable, as opposed to being a shallow text label.

2. *Put The Same Subcategory Within Multiple Main Categories When Necessary.*

Issue: *When a subcategory could logically appear in multiple parent categories but appears only in one, users are often led astray.*

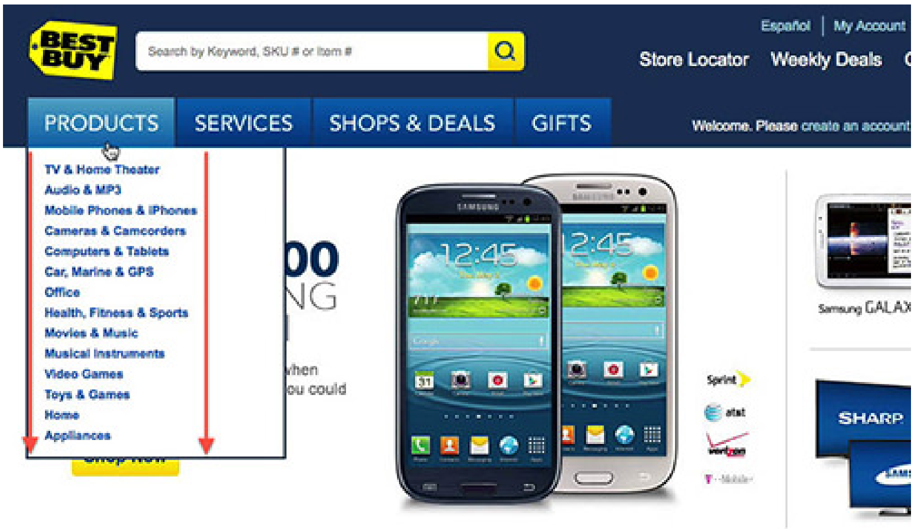
Depending on your product catalog, you might end up with subcategories that users would expect to find in multiple parent categories. For example, users might look

---

[63] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/gooutdoors-toysrus.png

for a coffee table in both the “Living Room” and “Tables” sections, as well as in the “Accessories” subcategory of “Sofas.”

While the ideal solution is to craft a completely unambiguous set of top-level categories, this is not always realistic, and sometimes popular demand requires a fuzzy category to be introduced in the top-level categories. Therefore, to avoid the severe usability problem of users not being able find a subcategory where they expect (which often lead subjects to conclude that the store simply doesn’t carry the item), consider putting the subcategory in multiple parent categories.



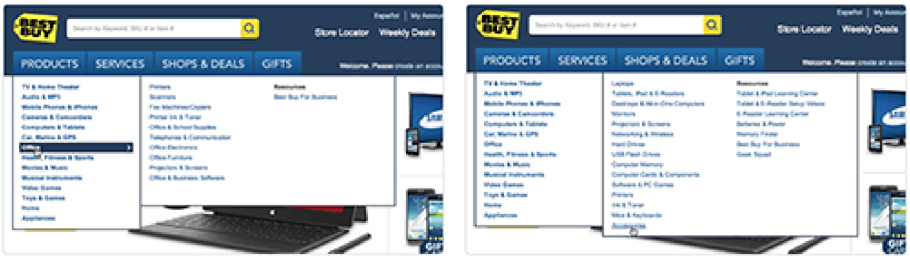
BestBuy.com (Larger view[64])

One subject was unsure whether she would find computer adapters in “Office” or “Computers & Tablets,” because

---

[64] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/ecommerce-homepage-and-category-usability-01.jpg

the former describes a usage context, while the latter describes the type of product. Based on the subcategory options, she found the latter to be the correct one. However, in “Computers & Tablets” (above right), she was in doubt about whether to look in “Batteries & Power” or in the generic “Accessories.” Luckily, both led her to adapters. Also, notice how Best Buy has an “Ink & Toner” category within “Computers & Tablets,” as well as a “Printer Ink & Toner” category within “Office,” allowing users to find the category in any of the potentially matching parent categories.



Larger view[65]

Consider the “Office” category in the Best Buy example above. All of its subcategories could be in other top-level categories, yet the “Office” section is presumably still needed to support the large portion of Best Buy’s customers who shop with a “home versus work” mindset. In these instances, featuring very important subcategories within multiple parent sections would be relevant (assuming that they semantically fit them equally well) be-

---

[65] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/bestbuy.png

cause users will look in the one that best fits their context.

In terms of implementation, there are two main approaches to featuring the same subcategory in multiple parent categories. Our tests showed no conclusive evidence for one method over another. Each has its advantages and disadvantages:

- You could put the subcategory in one place in the website's taxonomy, and then simply link to that destination in the other parent categories (for example, in the drop-down menu). The user would then jump scope to the "real" category, regardless of where they access it from. This could cause confusion if the user knows they have clicked a link in a menu named "Office" but then landed in the "Electronics" section (as indicated by the breadcrumbs).
- Alternatively, you could duplicate the categories so that each is a unique entry in the website's hierarchy, with proper breadcrumb paths, etc. The downside here is technical complexity. Products must be tagged consistently across multiple duplicated subcategories; the search engine's auto-suggestions must not suggest any one category more than once in a single search; and so on. Furthermore, implementing this requires canonical pages to be set up in order to avoid SEO penalties for the duplicate pages.

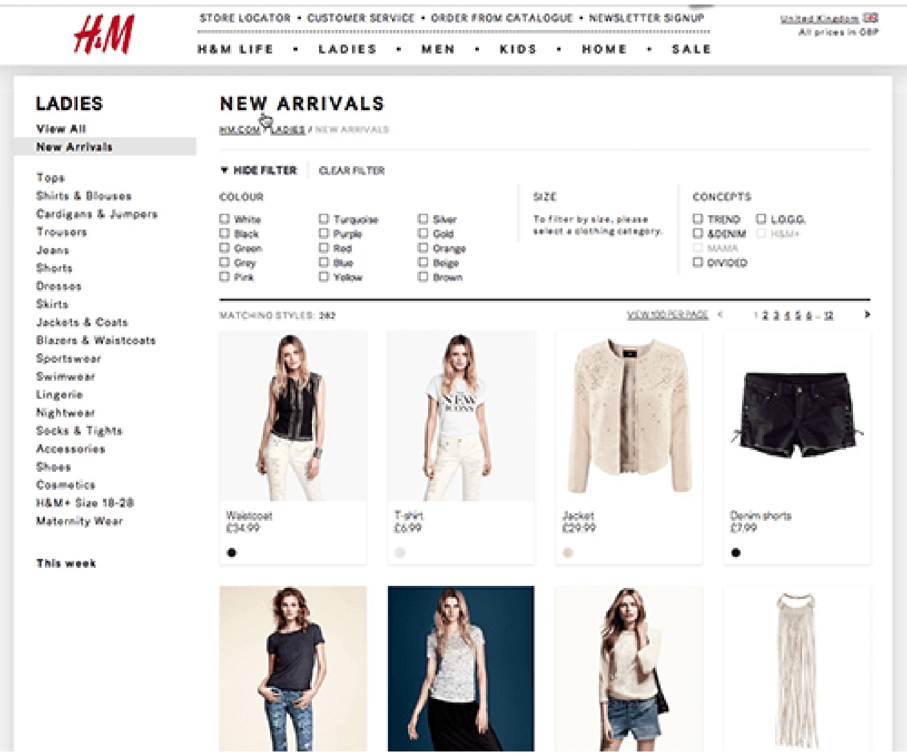
3. Consider Having A "What's New" Category Or Filter.

Issue: *Some users want to see what's new in your store – say, to be inspired or when buying for a friend – without having to plow through previously browsed products.*

"H&M is one of the websites that I check from time to time," a test subject explained, "so I might pick 'New Arrivals,' like this, and see what new stuff they have." Many subjects who had experience with a website or brand that we tested would look for a "What's New" category. This was especially true if they cared deeply about the products and brand and already had a good idea of the product catalog and, thus, wanted to check out what had arrived since their previous visit.

Clearly, a "What's New" filter-based category is a great way to support return visitors, so that they can easily identify what new products have arrived since their last visit. But there are other use cases for "What's New."

In seasonal industries, such as clothing and groceries, "What's New" helps users to see what's currently fresh and in season. "What's New" shouldn't be taken too literally. For example, fresh figs aren't exactly new because they are in stores every year, but they are new to stores around summertime, and most users would expect to find them in a "What's New" type of section, regardless of whether they are technically new (for example, the SKU might be the same). Indeed, the category or filter shouldn't necessarily be called "What's New"; depending on the product type, a label such as “New Arrivals” or “In Season” might be more appropriate.



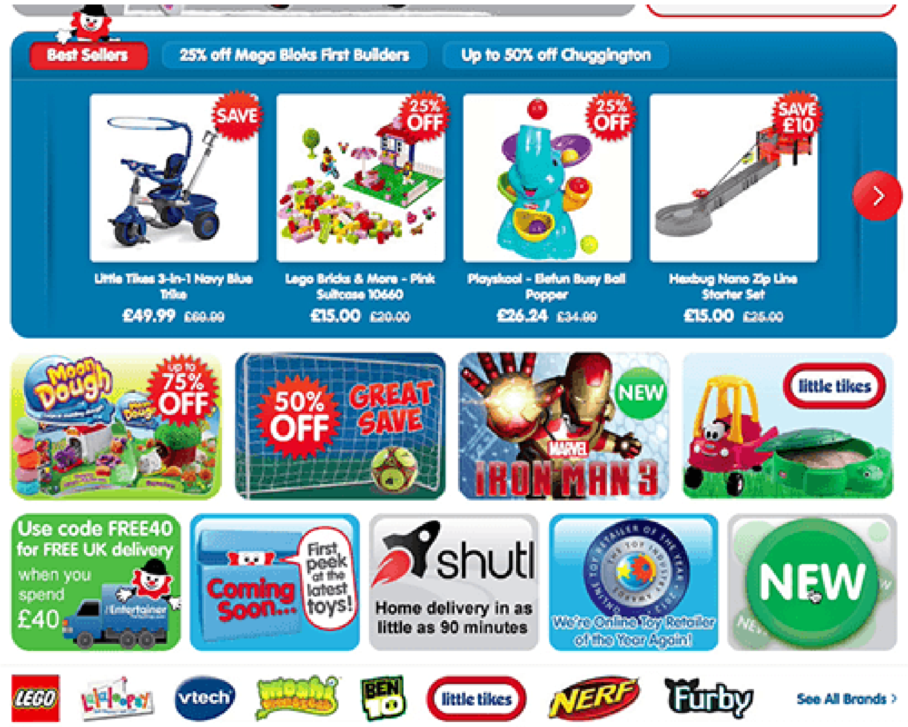
To filter by size, please select a clothing category.

“New Arrivals” is particularly meaningful in seasonal industries, where the newness factor could be a major part of the purchasing decision. (Larger view[66]*)*

Some gift-buyers want to see new releases to buy something interesting and novel. The recentness of a product also lowers the chance that the gift recipient already owns the product, which is particularly important when the buyer doesn’t know the recipient well.

---

[66] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/HM-whats-new.png


Best Sellers
25% off Mega Bloks First Builders
Up to 50% off Chuggington
SAVE
25% OFF
25% OFF
SAVE £10
Little Tikes 3-in-1 Navy Blue Trike
£49.99 £60.00
Lego Bricks & More - Pink Suitcase 10660
£15.00 £20.00
Playskool - Befun Busy Ball Popper
£26.24 £34.99
Hexbug Nano Zip Line Starter Set
£15.00 £25.00
Moon Dough
up to 75% OFF
50% OFF
GREAT SAVE
NEW
IRON MAN 3
little tikes
Use code FREE40 for FREE UK delivery when you spend £40
Coming Soon...
First peek at the latest toys!
shutl
Home delivery in as little as 90 minutes
We're Online Toy Retailer of the Year Again!
NEW
LEGO
vtech
little tikes
NERF
Furby
See All Brands ›

Unsure of what to buy for an eight-year-old nephew, a subject decided to open the "New" category because "kids often want the latest thing." *(Larger view*[67]*)*

Making "What's New" a filter, rather than a separate site-wide category, is often a good idea, so that users can see new items within sections. This works well in several cases: for repeat visitors who want to check only the new items in a particular category; in seasonal industries where a user is interested only in what's in season in a particular section, such as "Fruits"; and, last but not least, for gift-buyers who need to pick a section that's relevant to the recipient before considering how to find the best item in that section.

---

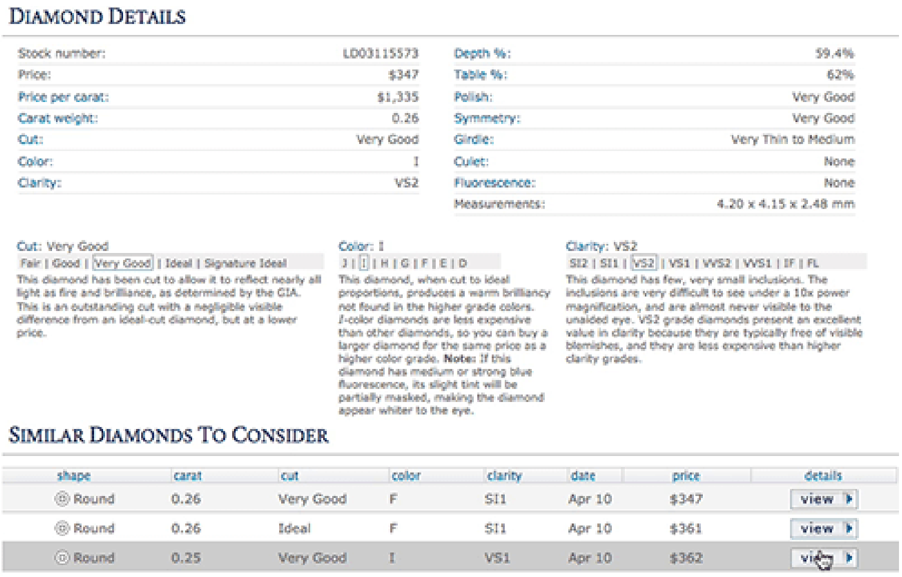
[67] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/theentertainer-whats-new.png

"What's New" can be integrated as an option in the filtering tools or as part of the category navigation (even if it's actually a filter that's presented as a subcategory). During testing, the subjects responded well to seeing it in both the filtering tools and in the category navigation of websites in seasonal industries. But they can clutter up category navigation quickly if not implemented carefully (i.e. if the options are not progressively disclosed as categories are selected). In industries in which newness isn't as important, a filtering option would probably suffice.

4. Suggest Both Alternative And Supplementary Products On Product Pages.

Issue: *Alternatives, substitutes, add-ons and accessories to the product that the user is currently viewing are unreasonably difficult to find without good upselling and cross-selling on the product page.*

Upselling and cross-selling is great for business. And, when implemented appropriately, they can be great for usability, too. Suggesting supplementary products is great for users who are looking for add-ons or accessories to the product they are viewing, while suggesting similar products is great for users who are searching for alternatives or substitutes.



DIAMOND DETAILS

Stock number:	LD03115573
Price:	$347
Price per carat:	$1,335
Carat weight:	0.26
Cut:	Very Good
Color:	I
Clarity:	VS2

Depth %:	59.4%
Table %:	62%
Polish:	Very Good
Symmetry:	Very Good
Girdle:	Very Thin to Medium
Culet:	None
Fluorescence:	None
Measurements:	4.20 x 4.15 x 2.48 mm

Cut: Very Good

Fair | Good | Very Good | Ideal | Signature Ideal

This diamond has been cut to allow it to reflect nearly all light as fire and brilliance, as determined by the GIA. This is an outstanding cut with a negligible visible difference from an ideal-cut diamond, but at a lower price.

Color: I

J | I | H | G | F | E | D

This diamond, when cut to ideal proportions, produces a warm brilliancy not found in the higher grade colors. *I*-color diamonds are less expensive than other diamonds, so you can buy a larger diamond for the same price as a higher color grade. **Note:** If this diamond has medium or strong blue fluorescence, its slight tint will be partially masked, making the diamond appear whiter to the eye.

Clarity: VS2

SI2 | SI1 | VS2 | VS1 | VVS2 | VVS1 | IF | FL

This diamond has few, very small inclusions. The inclusions are very difficult to see under a 10x power magnification, and are almost never visible to the unaided eye. VS2 grade diamonds present an excellent value in clarity because they are typically free of visible blemishes, and they are less expensive than higher clarity grades.

SIMILAR DIAMONDS TO CONSIDER

shape	carat	cut	color	clarity	date	price	details
Round	0.26	Very Good	F	SI1	Apr 10	$347	view
Round	0.26	Ideal	F	SI1	Apr 10	$361	view
Round	0.25	Very Good	I	VS1	Apr 10	$362	view

Larger view[68]

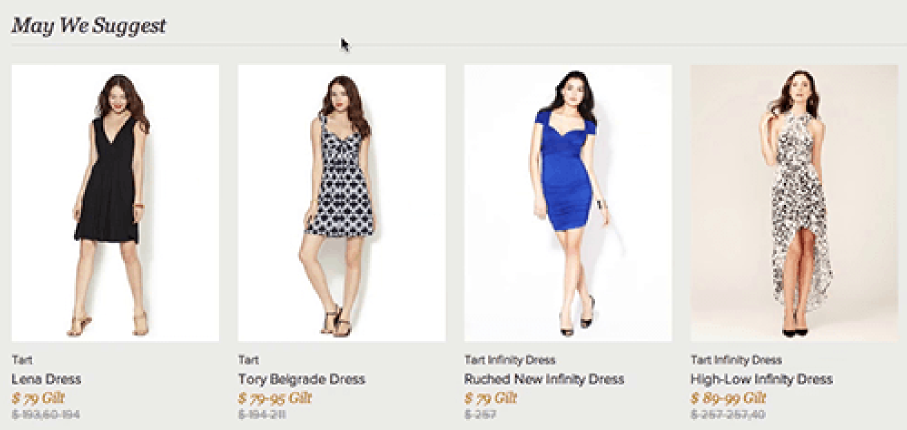
"It's like when you look for movies online. If I liked this one, then I might also like these. That's pretty smart," a subject explained when stumbling upon the "Similar Diamonds to Consider" on the product page for Blue Nile shown above. Suggesting substitute products is an effective way to keep the user on product pages that don't match their criteria.

If the user arrives on a product page that turns out not to match their criteria, they will either give up and abandon or look for alternatives or substitutes. Luckily, most users are patient in the beginning and opt for the latter, but they will quickly grow tired if the only way to browse alternatives is to go back to the overview list of products.

---

[68] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/bluenile-lack-of-upsell.png

This is where suggesting similar products helps. By listing alternatives and substitutes directly on the product page, the user can go directly from one product to the next. This much richer display of information about the product keeps the user engaged on the page and close to the "Add to Cart" button and checkout process. Good suggestions of similar products also help the user find alternatives or substitutes across the website's entire product catalog, not only easing the browsing experience but also enhancing product findability (and enabling cross-sectional navigation via breadcrumbs).



Larger view[69]

"Sometimes they have some looks or some ideas, or something," a subject explained after scrolling to the end of the product page on Gilt shown above. While the "May We Suggest" suggestions are great, the subject had already found a dress (on the product page she was currently on)

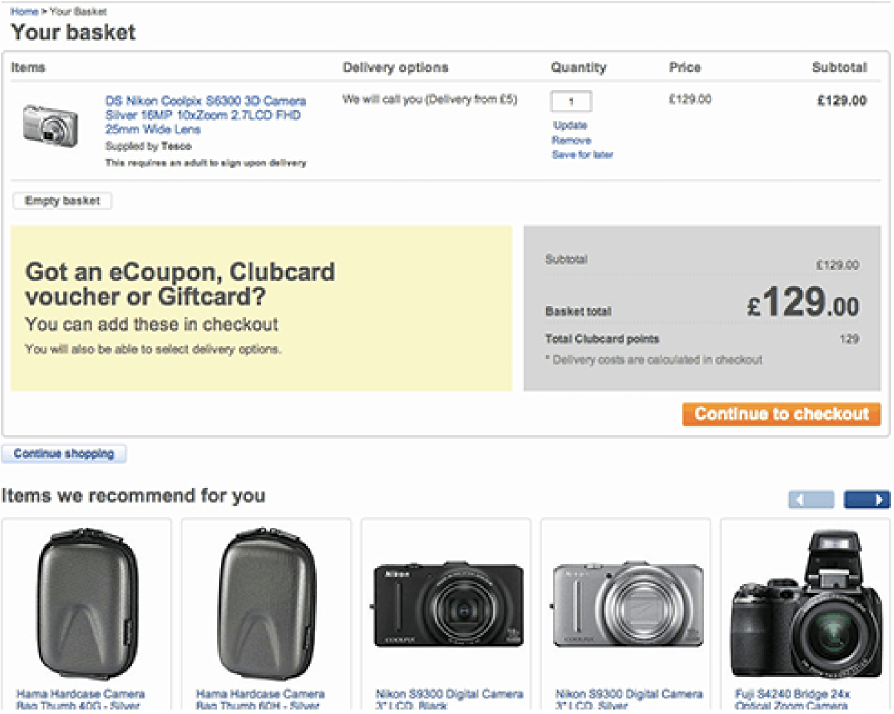
---

[69] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/gilt-lack-of-crosssell.png

and wanted to complete her outfit with a pair of shoes to go with the dress. Unfortunately, Gilt offered only alternative products (i.e. other dresses) and not add-ons or accessories (shoes, jewelry, makeup, etc.).

While suggestions for similar products are great, they often aren't enough. Users will often want suggestions of add-ons and accessories, too. After deciding to purchase a product, some users will want to buy additional — supplementary — products along with it, to "complete the look" or "finish the package." A user buying a camera is likely to want a case for it. Yet finding such supplementary products is often a hassle. Even if the website has a subcategory for accessories, the user would have to go back to the product list, select the subcategory and apply the right compatibility filters (which works only for category browsing, not search).

With a list of add-ons and accessories directly on the product page, the user would easily be able to find products to supplement their purchase. Much like suggestions for similar products, suggestions for supplementary products ease the user's browsing experience, enhance product findability, and — to a great extent — enable cross-sectional navigation. Not to mention its obvious business appeal.



Home > Your Basket

Your basket

Items	Delivery options	Quantity	Price	Subtotal
DS Nikon Coolpix S6300 3D Camera Silver 16MP 10xZoom 2.7LCD FHD 25mm Wide Lens Supplied by Tesco This requires an adult to sign upon delivery	We will call you (Delivery from £5)	1 Update Remove Save for later	£129.00	£129.00

Got an eCoupon, Clubcard voucher or Giftcard?
You can add these in checkout
You will also be able to select delivery options.

Subtotal	£129.00
Basket total	£129.00
Total Clubcard points	129

* Delivery costs are calculated in checkout

Items we recommend for you

Hama Hardcase Camera Bag Thumb 40G - Silver

Hama Hardcase Camera Bag Thumb 60H - Silver

Nikon S9300 Digital Camera 3" LCD, Black

Nikon S9300 Digital Camera 3" LCD, Silver

Fuji S4240 Bridge 24x Optical Zoom Camera

Larger view[70]

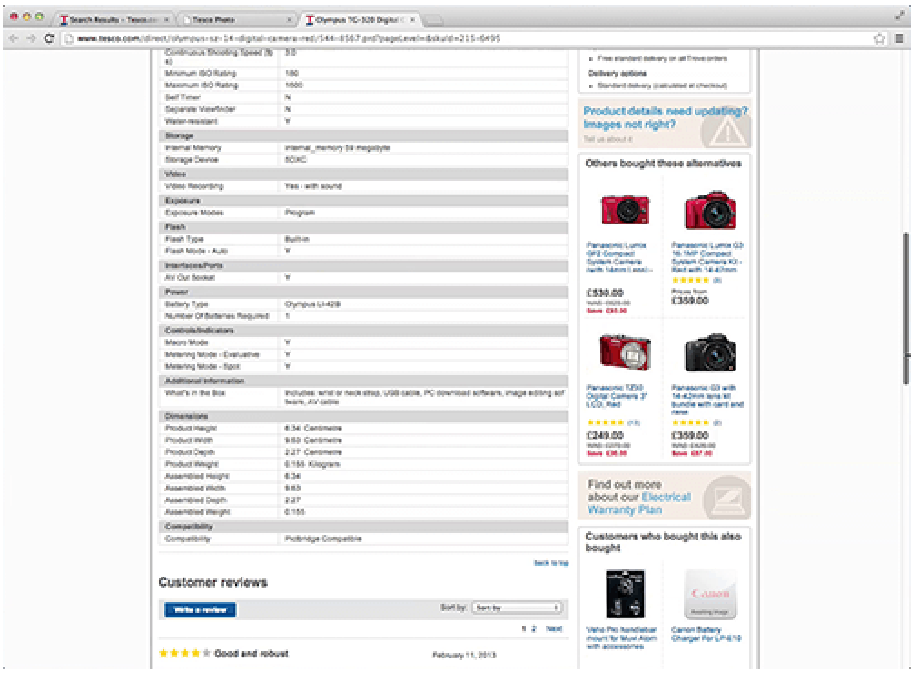
"When they say 'Recommended for you,' I assume they will fit," a subject explained, referring to the camera cases displayed after adding a Nikon Coolpix pocket camera to his cart on Tesco (above). It turned out that one of the two recommended cases didn't fit the camera.

When suggesting supplementary products, label them appropriately if compatibility is an issue in your industry. Many of the subjects assumed that any accessories suggested would be compatible with the product they were viewing or had just added to their cart. Only when the suggested products were explicitly labeled as being based on the behavior of other users (for example, "Other cus-

---

[70] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/tesco-recommended-bags.png

tomers also bought") did the subjects not assume them to be compatible. Be careful in labelling behavior-based suggestions for supplementary products as "recommended" if you can't guarantee their compatibility with the product they are being suggested to complement.


Product details need updating? Images not right?
Others bought these alternatives
Find out more about our Electrical Warranty Plan
Customers who bought this also bought
Customer reviews
Write a review
Good and robust

Larger view[71]

"Something which is similar that other customers visited or bought," a subject mumbled to himself when glancing over the sidebar shown above. Tesco helps its users find both alternative and supplementary products by including lists of both "Others bought these alternatives" and "Customers who bought this also bought" in the sidebar of its product pages. (And unlike on its shopping-cart

---

[71] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/tesco-both-cross-and-up-sell.png

page, Tesco gets the labeling right here by clearly indicating that the lists are based on the behavior of other customers.)

Given that users want suggestions for both similar and supplementary products, implementing both on product pages is recommended. The lists don't have to be located near each other, although they could be, as long as they aren't mixed. The subjects responded poorly when the criteria or theme of the product suggestions was not clear. Therefore, keep suggestions for similar products and supplementary products in distinct groups, but be sure to have both.

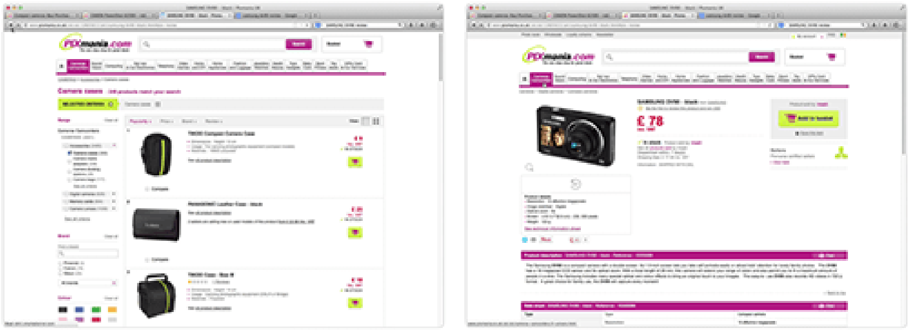
While basing these suggestions on the behavior of other users can be effective, exercise care. Tesco's suggestions for supplementary products consisted entirely of memory cards, even though many other relevant add-ons and accessories are obvious, such as cases, lenses and batteries. So, either manually curate the suggestions or have the system generate them based on a broad range of factors, so that a diverse set of complementary product types is shown.

5. List "Recently Viewed Items."

Issue: *Refinding a previously visited product becomes needlessly complex when the user has to rely on the browser's native "Back" button or has to renavigate the categories or reuse search.*

During testing, subjects often wanted to return to a previously visited item – sometimes to check whether certain features of the previous item were compatible with the new one, other times to compare two products before deciding on one to purchase, and still other times to return to a certain product scope from where they could use the breadcrumbs to climb back up the category hierarchy.

Whatever the reason, the subjects simply wanted to refind a previously viewed product. Yet, on websites without a “Recently viewed items” feature, the only ways to do this were through repeated clicking of the browser’s “Back” button (an option that occurred only to some subjects) or by searching for it or plowing through the product categories once again.



Larger view[72]

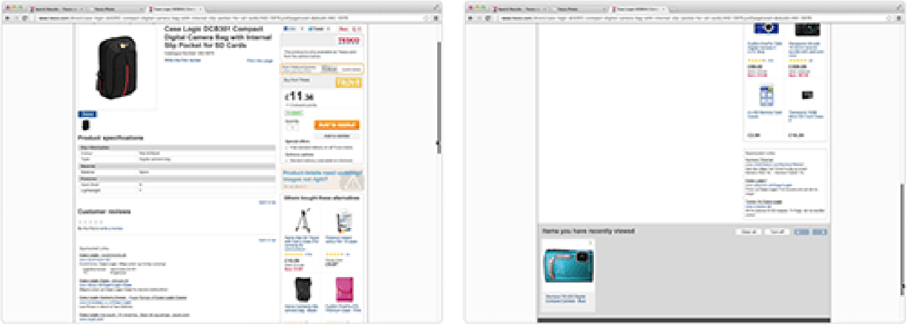
When looking for a camera case on Pixmania (above), this subject realized that he needed the name of the camera he chose. He went back to the product page using the browser’s “Back” button, then reopened the drop-down menu, then opened the “Camera Cases” subcategory in a new tab. A list of “Recently viewed items” would have greatly simplified this process.

---

[72] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/pixmania.png

A list of “Recently viewed items” typically consists of a row of products that the user has previously visited. It is a kind of history-based breadcrumb trail (except that it typically includes only products, not categories or other pages). The list tends to be located towards the bottom of the product page – sometimes even in the footer – but is sometimes given more prominence in a sidebar.

However, the list should be available on all pages of the website (not just the product page), because returning to a previously visited item would be just as welcomed by users who find themselves lost on a category page. The footer has the benefit of being out of the way most of the time; and then when subjects wanted to change scope or refind an item, most scrolled to the bottom of the page, likely looking for cross-sectional navigational such as “Related Items,” and thus discovering the “Recently viewed items” list.

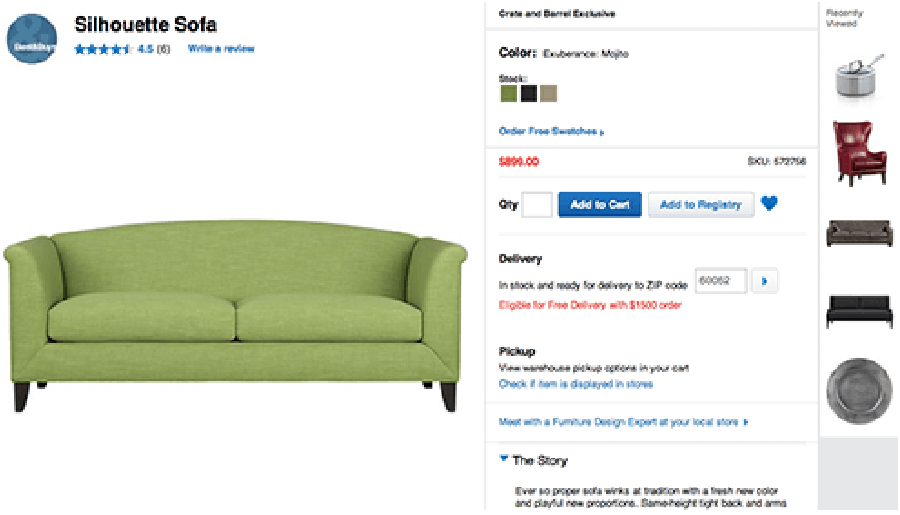


Larger view[73]

---

[73] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/Tesco-recently-viewed.png

On Tesco (above), refinding a previously visited product is made easy by the “Items you have recently viewed” list, which is integrated in the footer on all category and product pages. Compare how easy it was for this subject to check the camera’s dimensions with the previous Pixmania example.



Color: Exuberance: Mojito

$899.00

SKU: 572756

In stock and ready for delivery to ZIP code 60062

Eligible for Free Delivery with $1500 order

View warehouse pickup options in your cart

Check if item is displayed in stores

Ever so proper sofa winks at tradition with a fresh new color and playful new proportions. Same-height tight back and arms

Another location for the “Recently viewed items” list is the sidebar, as seen here on Crate & Barrel. (Larger view[74])

With this list readily available throughout the website, users are assured that refinding products will be easy, and they are more likely to explore other items because they know that returning to a favorite won’t be a hassle. Combined with breadcrumbs, users enjoy a powerful combination that facilitates both history-based cross-sectional navigation and section jumping. Show “Recently viewed items” to everyone, then, without requiring users

---

[74] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/Crate-Barrel-recently-viewed-items.png

to sign in; the list should be session-based, functioning much like a shopping cart.

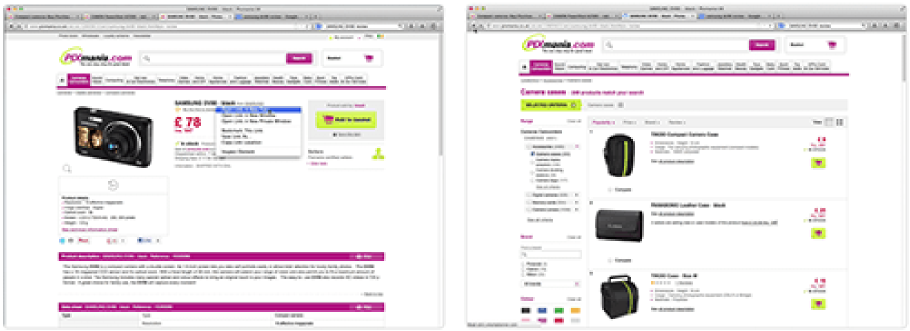
Because the list is automatically generated for users, a couple of privacy features are worth considering. While the vast majority of users will enjoy seeing "Recently viewed items," a few will want to hide the items because they don't want others to know or because they're on a public computer. In such cases, consider two features: "Clear all" and "Disable list."

6. Create Dedicated Pages That List Compatible Products.

Issue: *Users have a difficult time finding compatible products and verifying their compatibility when the website doesn't explicitly state their compatibility or link to the corresponding products.*

Finding a spare adapter for your laptop or buying a camera and matching case might sound like trivial tasks, but during testing, it turned out to be extremely difficult for subjects, who had a completion rate of only 35%. This means that 65% had to give up or, worse, ended up purchasing a product that they believed was compatible but was, in fact, not.

The subject below opened the camera page in a new tab, but even with the camera's dimensions close at hand, finding a matching case proved to be tiresome, as he still had to open the page for the camera case, go to the specifications, locate the dimensions, compare it to the camera's, and repeat this for every single case. After a few attempts he gave up, like 65% of the subjects.

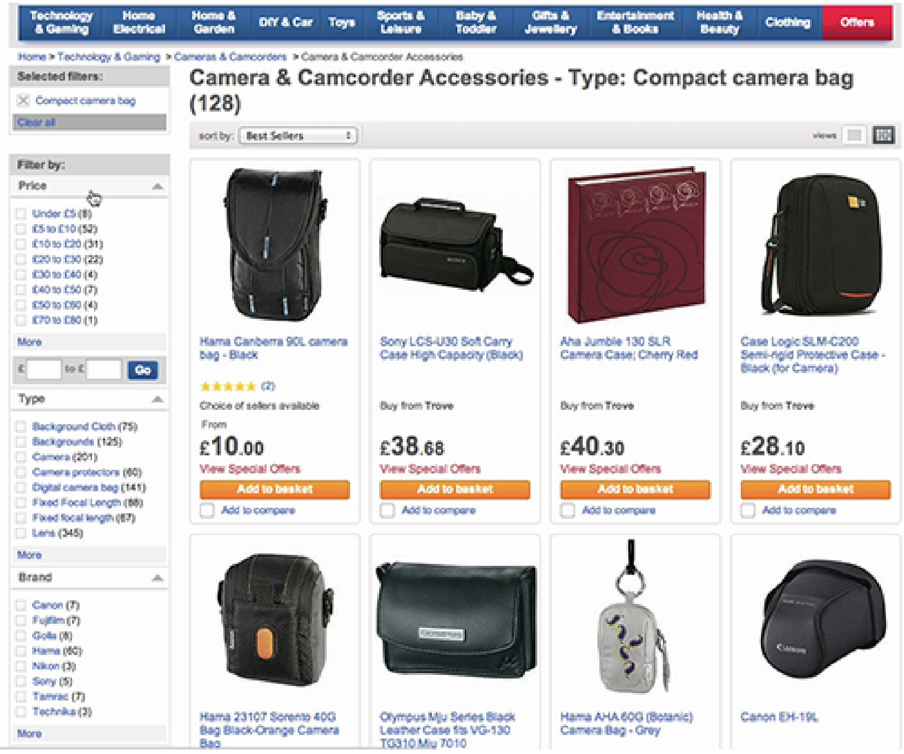


Larger view[75]

Finding compatibility-dependent accessories can be difficult, which is why you should always suggest both alternative and supplementary products on a product page (see guideline 5), as well as list "Recently viewed items" (guideline 6). However, if the majority of accessories in your industry are strictly compatible with certain other products (regardless of whether you sell those other products), then consider also offering whole pages listing compatible products. Technology industries are ideal for this (due to the technical dependency between products), whereas it would be overkill for a clothing store (all clothes "function" together — the only "compatibility" factor is taste).

---

[75] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/pixmania-camera-compatibility.png



Larger view[76]

"I'll pick Nikon now – originally, I didn't necessarily want one from Nikon – but I'll do it now hoping to find an original camera bag so I know it will fit, because I'm not really keen on going back to find my camera dimensions and then compare to the bags," a test subject explained. "So, unless it's insanely expensive, I'll probably take an original." Subjects often gave up finding a compatible case that they liked and simply tried to find anything that would fit their camera. Using brand filters was often a part of that strategy, although it led some novice photographers to purchase incompatible cases, because they as-

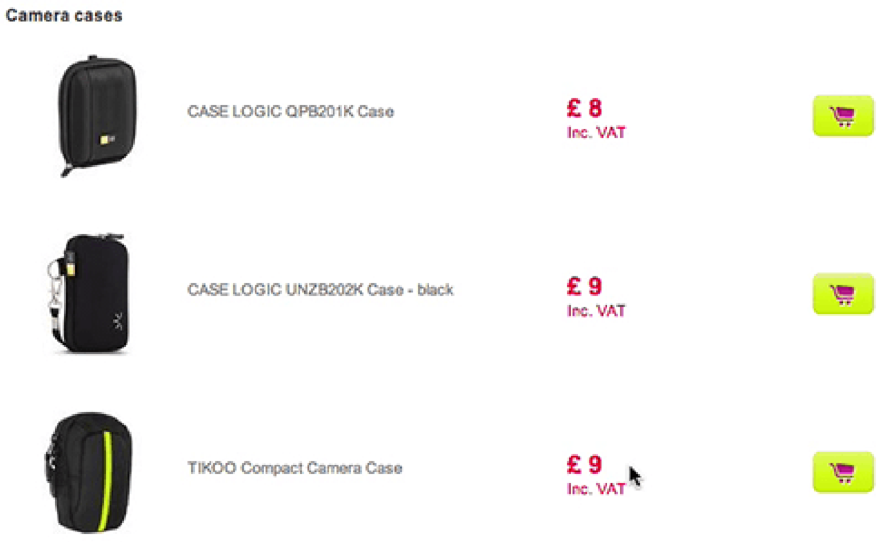
---

[76] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/tesco-compatibility.png

sumed that most Nikon cases would fit most Nikon cameras.

When dedicating whole pages to compatible products, then the page for, say, the “Nikon D7000 camera” would list all compatible accessories, such as batteries, cases and lenses. Going a step further, the page could even filter by product type, so that users can view “compatible ‘camera cases’ for ‘Nikon D7000’.” This enables users to navigate the product catalog vertically and to find (typically high-profit) accessories, instilling confidence in the accessories’ compatibility.

Determining compatibility across a catalog is a major undertaking, but with intelligent queries for each compatibility-dependent category, a lot of the work can be automated. The benefits of determining such compatibility are many. Besides the already mentioned ability to browse vertically across categories, it enables you to create powerful filters. Imagine one filter in the “Laptop Adapters & Chargers” category that allows the user to enter their computer’s model and see compatible chargers. Furthermore, it is also great for search engine optimization, because these compatibility lists can be presented as permanent pages, giving you several highly targeted and unique landing pages for each product, such as “Lenses for Nikon D7000,” “Laptop Chargers & Adapters for MacBook Pro” and “Covers for Kindle Paperwhite.”



Camera cases

CASE LOGIC QPB201K Case	£ 8 Inc. VAT	
CASE LOGIC UNZB202K Case - black	£ 9 Inc. VAT	
TIKOO Compact Camera Case	£ 9 Inc. VAT	

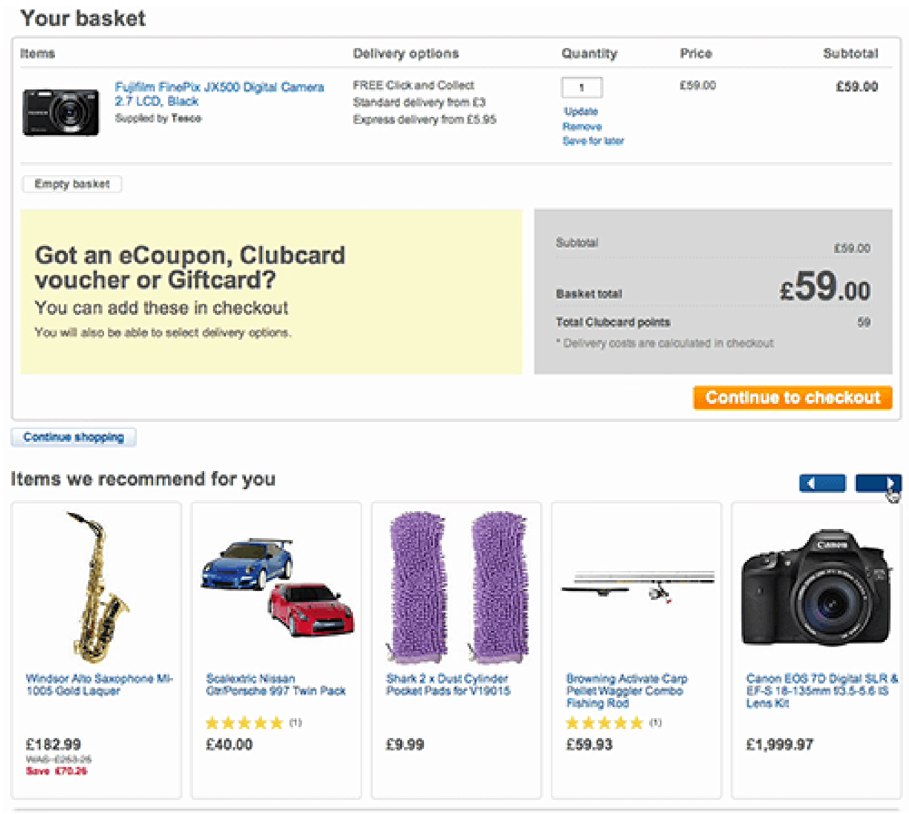
When seeing these camera bags being cross-sold in their shopping cart, the subject above was disappointed by their looks (all black nylon). (Larger view[77])

Had Pixmania established compatibility across its catalog, it could have linked to a list of compatible accessories — "See all 8 compatible cases for Canon PowerShot A2300" — at the end of this cross-selling section, providing a direct path to a complete overview of relevant cases.

In Tesco's shopping cart below, the subject tried to find a matching case for the camera she had just chosen, but she completely lost faith in the website upon seeing few related accessories and a lot of irrelevant recommendations, including a saxophone!

---

77. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/pixmania-cross-sell-no-category-link.png



Your basket

Items	Delivery options	Quantity	Price	Subtotal
Fujifilm FinePix JX500 Digital Camera 2.7 LCD, Black Supplied by Tesco	FREE Click and Collect Standard delivery from £3 Express delivery from £5.95	1 Update Remove Save for later	£59.00	£59.00

Got an eCoupon, Clubcard voucher or Giftcard?
You can add these in checkout
You will also be able to select delivery options.

Subtotal	£59.00
Basket total	£59.00
Total Clubcard points	59

* Delivery costs are calculated in checkout

Items we recommend for you

Windsor Alto Saxophone MI-1005 Gold Laquer	Scalextric Nissan Gt/Porsche 997 Twin Pack	Shark 2 x Dust Cylinder Pocket Pads for V1901S	Browning Activate Carp Pellet Waggler Combo Fishing Rod	Canon EOS 7D Digital SLR & EF-S 18-135mm f/3.5-5.6 IS Lens Kit
	★★★★★ (1)		★★★★★ (1)	
£182.99 ~~WAS £253.25~~ Save £70.26	£40.00	£9.99	£59.93	£1,999.97

Establishing compatibility across a catalog helps you to avoid plainly wrong matches. (Larger view[78])

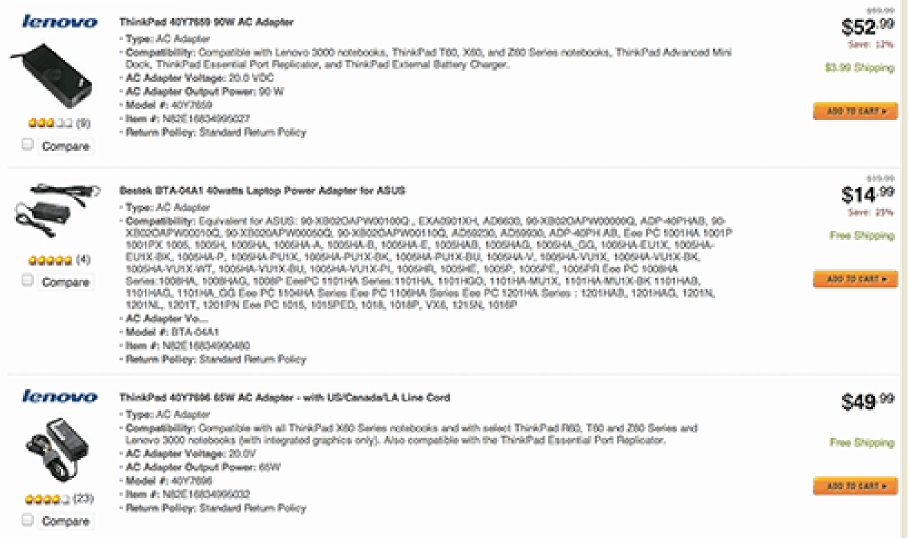
Compatibility-based pages should be cross-linked with the original product page, as well as with any "Compatible With" lists on the product pages of compatible items. Such pages could also appear in a user's shopping cart and be included in the filters of all relevant accessory categories across the website.

Besides being great for cross-selling and SEO, dedicated pages of compatible products can be mined for data to create filters and to improve cross-selling recommendations. They would enable you to avoid suggesting incom-

---

[78] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/tesco-poor-cross-sell-suggestions.png

patible products, which is critical because most users will assume that any product being suggested fits.



ThinkPad 40Y7659 90W AC Adapter
- **Type:** AC Adapter
- **Compatibility:** Compatible with Lenovo 3000 notebooks, ThinkPad T60, X60, and Z60 Series notebooks, ThinkPad Advanced Mini Dock, ThinkPad Essential Port Replicator, and ThinkPad External Battery Charger.
- **AC Adapter Voltage:** 20.0 VDC
- **AC Adapter Output Power:** 90 W
- **Model #:** 40Y7659
- **Item #:** N82E16834996027
- **Return Policy:** Standard Return Policy

~~$59.99~~
$52.99
Save: 12%
$3.99 Shipping

Bestek BTA-04A1 40watts Laptop Power Adapter for ASUS
- **Type:** AC Adapter
- **Compatibility:** Equivalent for ASUS: 90-XB02OAPW00100Q , EXA0901XH, AD6630, 90-XB02OAPW00000Q, ADP-40PHAB, 90-XB02OAPW00010Q, 90-XB020APW00050Q, 90-XB02OAPW00110Q, AD59230, AD59930, ADP-40PH AB, Eee PC 1001HA 1001P 1001PX 1005, 1005H, 1005HA, 1005HA-A, 1005HA-B, 1005HA-E, 1005HAB, 1005HAG, 1005HA_GG, 1005HA-EU1X, 1005HA-EU1X-BK, 1005HA-P, 1005HA-PU1X, 1005HA-PU1X-BK, 1005HA-PU1X-BU, 1005HA-V, 1005HA-VU1X, 1005HA-VU1X-BK, 1005HA-VU1X-WT, 1005HA-VU1X-BU, 1005HA-VU1X-PI, 1005HR, 1005HE, 1005P, 1005PE, 1005PR Eee PC 1008HA Series:1008HA, 1008HAG, 1008P EeePC 1101HA Series:1101HA, 1101HGO, 1101HA-MU1X, 1101HA-MU1X-BK 1101HAB, 1101HAG, 1101HA_GG Eee PC 1104HA Series Eee PC 1106HA Series Eee PC 1201HA Series : 1201HAB, 1201HAG, 1201N, 1201NL, 1201T, 1201PN Eee PC 1015, 1015PED, 1018, 1018P, VX6, 1215N, 1016P
- **AC Adapter Vo...**
- **Model #:** BTA-04A1
- **Item #:** N82E16834990480
- **Return Policy:** Standard Return Policy

~~$19.99~~
$14.99
Save: 25%
Free Shipping

ThinkPad 40Y7696 65W AC Adapter - with US/Canada/LA Line Cord
- **Type:** AC Adapter
- **Compatibility:** Compatible with all ThinkPad X60 Series notebooks and with select ThinkPad R60, T60 and Z60 Series and Lenovo 3000 notebooks (with integrated graphics only). Also compatible with the ThinkPad Essential Port Replicator.
- **AC Adapter Voltage:** 20.0V
- **AC Adapter Output Power:** 65W
- **Model #:** 40Y7696
- **Item #:** N82E16834996032
- **Return Policy:** Standard Return Policy

$49.99
Free Shipping

Larger view[79]

“It fits ‘X60,’ but that’s not mine. I have an X61,” a subject said, referring to the top result above. He continued, “It fits all in the X60 series. Does that mean my X61 as well? I would go to Lenovo’s website and find out.” Confusion about which models are in a “series” was common, because a series’ name can be confused with a particular model’s name.

Just showing a list of compatible products for each model doesn’t always cut it because some models are organized into series as well. In the Newegg example just above, the “Lenovo ThinkPad X61s” model is part of the “Lenovo X60 series.” This hierarchy should be reflected in

---

[79] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/newegg-lack-of-compatibility-lists.png

the dedicated pages of compatible products as well, because some test subjects mixed up a series' name with a model's name. Pages for compatible products in a series should link to all models in that series to clear up any doubts the user might have.

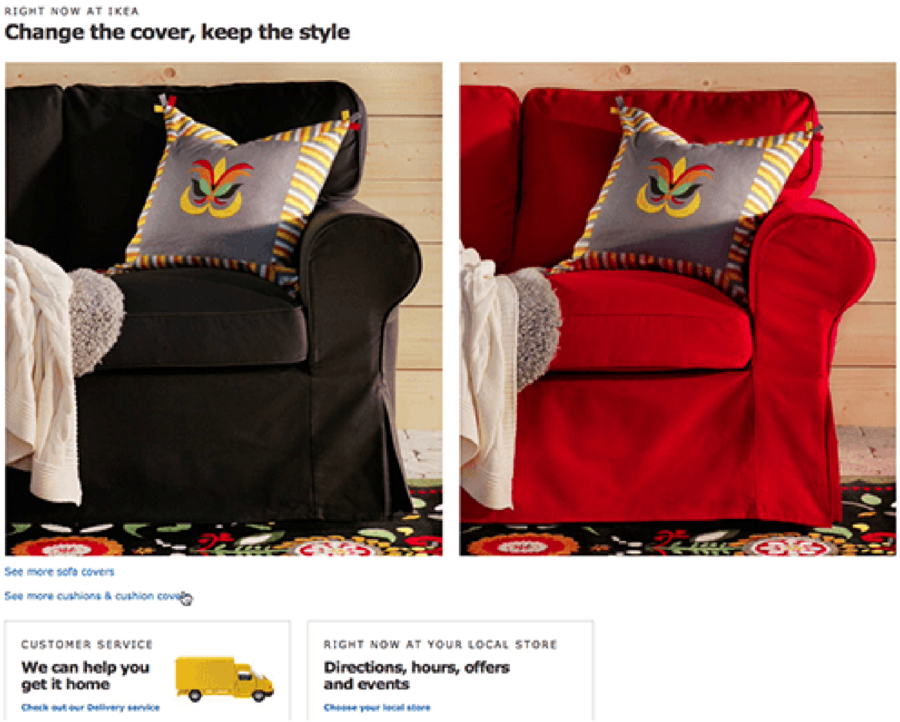
Lastly, dedicated pages of compatible products can still be meaningful even if the website doesn't carry all of the products. For example, an electronics store that doesn't sell Sony digital cameras could still have pages of compatible products for Sony cameras to help customers find accessories that it does sell. The same goes for websites that don't even sell products from a given industry; for example, a website that sells apparels or bags but not laptops or electronics might still want to list compatible products so that users can browse only the bags that fit their particular laptop.

7. *Always Link Contextual Images Directly To The Products Shown.*

Issue: *Users quickly grow frustrated when they spot a product in a contextual image but can't navigate to it.*

"I want this. What do I do?… I want this one," one subject said, laughing out of despair while pointing and clicking at a coffee table shown in a contextual image on IKEA. While inspirational images can raise the aesthetic appeal of an e-commerce website and serve as an important vertical style-based navigation path, not directly linking to the products depicted in contextual images will frustrate users to no end.

During testing, the subjects were dumbfounded that a website didn't simply link directly to all products depicted and that they had to hunt them down to learn more or to purchase them. This lowered their perception of the website, and some took it as a sign that the owners clearly hadn't used their own website.


RIGHT NOW AT IKEA
Change the cover, keep the style
See more sofa covers
See more cushions & cushion cove
CUSTOMER SERVICE
We can help you get it home
Check out our Delivery service
RIGHT NOW AT YOUR LOCAL STORE
Directions, hours, offers and events
Choose your local store

Larger view[80]

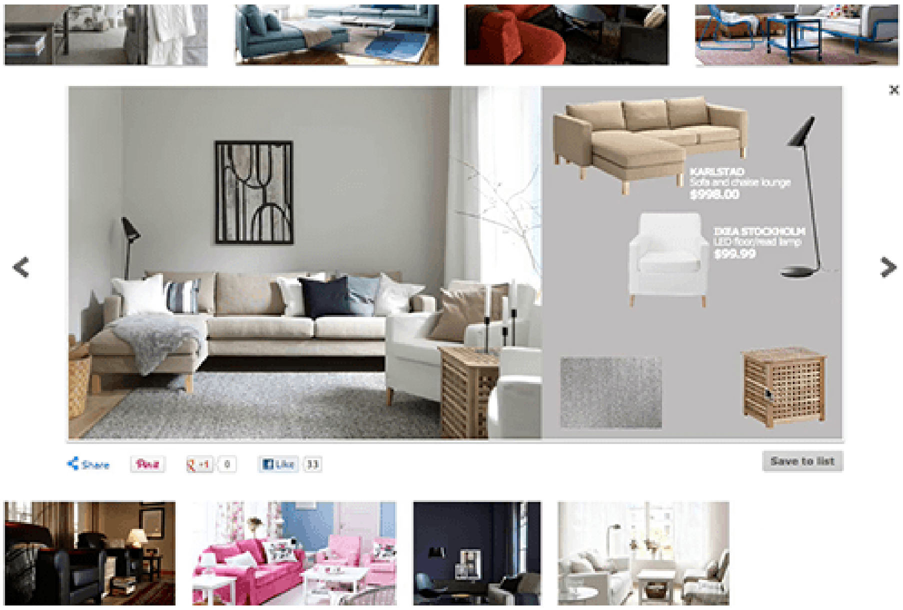
"I don't know how I found this cushions category. I wonder why there wasn't a cushions category along with all the sofa options up there. But then I saw this image of a cushion down the page and thought that maybe I'm on the right track." One subject said this while looking for

---

[80] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/IKEA-links-all-depicted-categories.png

cushions in the sofa category on IKEA's website. As he scrolled down the "Sofas" subcategory page, he spotted an image containing a cushion, and while the image was actually cross-selling sofa covers, the "Cushions" category was linked to it as well.

Images tend to draw a lot of attention, and when users get stuck in first attempting to find a product, they tend to scan the page very narrowly for anything that looks like a path to the product they want. Therefore, contextual images should always link to the products depicted, even if the image is meant merely as inspiration for one of the products being shown. Users will still notice the other products in the image, especially if they are actively scanning for one of those product types. Even if the purpose of the image isn't to promote that particular product, users will become frustrated if they can see the product but not access its page.



Larger view[81]

Above, a subject saw a table that he wanted in the thematic "Seating Solutions" image, so he clicked it, but nothing happened. He then tried the "Save to list" button, assuming it would save all of the products shown and that he could then simply remove the other products. But that didn't happen either. "Nooo… Arrgghhh, it only added the sofa. I would like to get the sofa table," he said, hovering over and right-clicking the table in the image. He laughed in despair as he continued, "I want this. What do I do? I want this one [pointing at the table]. I expected it would save all of them when I used the button, but it only saved the sofa." After searching for the table, the subject ended up abandoning the website.

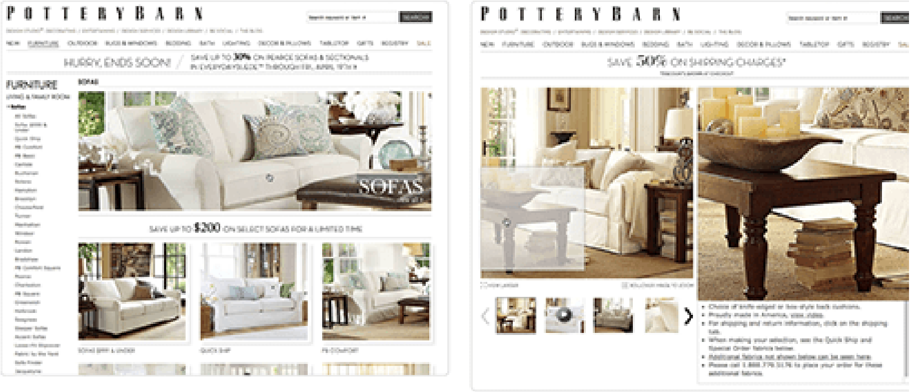
If an item is not being sold, ideally it shouldn't be depicted at all. In practice, this is easier said than done because contextual images sometimes contain products that were available when the photograph was taken but that now are not (or are not in all distribution channels — for example, a store might sell some products offline only, or an international website might ship certain products to certain regions). Discarding or reshooting an entire scene of multiple products is likely unfeasible if just one or two of the products are no longer available.

In such cases, replace the product link with a description, rather than just remove it entirely (as seen in the IKEA example above). The description could be as simple as "Discontinued," "Available only in store" or "Not available in US store" — the vital part is to indicate that the

---

81. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/IKEA-suggested-products-not-linked.png

user may not purchase the item. If the item has not been discontinued but is simply unavailable for purchase in a particular channel or region (as with IKEA above), then the description can point very persistent customers in the right direction. Better yet, if similar products are available, consider linking to them or to their categories.

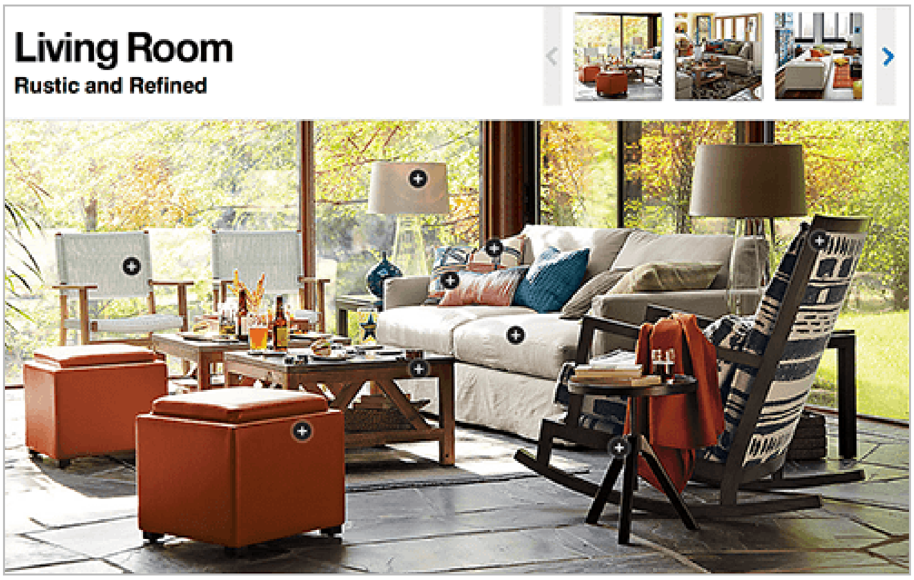


Larger view[82]

In the image above on the left, one subject found the sofa in the header image interesting and clicked it to investigate further, only to be confused when presented with a list of products but not that particular sofa. In the image on the right, another subject was on the product page for a sofa. Upon inspecting the sofa images, she found that she very much liked the coffee table as well and wanted to know more about it. She looked around for links, but there weren't any, not even in the cross-selling section further down the page.

---

[82] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/potterybarn-not-linking-to-products-depicted.png



Another way to solve this challenge is to mark up contextual images with direct links to the products being depicted, as seen above on Crate & Barrel, where clicking the "+" icon will open a quick preview of the pinned product. (Larger view[83])

Direct links are needed not only for contextual images. Header images and even some images on product pages would benefit from having direct links to the items being shown. For images on product pages, any products that are clearly depicted could be linked to either right below the image, by having a dedicated "get the look" cross-selling list, or at the very least in a generic cross-selling section on the product page. One could even experiment with tagging the image so that users can actually click right on the products they are interested in.

---

[83] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/11/crate-barrel-links-to-all-products-depicted.png

If They Can't Find It, They Can't Buy It.

In a time when more and more customers are accessing e-commerce websites through search engines and social media links that send them deep into a website's hierarchy, enabling users to infer their current position in the hierarchy, to go to the generic parent category and to find related products is critical. Even customers who use on-site search will depend on the website's taxonomy of categories to infer the available range of products.

No matter how much time you spend on the aesthetics, the product images and the optimization of landing pages, the customer's overall experience will falter if the foundational e-commerce elements, such as the taxonomy of categories, aren't solid.

Designing user-friendly category-based navigation is no easy task. It requires a solid information architecture, systematic labelling, a logical hierarchy, curated subcategory pages and a balanced home page design. Obviously, all of this can't be covered in an chapter like this, but the seven guidelines we've looked at are low-hanging fruit; by following them, you can quickly improve the category navigation on a typical e-commerce website:

1. Don't make parent categories shallow.
2. Put the same subcategory within multiple main categories when necessary.
3. Consider having a "What's New" category or filter.
4. Suggest both alternative and supplementary products on product pages.

5. List "Recently Viewed Items."
6. Create dedicated pages that list compatible products.
7. Always link contextual images directly to the products shown.

One last note. During testing, it became clear that loosely executed categories can have more devastating consequences than "just" immediate abandonment of the website — it could permanently damage the brand. When the subjects couldn't find a particular product type, they would often conclude that the website didn't carry such items. Such fundamental misunderstanding leads not only to an immediate loss of a sale, but to future losses because customers won't visit a store that they assume does not carry the type of product they are looking for. ❧

Learn more guidelines about category and navigation usability in the (paid) report "Homepage & Category Usability[84]," by the author of this chapter.

---

[84] http://baymard.com/homepage-and-category-usability

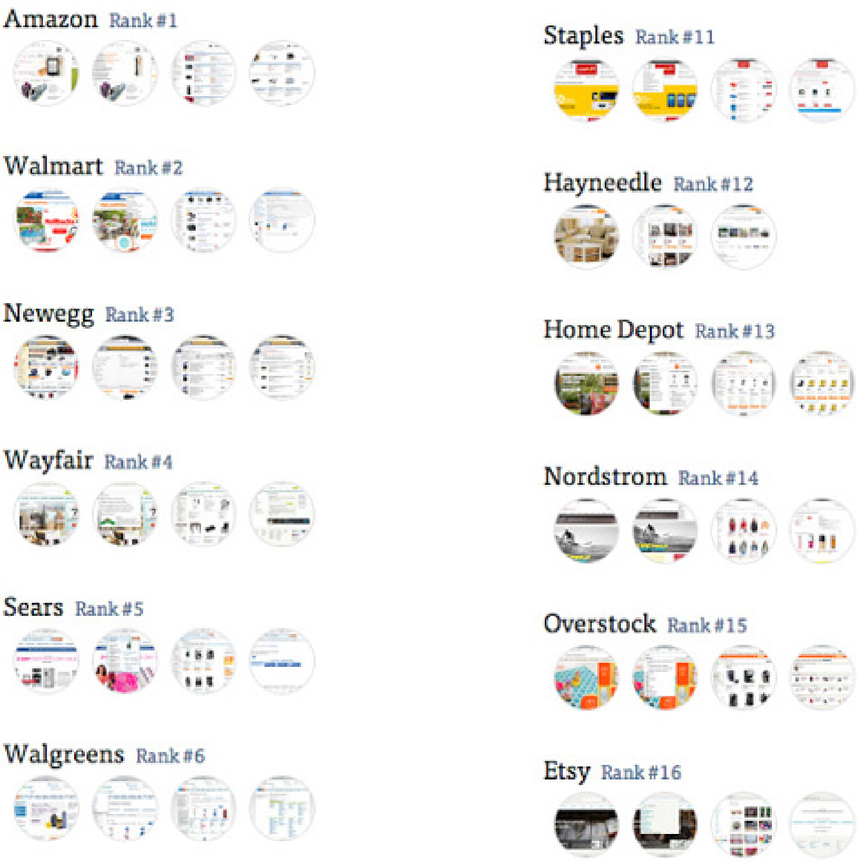
The Current State Of E-Commerce Search

BY CHRISTIAN HOLST ❧

When e-commerce search works, it's fast, convenient and efficient. It's no wonder that so many users prefer searching over clicking categories. Unfortunately, our recent large-scale usability study and top-50 benchmark of e-commerce search finds that search often doesn't work very well.

On-site search is a key component of almost any e-commerce website. That's why we at Baymard Institute have invested months conducting a large-scale usability study, testing the e-commerce search experience of 19 major e-commerce websites with real-world end users.

We've boiled our findings down to 60 usability guidelines for e-commerce search design and logic. Based on these findings, we've benchmarked the search experience of the 50 top-grossing US e-commerce websites, rating each website across all 60 search usability parameters. In this chapter, we'll present some of the findings from this vast research data set and explore the state of e-commerce search.



50 e-commerce websites benchmarked and ranked across 60 search usability guidelines. (View large version[85])

Benchmarking the search experience of the 50 top-grossing US e-commerce websites reveals a surprisingly grim state of affairs. Here's a walkthrough of just a handful of the most interesting statistics:

- 16% of e-commerce websites do not support searching by product name or model number, despite those details appearing on the product page! An additional 18% of web-

---

[85] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/02-ecommerce-search-benchmark-opt.jpg

sites provide no useful results when the user types just a single character wrong in the product's name.

- 70% require users to search by the exact jargon for the product type that the website uses, failing to return relevant products for, say, "blow dryer" if "hair dryer" is typed, or "multifunction printer" if "all-in-one printer" is typed.
- Searches with symbols and abbreviations are not supported by 60% of e-commerce websites. For example, the websites do not map the double quotation mark (often substituted for the double prime symbol: ″) or "in" to "inch."
- Autocomplete suggestions are found on 82% of e-commerce websites. While some implementations greatly enhance the search experience, 36% of implementations do more harm than good.
- Only 34% allow users to easily iterate on their query by prefilling it in the search field on the results page, despite the fact that, according to our tests, users frequently need to iterate on their query — on average, 65% of test subjects required two or more query attempts during testing.
- Only 40% of websites have faceted search, despite it being essential to e-commerce search because it is the foundation of contextual filters.
- While an e-commerce website eases navigation by offering two types of breadcrumbs, 92% of the top-50 websites display only one breadcrumb type or none at all.

Below, we'll walk through each of the above statistics and provide insight on how to improve the search experience and success rate on your e-commerce website. We'll round the chapter off with a general analysis of the current state of e-commerce search.

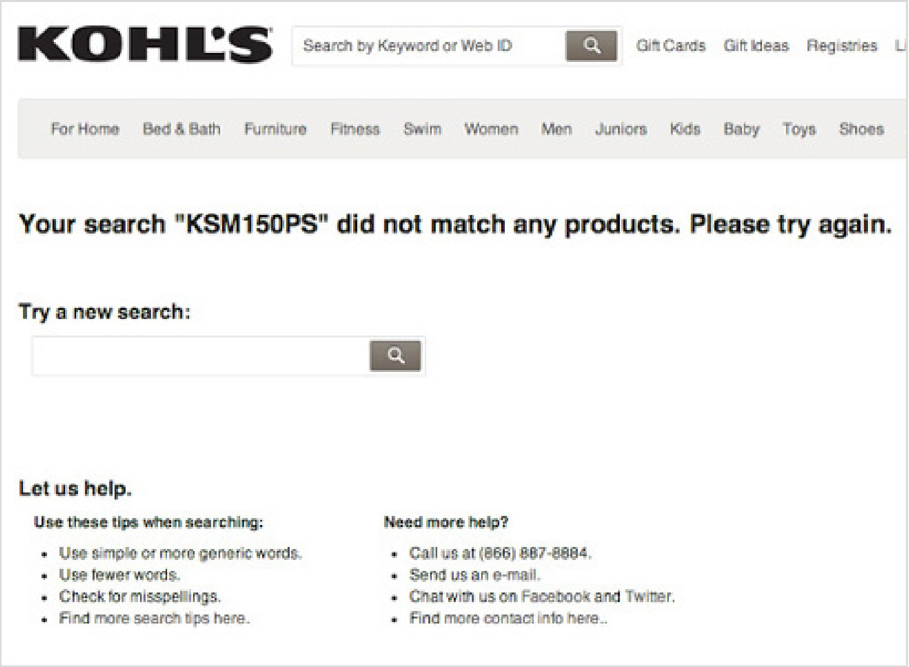
1. 34% Do Not Support Users' Searches By Product Name

At the heart of a good e-commerce search experience is the search engine's ability to return relevant results for the query. While our usability study identified 12 unique types of search queries[86] that users make on e-commerce websites, let's stick to the most basic ones here, because even those prove troublesome for a significant portion of the top e-commerce website.

The simplest query type is an exact search, whereby users search by a specific product name or model number. Yet 16% of the top benchmarked e-commerce websites do not support searches for product names or model numbers that appear on the respective product pages. The reason is probably that the search logic of these websites is based entirely on matching the user's keywords against the product title or main product description, instead of the full data set. Whatever the reason, it makes for a poor experience, with grave consequences.

---

[86] http://baymard.com/blog/ecommerce-search-query-types



Your search "KSM150PS" did not match any products. Please try again.

Try a new search:

Let us help.

Use these tips when searching:

- Use simple or more generic words.
- Use fewer words.
- Check for misspellings.
- Find more search tips here.

Need more help?

- Call us at (866) 887-8884.
- Send us an e-mail.
- Chat with us on Facebook and Twitter.
- Find more contact info here..

Here on Kohl's[87]*, an exact query for a KitchenAid model number yields no results (top), despite the model number being part of the mixer's product page data (bottom). While this might seem like a bizarre one-off case, it is the reality on 16% of the top-grossing e-commerce websites. (View large version*[88]*)*

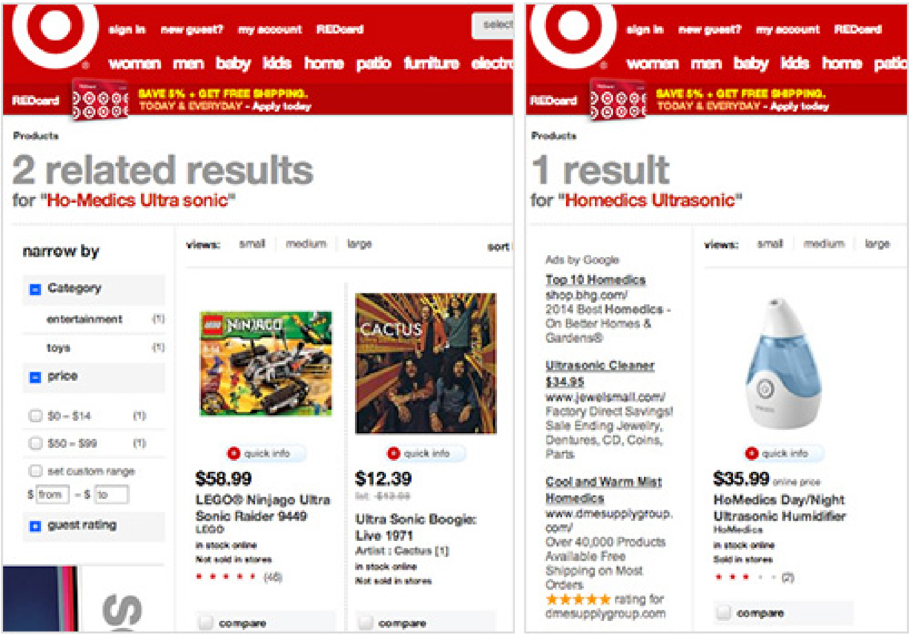
During testing, users would (rightfully) conclude that a website that displays no results for a query so specific means that the company doesn't carry the product. And if you're wondering how many users actually searched by product name or model number, they frequently did during our testing. Multiple test subjects began their initial product research on an external website, starting with a Google search, or on a manufacturer's website, a review website, etc. Only when they had decided on one or more

---

[87] http://baymard.com/ecommerce-search/benchmark/site-reviews/173-kohl-s

[88] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/03-kohls-search-opt.jpg

products did they copy and paste the product's name or model number directly from the external website into the search field on one or more e-commerce websites.


2 related results
for "Ho-Medics Ultra sonic"
narrow by
Category
price
guest rating
$58.99
LEGO® Ninjago Ultra Sonic Raider 9449
$12.39
Ultra Sonic Boogie: Live 1971
1 result
for "Homedics Ultrasonic"
Ads by Google
Top 10 Homedics
Ultrasonic Cleaner
Cool and Warm Mist Homedics
$35.99
HoMedics Day/Night Ultrasonic Humidifier

A user searching for "Ho-Medics Ultra sonic" (left), instead of the correct "HoMedics Ultrasonic" (right), will get two irrelevant results on Target's website[89]*. Notice how this is barely a misspelling of the product's name. (View large version*[90]*)*

Another search pattern for exact searches that is ill-supported by the top e-commerce websites is phonetic misspellings. 18% of websites handle phonetic misspellings so poorly that users would have to be able to pass a spelling test in order to get relevant results. For example, the query "Kitchen Aid Artysan," rather than "KitchenAid Artisan," yields no results. While misspellings can occur

---

[89] http://baymard.com/ecommerce-search/benchmark/site-reviews/163-target

[90] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/04-target-search-opt.jpg

in any scenario, phonetic misspellings are particularly common when users have only verbally heard a product's name and later try searching for it. This isn't unusual in the discovery process, if we consider how often products are recommended by friends and colleagues. Suggesting the correct spelling[91] on the results pages is recommended, then. And if the search engine automatically processes the query when it finds no matches or a few poor matches for the user's spelling, even better.

IMPLEMENTATION TIP

Assuming that users will spell perfectly is unreasonable. And it's important that the search logic broadens the query's scope and looks for closely related spellings, especially if only a few results of low relevance would be returned. Furthermore, the logic should search the entire data set of products to include matches for product names and model numbers.

2. 70% Require Searches In The Website's Jargon

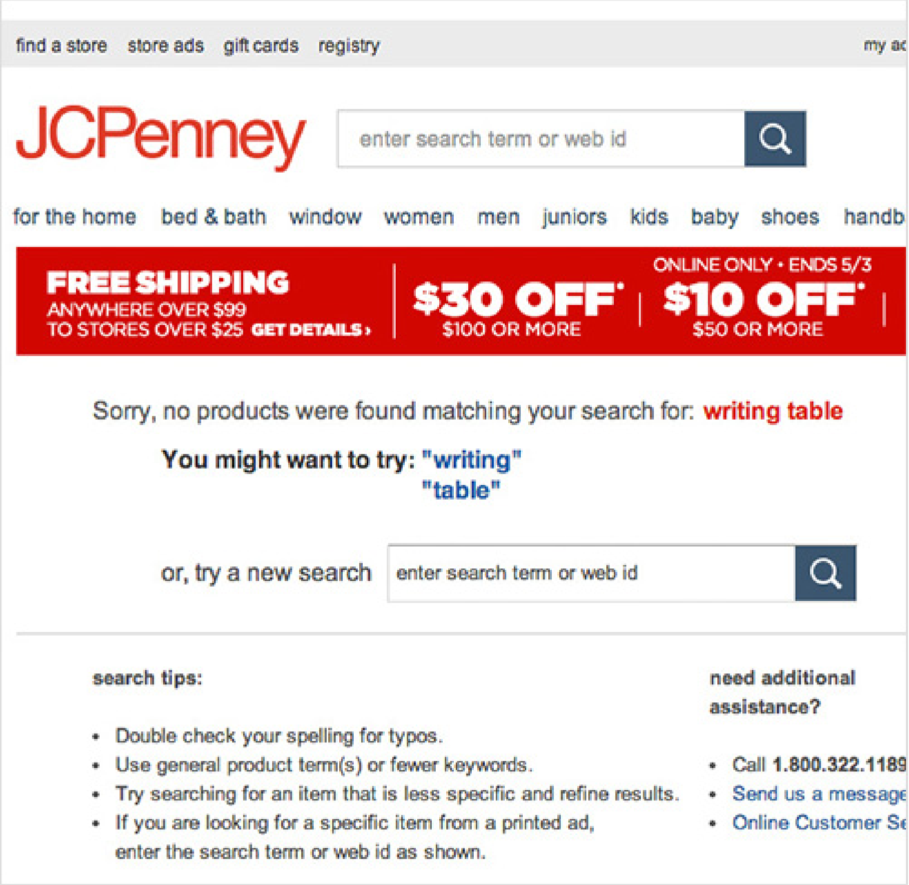
Another common search query type in e-commerce is the product type query, whereby a user knows the type of product they want but doesn't know of or hasn't decided on a particular product. So, they simply search for, say, "blow dryer" or "multifunction printer," two queries that

---

91. http://www.nngroup.com/articles/search-no-results-serp/

often lead to no results because the “correct” name for that product type is “hair dryer” or “all-in-one printer.”

To fully support product type queries, the search engine’s logic must go beyond the exact titles and descriptions of products, and look to the categories that products are placed in, as well as take product synonyms into account.



Sorry, no products were found matching your search for: writing table

You might want to try: **"writing"**
"table"

or, try a new search enter search term or web id

search tips:

- Double check your spelling for typos.
- Use general product term(s) or fewer keywords.
- Try searching for an item that is less specific and refine results.
- If you are looking for a specific item from a printed ad, enter the search term or web id as shown.

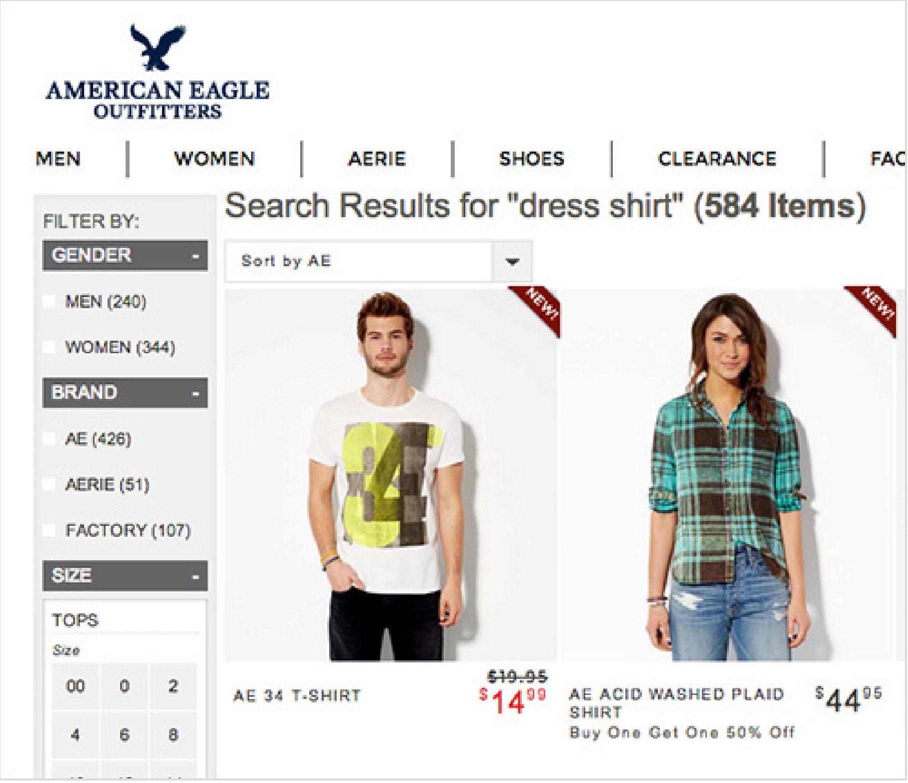
need additional assistance?

- Call **1.800.322.1189**
- Send us a message
- Online Customer Se

Users have to use a website’s jargon to search by product type. Here, “writing table” returns none of the many “writing desks” available on J.C. Penney[92]*. (View large version*[93]*)*

---

[92] http://baymard.com/ecommerce-search/benchmark/site-reviews/176-j-c-penney



Similarly, "dress shirt" isn't recognized by American Eagle Outfitters[94], *which serves up t-shirts and casual shirts as the top results, instead of its long-sleeved Oxford and solid-color shirts. (View large version*[95]*)*

However, only 30% of e-commerce search engines include keywords from each product's parent category or map a set of synonyms to product titles, product types and category names. As a result, users have to use the website's exact jargon for their product type queries on 70% of websites, as seen in the two examples above.

---

[93] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/05-jcpenny-search-opt.jpg

[94] http://baymard.com/ecommerce-search/benchmark/site-reviews/166-american-eagle-outfitters

[95] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/06-american-eagle-search-opt.jpg

Product type synonyms were observed to have a particularly large impact on the user's search experience during testing, because it can be very difficult for users to tell whether they are using a wrong term, and even more so to guess what the "correct" term is. Therefore, a lack of synonym support was observed to be a direct cause of website abandonment, because users assumed that the website doesn't carry the products that they searched for.

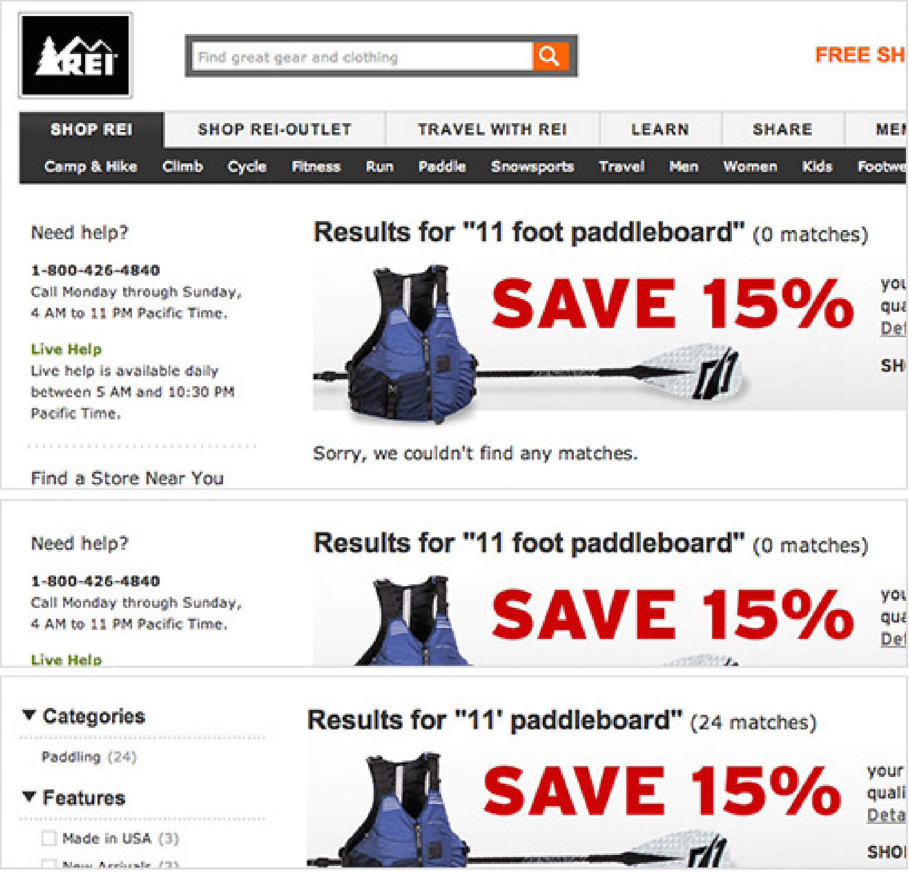
IMPLEMENTATION TIP

At the very least, manually map common product type synonyms to the actual product types and category names. A better long-term solution would be to build keyword synonym logic, because this can more easily be updated, tweaked and even personalized on a regular basis.

3. 60% Don't Support Searches With Symbols And Abbreviations

Some products have specifications that are vital to the user's purchasing decision. When searching for such products, our test subjects frequently included those specifications directly in their search queries (for example, "13″ laptop sleeve"), making them feature queries.

But do users usually search for "13 inch laptop sleeve" or "13″ laptop sleeve"? Of course, both queries should present exactly the same results, because users have no way of knowing how each website denotes such units of measurement, and all ways are equally "correct" and used interchangeably across the Internet. In case you think we're stating the obvious here, 60% of the top e-commerce websites do not support searches with symbols and abbreviations. So, users will miss out on perfectly relevant products if they search for “inch” and the website uses the double prime symbol (″) or the abbreviation “in,” or vice versa.



Need help?

1-800-426-4840
Call Monday through Sunday,
4 AM to 11 PM Pacific Time.

Live Help
Live help is available daily between 5 AM and 10:30 PM Pacific Time.

Find a Store Near You

Results for "11 foot paddleboard" (0 matches)

Sorry, we couldn't find any matches.

Results for "11 foot paddleboard" (0 matches)

Results for "11' paddleboard" (24 matches)

If all abbreviations, symbols and full spellings are not mapped to each other, many users will miss out. The queries “11 ft. paddleboard” and “11 foot paddleboard” yield no results, because REI[96] *only supports the query “11′ paddleboard”. People who do not understand search engine logic will probably conclude that REI doesn’t carry 11-foot paddleboards. (View large version*[97]*)*

---

[96] http://baymard.com/ecommerce-search/benchmark/site-reviews/185-rei

Breaking down such technical hindrances and mapping common symbols and abbreviations is important, so that users find the products they are looking for and get the same results regardless of what a website or its suppliers have decided to use. Most websites are small enough that synonyms, abbreviations and full spellings could be manually mapped for the most common units.

IMPLEMENTATION TIP

Map all common symbols, abbreviations and full spellings to each other, so that all results are shown regardless of how a query is written. A quick way to identify candidates for mapping is to look for units of measurement in all product titles. A more thorough way is to compile a list of units of measurement by going over all product specifications.

4. *Auto-Suggestions Found On 82% Of Websites*

Auto-suggestion is a convention of e-commerce search, with 82% of large websites offering it.

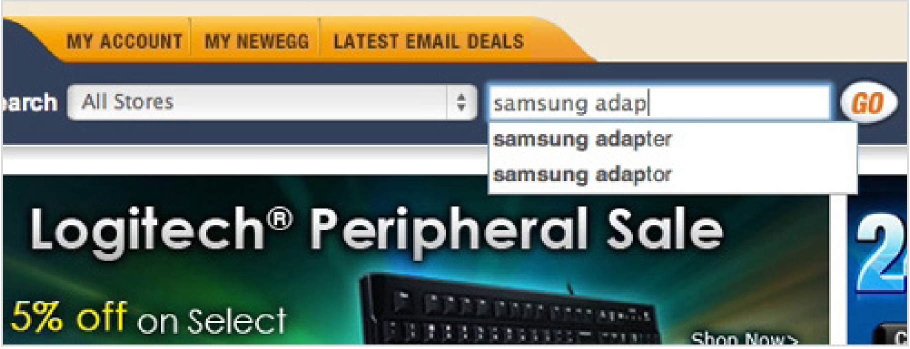
The value of autocomplete suggestions isn't that they speed up the typing process, but that they guide users to better queries. When auto-suggestions are done well, they teach users the types of queries to make, show them

---

[97] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/07-REI-search-opt.jpg

correct domain terminology, help them avoid typos and assist them to select the right scope in which to search.

During usability testing, autocomplete suggestions directly influenced and altered what the test subjects decided to search for. While this is their purpose, it also means that autocompletion can do more harm than good if not implemented carefully.

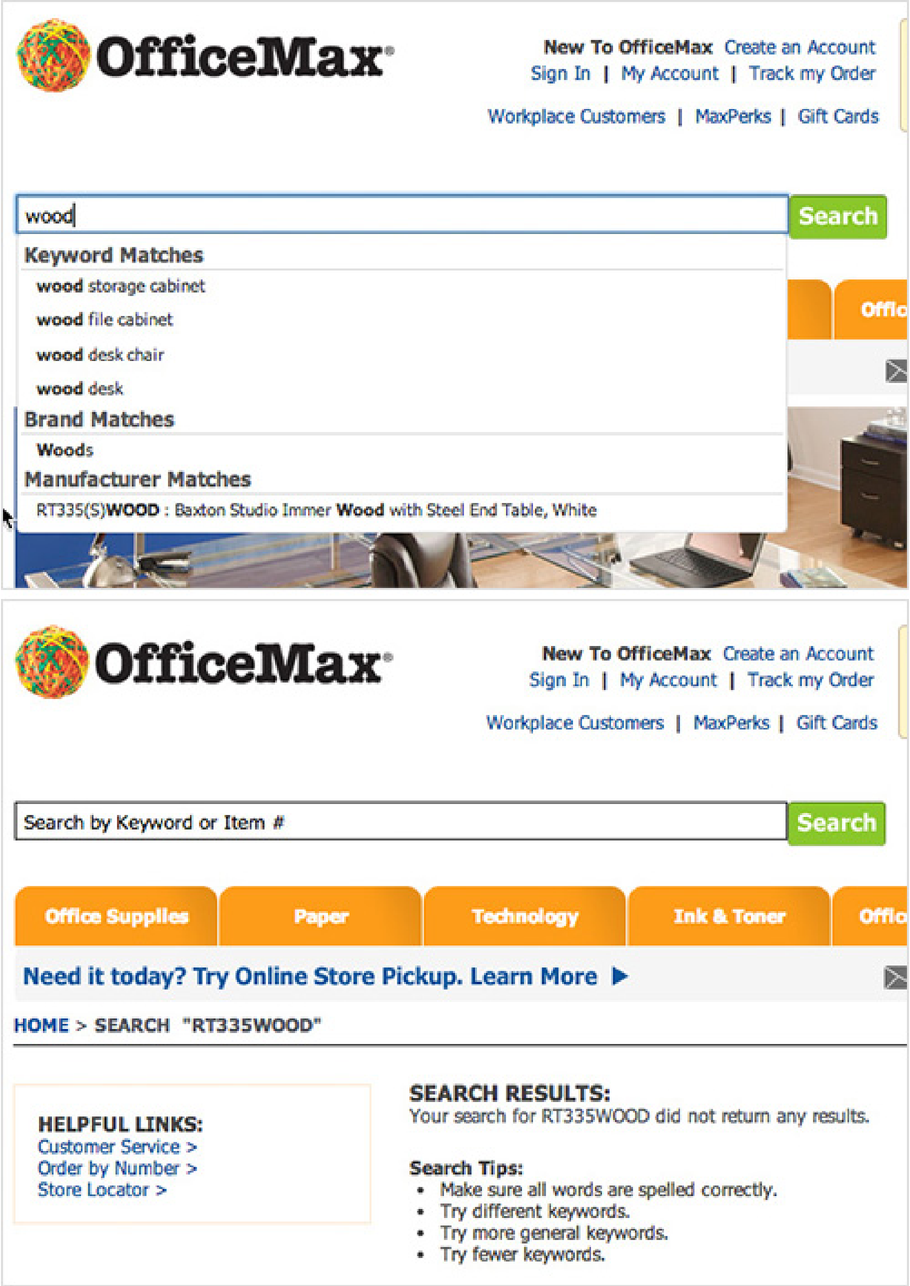


"I don't really know what the difference is. Which one is spelled correctly?" a test subject asked, referring to the two auto-suggestions for "samsung adapter" and "samsung adaptor" on Newegg[98]*. While this redundancy is seemingly innocent, it frequently made the test subjects wonder whether different results would appear because the website suggested both.*

Among the websites that do have autosuggest, 36% of them have implementations with severe usability problems. Two problems frequently observed in testing are query suggestions that either are repetitive or lead to a dead end.

---

[98] http://baymard.com/ecommerce-search/benchmark/site-reviews/160-newegg


OfficeMax

New To OfficeMax Create an Account
Sign In | My Account | Track my Order
Workplace Customers | MaxPerks | Gift Cards

wood

Keyword Matches
wood storage cabinet
wood file cabinet
wood desk chair
wood desk
Brand Matches
Woods
Manufacturer Matches
RT335(S)WOOD : Baxton Studio Immer Wood with Steel End Table, White

OfficeMax

New To OfficeMax Create an Account
Sign In | My Account | Track my Order
Workplace Customers | MaxPerks | Gift Cards

Search by Keyword or Item #

Need it today? Try Online Store Pickup. Learn More

HOME > SEARCH "RT335WOOD"

HELPFUL LINKS:
Customer Service >
Order by Number >
Store Locator >

SEARCH RESULTS:
Your search for RT335WOOD did not return any results.

Search Tips:
- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.
- Try fewer keywords.

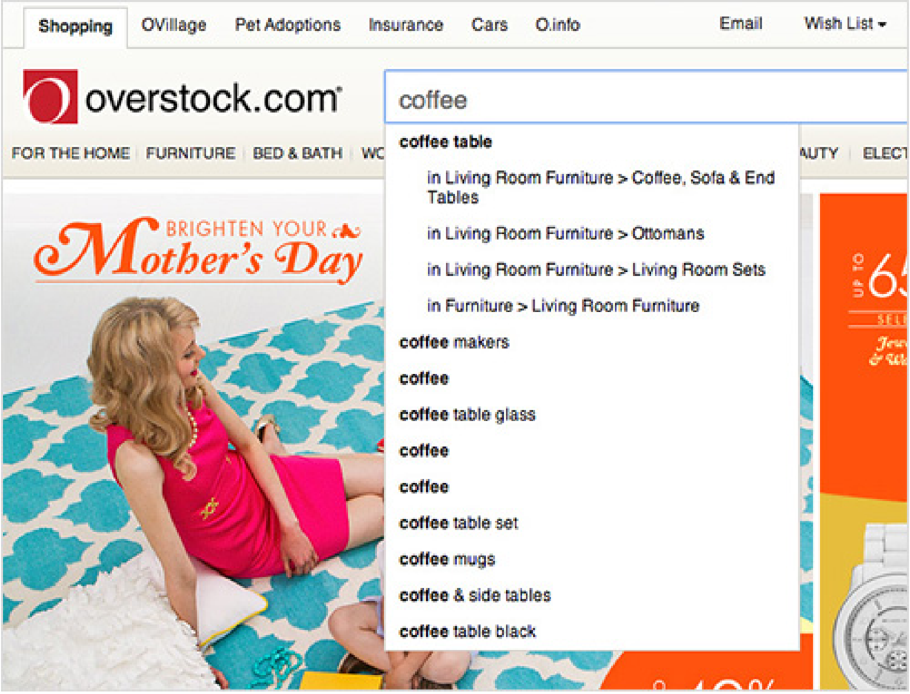
Notice how OfficeMax[99] *suggests a dead end in its autocompletion. When the last suggestion, "RT335WOOD," is selected (top), the user gets no results (bottom). (View large version*[100]*)*

---

[99] http://baymard.com/ecommerce-search/benchmark/site-reviews/157-officemax

[100] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/09-officemax-search-opt.jpg

While avoiding dead ends might seem obvious, such suggestions were observed multiple times during benchmarking. They were often the result of auto-suggestions being based on the prior searches of other users or old catalog contents, regardless of whether they proved to be useful. Developers should at least internally query all suggestions on a regular basis and weed out those without any results.



coffee

coffee table
in Living Room Furniture > Coffee, Sofa & End Tables
in Living Room Furniture > Ottomans
in Living Room Furniture > Living Room Sets
in Furniture > Living Room Furniture
coffee makers
coffee
coffee table glass
coffee
coffee
coffee table set
coffee mugs
coffee & side tables
coffee table black

Another common problem with autocompletion, especially when based on users' past queries, is redundant suggestions. Notice how Overstock.com suggests[101] *the keyword "coffee" three times, leading to a lack of overview. (View large version*[102]*)*

---

[101] http://baymard.com/ecommerce-search/benchmark/site-reviews/174-overstock

[102] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/10-overstock-search-opt.jpg

To provide high-quality search suggestions, look at how suggestions are generated. Many suggestions that are redundant, of low quality or typos are likely the result of developers sourcing suggestions from the website's search logs. If this strategy doesn't take into account the success of those queries (that is, whether a decent percentage of users found and purchased products after performing those searches), then it is flawed.

Unless you track the success of search queries, don't use search logs to generate auto-suggestions because that would result in redundant and low-quality suggestions. Aside from outright duplicate suggestions (as seen in the Overstock.com example above, which could easily have been filtered out), redundant suggestions are ones that overlap and make it difficult for the user to select one over the other. Notice in the Overstock.com example how five variations of "coffee table" are suggested, despite the user having only typed "coffee" at this stage. These nuances might have made sense if the user had typed "coffee ta–."

We also found that copying a suggestion to the search field when the user focuses on it with their keyboard (as illustrated above) is an important detail in autocompletion design because it enables users to iterate on a suggestion.

(We identified eight autocomplete design patterns[103] during testing.)

---

[103] http://baymard.com/blog/autocomplete-design

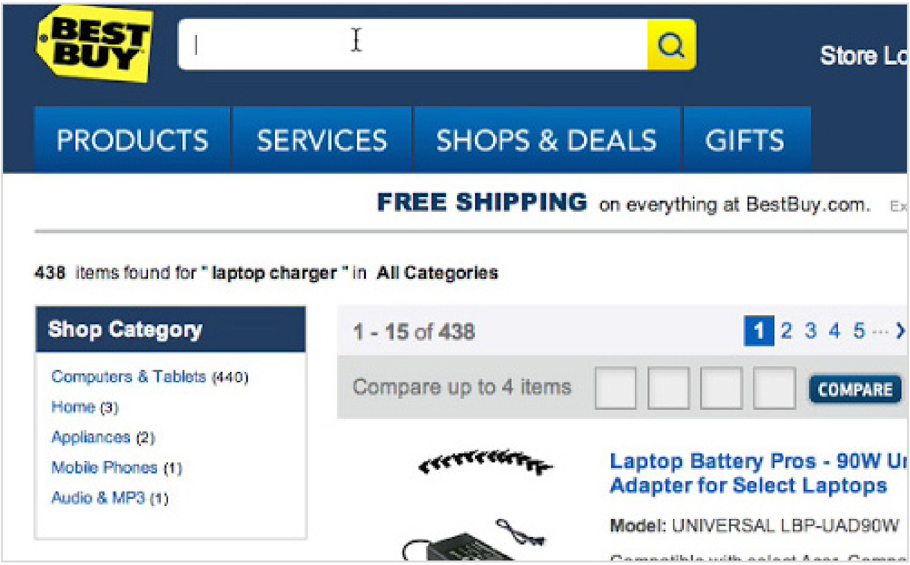
Northern Tool allow users to iterate on auto-suggestions.

IMPLEMENTATION TIP

Given that autocompletion design and logic will directly alter what most users search for, ensuring the high quality of suggestions by weeding out dead ends and being selective in the inclusion of suggestions is vital. Suggestions based on other users' past queries should be carried out with special care or avoided entirely; ideally, any machine learning should be based on the success rate (or conversion rate) of each query.

5. Only 34% Prefill The User's Query On The Results Page

During testing, 65% of all test subjects' attempts at searching consisted of two or more queries in the same search. However, only 34% of e-commerce websites allow users to easily iterate on their query by prefilling the query in the search field on the results page.



FREE SHIPPING on everything at BestBuy.com.

438 items found for " **laptop charger** " in **All Categories**

Laptop Battery Pros - 90W U
Adapter for Select Laptops

Model: UNIVERSAL LBP-UAD90W

"Maybe I should… Argh, it's really frustrating that it disappears up here, that it doesn't keep displaying [my query]. That is actually very annoying, because I just want to add '13,'" a test subject explained as she made her third search attempt on Best Buy[104]*. Because the search query didn't persist, she had to retype the phrase three consecutive times.*
(View large version[105]*)*

On websites that do not persist the user's query in the search field, the iteration process became needlessly cumbersome and easily frustrated subjects. Not persisting a query introduces friction at the worst possible time because redundant typing is added to the already disappointing experience of not receiving relevant results.

---

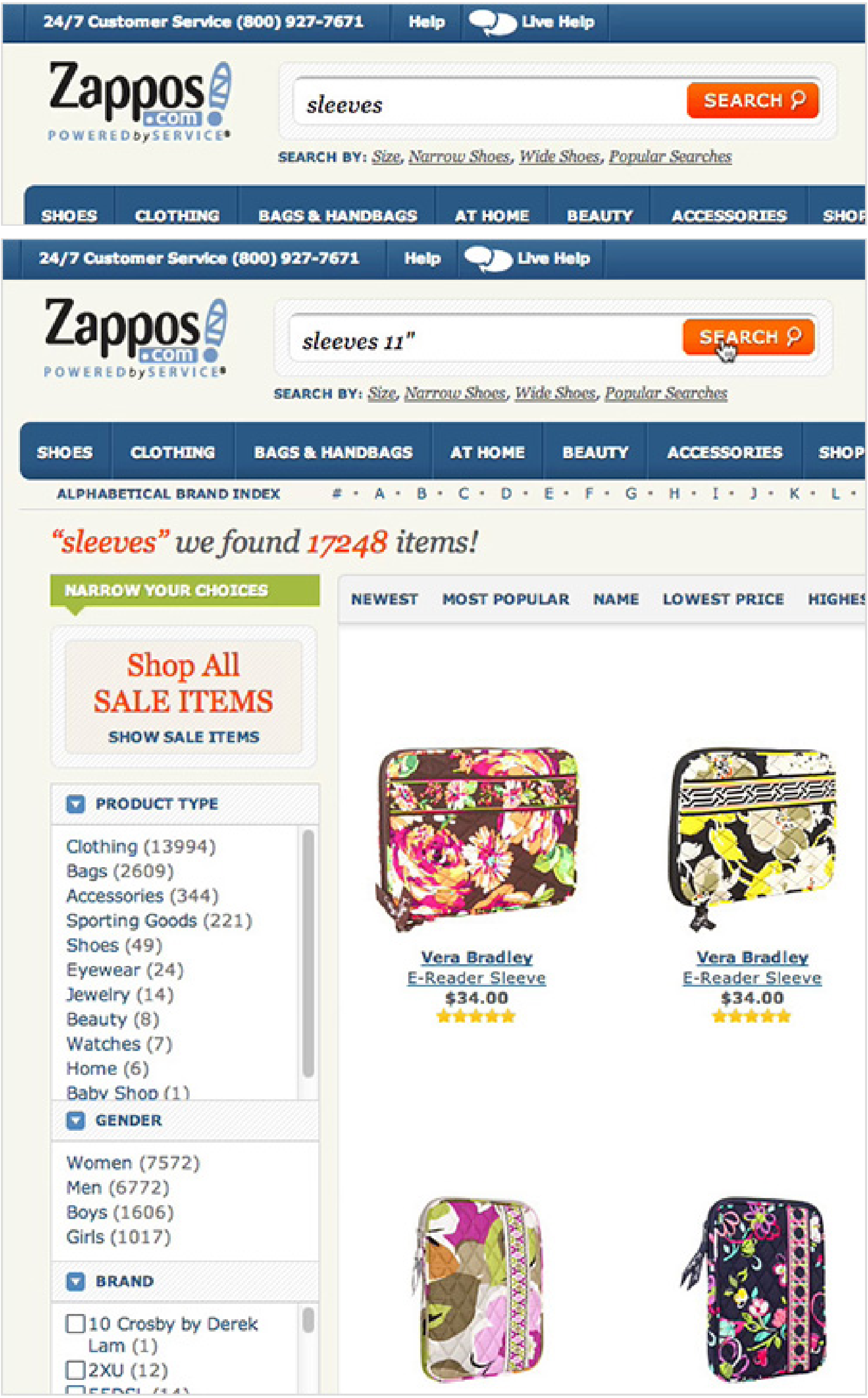
104. http://baymard.com/ecommerce-search/benchmark/site-reviews/158-best-buy
105. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/12-bestbuy-search-opt.jpg

The amount of time that test subjects spent retyping their query is insignificant, but as observed in all of our prior usability studies that involve filling out forms (see the second point in “Exploring 10 Fundamental Aspects of M-Commerce Usability” and the fifth point in “The State of E-Commerce Checkout Design 2012[106],” on Smashing Magazine), the user has a negative perception of a website that forces them to retype the same data within a short timeframe, which often sparks remarks such as “Tedious,” “Idiotic” and “Do you think they’ve tried using their own website?” This is especially true on touch devices, where typing is particularly taxing.

The picture was completely different on those websites that persist queries on the search results page. Here, test subjects weren’t forced through a needless halt-and-retype process each time they wanted to iterate on their query, but instead made swift changes by adding or removing a word or two from their original query, as seen in the Zappos example below, where the user simply added “11″” to his prior query.

---

[106] http://www.smashingmagazine.com/2012/09/04/the-state-of-e-commerce-checkout-design-2012/



sleeves

sleeves 11"

"sleeves" we found 17248 items!

"There's product type, there's brand, there's price, there's color, but I'm missing a size option," a subject noted after having searched for "sleeve" on Zappos (top). In this instance, the subject made up for the website's lack of a "size" filtering option by simply adding "11"" to his persisted "sleeve" query (bottom). (View large version[107])

IMPLEMENTATION TIP

Given how relatively simple this is to implement, persisting the user's query in the search field on the results page can be considered low-hanging fruit in search optimization.

6. Only 40% Have Faceted Search

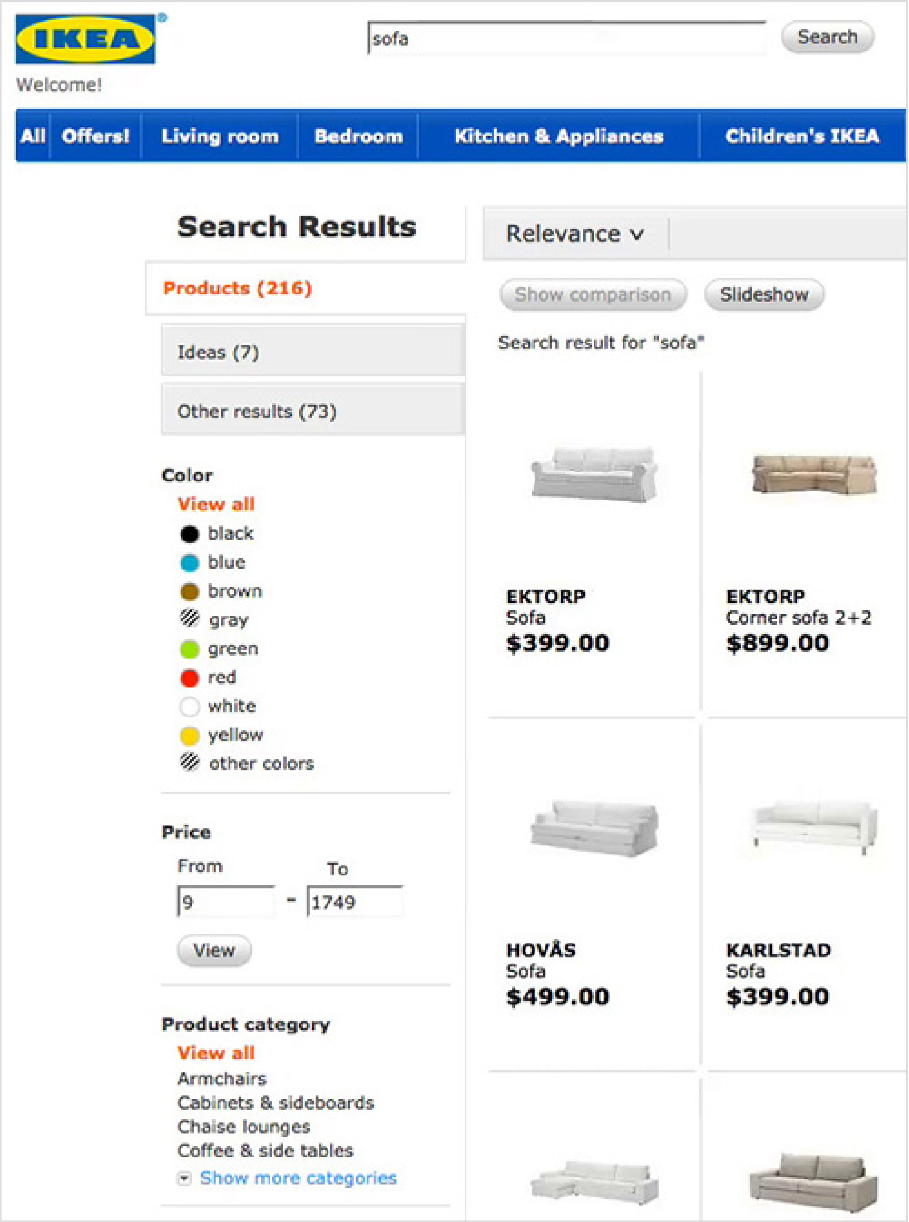
In a perfect world, we would have little need to filter and sort search results because users would make precise queries, knowing exactly what they want, and the website's search logic would return just the right results.

This is far from reality, however; filtering and sorting are vital ways that users find the right product among the results. This is partly due to the challenge of getting search logic and design just right (as we've hinted at in the preceding five points), but also partly due to how and when users search. Users will not always be able to perfectly specify their queries, simply because many still haven't fully decided or realized what they are looking for.

In both cases, being able to modify search results by filtering and sorting is a powerful and important tool. During testing, the quality of the filtering and sorting features and their design often meant the difference between success and failure in the subjects' search experience.

---

107. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/13-zappos-search-opt.jpg



"Here, I got 287 sofas. Can't we… Hmm… Let's select something here," a subject said after seeing the many results for his product type query "sofa." While the results were relevant, notice how IKEA doesn't have faceted search. With faceted search filters, the subject could have had the option to select, say, "Sofa Size: 2-person, 3-person," "Sofa Material: fabric, leather, synthetic," etc. (View large version[108])

---

[108] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/14-ikea-search-opt.jpg

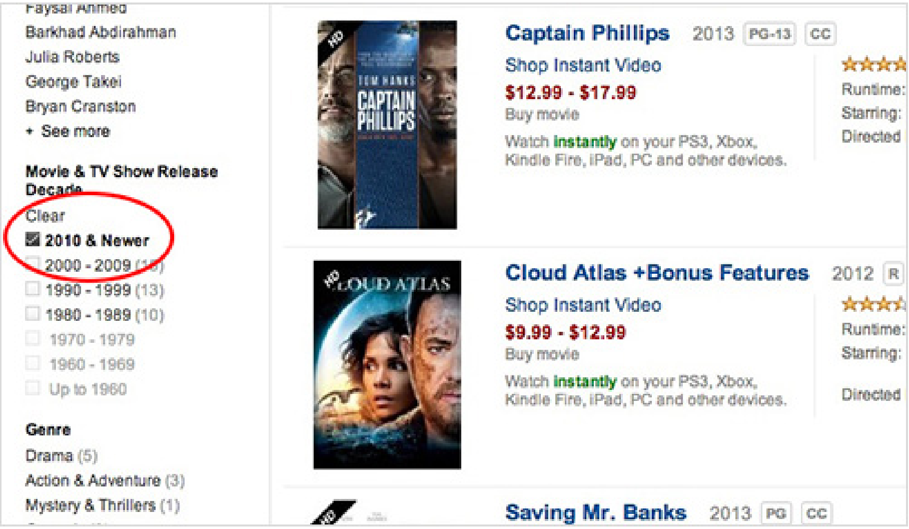
Our testing confirmed that the foundation of a contextual filtering experience in e-commerce search is faceted search. With faceted search, the user is presented with a list of filters for product attributes, filters that apply only to a part of the search results. For example, the search results for “Tom Hanks” could have a “movie duration” filter even though the results include books, and the search results for “down filling” could have a filter for “sleeping bag temperature rating” even though the results include other product types.

The traditional way of suggesting only generic scope filters (categories) and site-wide filters (price, brand, availability, etc.) for site-wide search results is insufficient for a good experience. Product-specific filters based on the user’s query must be suggested, too. However, only 40% of e-commerce websites currently do this via faceted search filter suggestions.

While faceted search is a crucial component of search filtering, it doesn’t make for a good filtering experience on its own. Also crucial are the filtering types (such as thematic filters), the filters’ design details and the filtering logic (for example, avoiding mutually exclusive filters, as explained in the third point of “Best Practices for Designing Faceted Search Filters[109]”).

---

[109] http://www.uxmatters.com/mt/archives/2009/09/best-practices-for-designing-faceted-search-filters.php



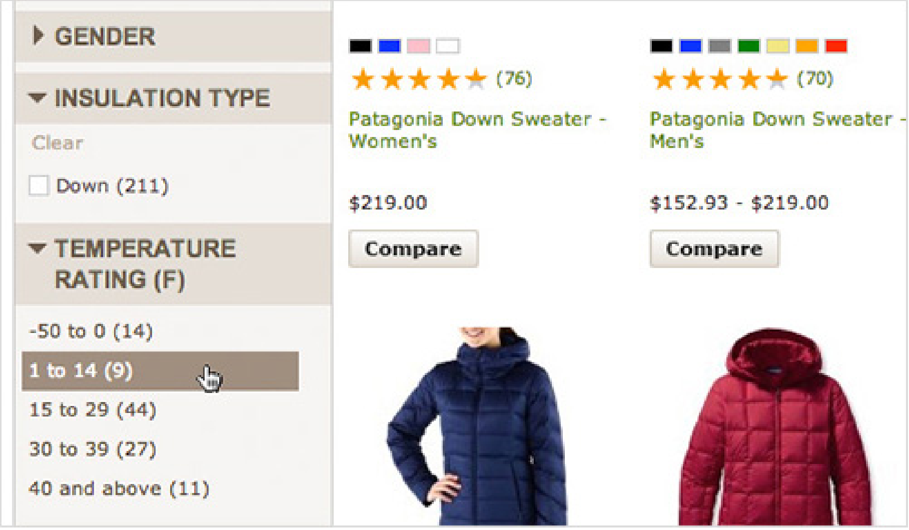
The site-wide search for "Tom Hanks" returned not only movies, but other product types, such as books (for example, biographies). However, with the faceted search filters on Amazon[110]*, this subject was able to quickly select "Movie Release Date: 2010 & newer" to see just the newest movies starring Tom Hanks. Without faceted search, the subject would have had to first select a scope filter (books, posters, movies) in order to see the movie-specific filter "Release Date." (View large version*[111]*)*

Furthermore, faceted search filters were observed to have usability issues of their own. One challenge is that when the filters also invoke a higher-level scope, they need to clearly indicate this in their label. Otherwise, users will likely be misled because they have no way to accurately predict the implications of applying the filter, as illustrated in the REI example on the following page.

---

[110] http://baymard.com/ecommerce-search/benchmark/site-reviews/172-amazon

[111] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/15-amazon-search-opt.jpg



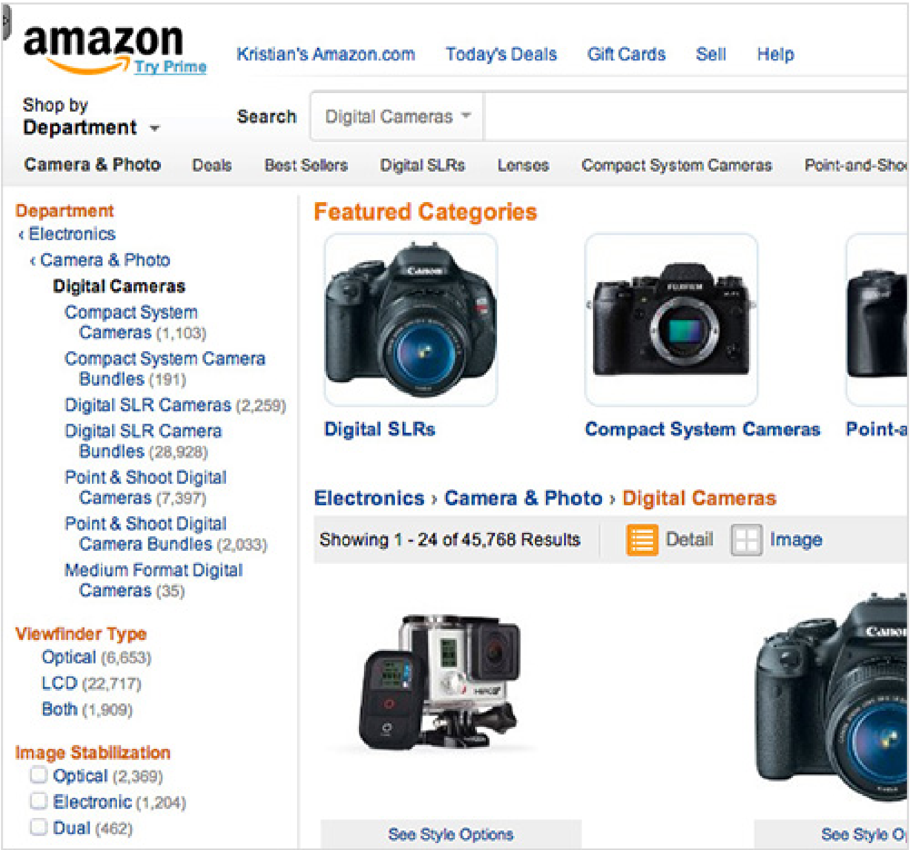
The feature search query "down filling" yields multiple product types on REI[112]*, including jackets and sleeping bags. The seemingly relevant "temperature rating" filter is actually a faceted filter that applies only to the website's "sleeping bag" scope, yet the label doesn't indicate this. Thus, when the user applies the "temperature" filter, all of the "down-filled" jackets are removed from the results. (View large version*[113]*)*

Faceted search's labelling issues aren't solved simply by including the filter's context in the filter label (for example, permanently having the filter read "Sleeping Bag Temperature Rating"). That would hinder users who have already applied a search scope (and users who are using category navigation) because it would make the labels needlessly difficult to scan due to a lack of front-loaded information and a poor signal-to-noise ratio. Therefore, if faceted search filters invoke a scope, then a dynamic labeling system is needed to keep the filter labels concise and scannable when the user has already selected a con-

---

112. http://baymard.com/ecommerce-search/benchmark/site-reviews/185-rei
113. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/16-rei-search-opt.jpg

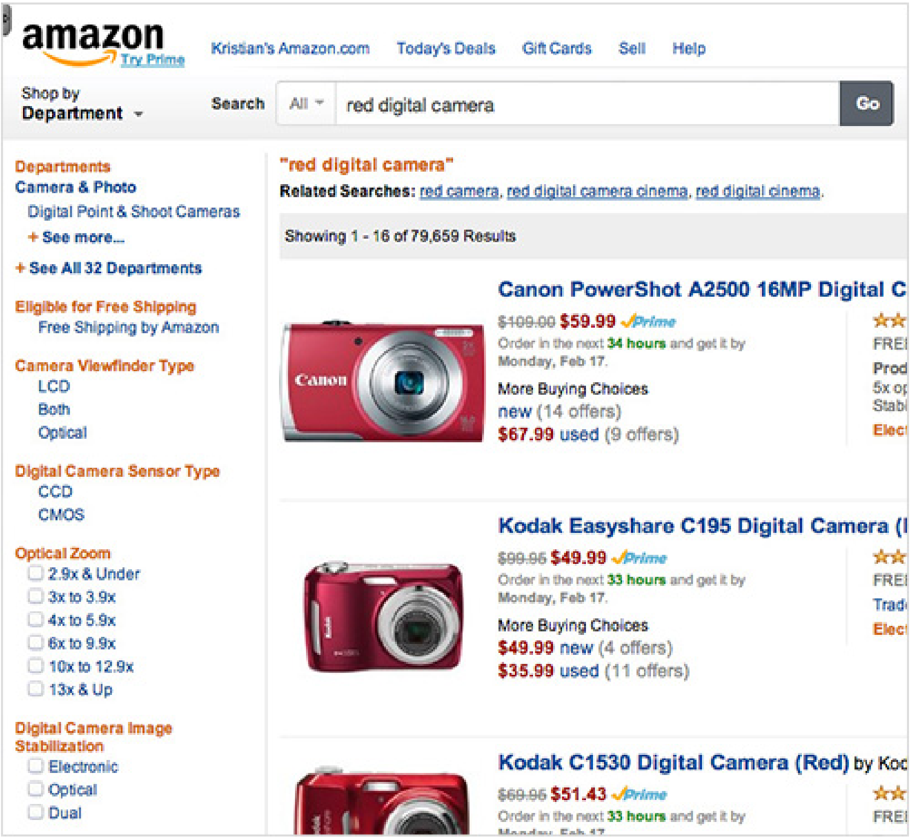
text (for example, navigated to a category or applied a search scope) and then dynamically rename the filter labels to indicate the scope-related implications of applying that filter. Such a dynamic filter labeling system is illustrated in the example below:



When in the "Digital Cameras" scope on Amazon, the filter labels are optimized for scannability by removing redundant scope terms, resulting in concise titles such as "Viewfinder Type," "Image Stabilization" and so on (View large version[114]*)*

---

[114] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/17-amazon-search-opt.jpg



Search: red digital camera

"red digital camera"

Related Searches: red camera, red digital camera cinema, red digital cinema.

Showing 1 - 16 of 79,659 Results

Canon PowerShot A2500 16MP Digital C

~~$109.00~~ $59.99

Order in the next 34 hours and get it by Monday, Feb 17.

More Buying Choices

new (14 offers)

$67.99 used (9 offers)

Kodak Easyshare C195 Digital Camera (I

~~$99.95~~ $49.99

Order in the next 33 hours and get it by Monday, Feb 17.

More Buying Choices

$49.99 new (4 offers)

$35.99 used (11 offers)

Kodak C1530 Digital Camera (Red) by Koc

~~$69.95~~ $51.43

Order in the next 33 hours and get it by

On the other hand, when users make a site-wide search, the (faceted) filtering suggestions are dynamically renamed to include the scope's context, so that they now read "Camera Viewfinder Type," "Digital Camera Image Stabilization" and so on, making it much easier for the user to infer that a category scope will be applied if selected. (View large version[115])

IMPLEMENTATION TIP

Don't simply rely on generic site-wide filters, such as category, price and brand. Rather, provide product-specific filters that relate directly to the user's query (through faceted search). If the faceted search filters invoke a scope, then the filter labels need to be dynamically renamed to indicate this. Also, consider whether sufficient

---

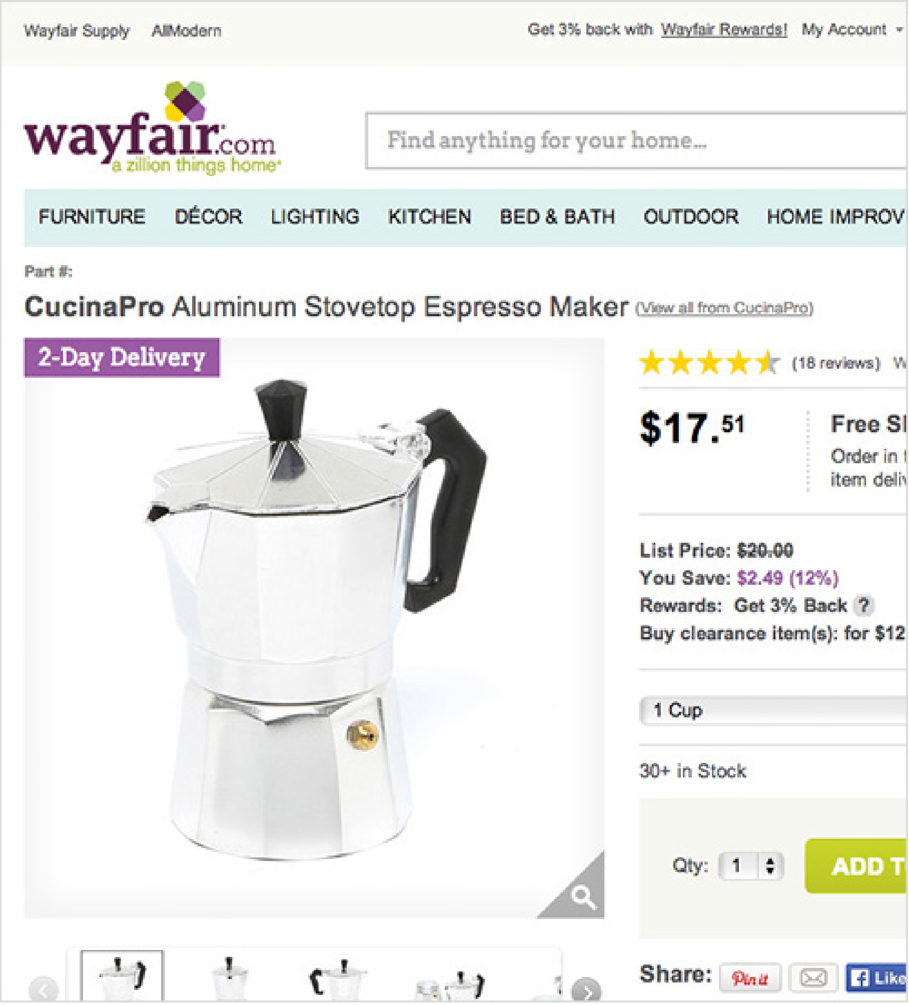
[115] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/18-amazon-search-opt.jpg

filtering types are available. For example, thematic filters such as style, season and usage context often map closely to users' purchasing parameters.

7. 92% Have Only One Breadcrumb Type Or No Breadcrumbs At All

During testing, breadcrumbs proved to be helpful for test subjects when navigating both search results and when looking through categories to find just the right product. Interestingly, testing also revealed that e-commerce websites need two different types of breadcrumb links — namely, hierarchical and history-based breadcrumbs. Yet, 92% of the 50 top-grossing e-commerce websites display only one breadcrumb type (72%) or no breadcrumbs at all (20%).

Without breadcrumbs on the product page, users will find it difficult to efficiently browse a collection of products, because they have no way to go one level up in the hierarchy to the product category or to return to the search results page. In practice, this often forces users to make a drastic jump in scope, such as selecting a generic top-level category, or else perform a new search or remain stuck on the product page.



Neither history-based nor hierarchical breadcrumbs is available on Wayfair[116], making it difficult for users to get back to their search results or to access related products from the current category. Here, the hierarchical breadcrumbs would have been "Kitchen" → "Small Kitchen Appliances" → "Espresso Makers" → "Stovetop Espresso Makers." (View large version[117])

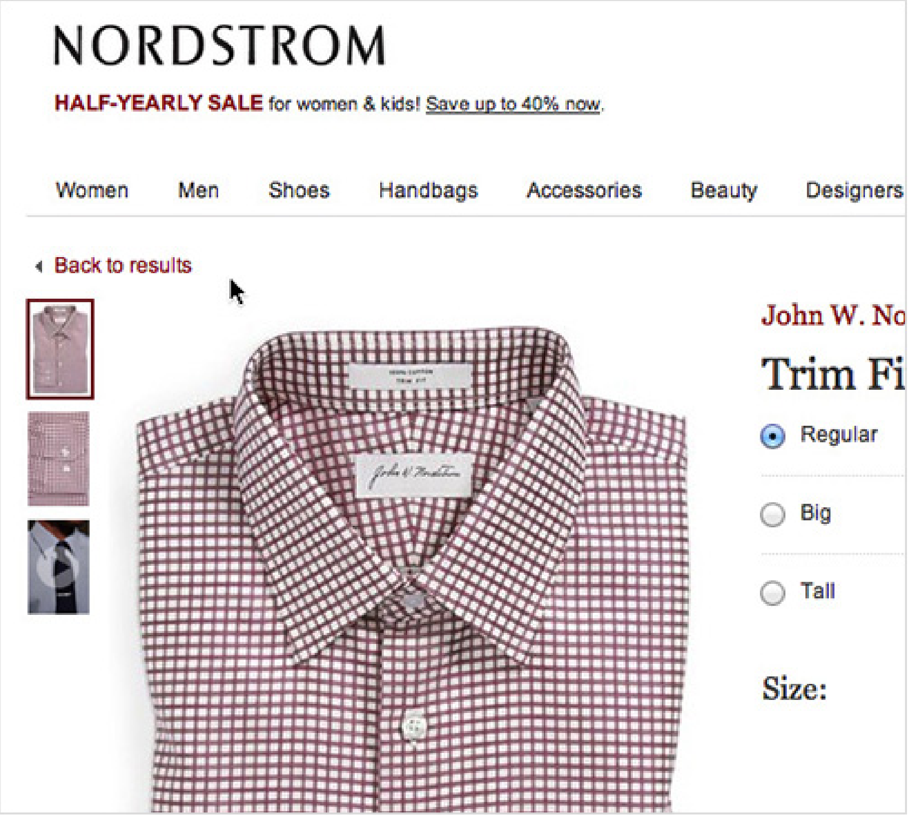
With traditional hierarchical breadcrumbs, any user who doesn't find a particular product to be a good match can use the breadcrumbs to traverse up the website's hierar-

---

[116] http://baymard.com/ecommerce-search/benchmark/site-reviews/161-wayfair

[117] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/19-wayfair-search.jpg

chy and navigate to a related category. This is paramount for non-linear navigation such as search, because it enable users to see other products in the same category as an item in a search result. The hierarchy essentially acts as a cross-navigation link for finding related products, regardless of whether the user has accessed the category from a completely different part of the website. (The same non-linear behavior was observed to hold true for all external traffic landing directly on product pages.)



Nordstrom[118] has history-based breadcrumbs, giving users a "Back to results" link to return them to the search results, with all previous filtering and sorting settings intact. However, the lack of hierarchical breadcrumbs makes it difficult for users to infer or jump scope. (View large version[119])

During testing, it quickly became evident that most subjects had a strong desire to go “one step back” after exploring a product page. This typically meant going back to the search results list, which history-based breadcrumbs are well suited to. History-based breadcrumbs are, as the name implies, based on the user’s history, giving the user a way back to previously visited pages.

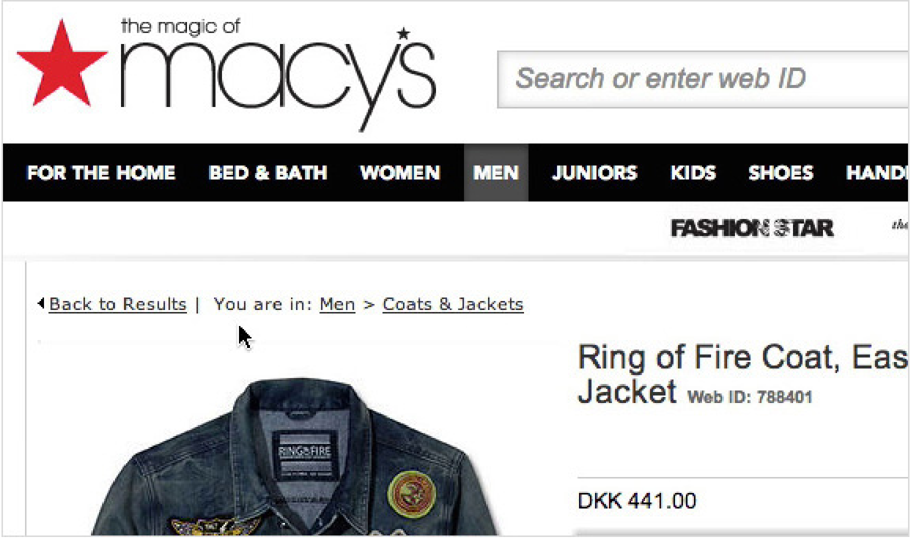
While this functionality is also available in the browser’s interface via the “Back” button, test subjects repeatedly got stuck or were misguided on websites that offer only one type of breadcrumb. For example, when only hierarchical breadcrumbs were available, many subjects confused them as a way back to their search results. As a consequence, they unwittingly switched their product-finding strategy and lost any filter or sorting settings they had applied, thinking the last hierarchical breadcrumb link would take them back to the search results page.

A simple “Back to results” link alongside the standard hierarchical breadcrumbs enables users to seamlessly go back to their search results, with filters and sorting choices intact. History-based and hierarchical breadcrumb links are an ideal combination, allowing users to efficiently continue their current search session or switch to a new navigational mode.

---

118. http://baymard.com/ecommerce-search/benchmark/site-reviews/165-nordstrom

119. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/20-nordstrom-search-opt.jpg



By including both history-based and hierarchical breadcrumbs, as seen here on Macy's[120]*, users have an easy, inline way to go back to the search results or to switch strategies and go directly to the related product category. Both breadcrumb types are found on only 8% of the top e-commerce websites.*

IMPLEMENTATION TIP

Implement two types of breadcrumbs on product pages: hierarchical breadcrumbs, which allow users to infer and jump to categories that contain the current product, and history-based breadcrumbs (such as "Back to Results"), which minimize misinterpretation of hierarchical breadcrumbs as a way back to the search results. Testing confirms that history-based breadcrumbs can be both appended (as on Macy's) and prepended to hierarchical breadcrumbs.

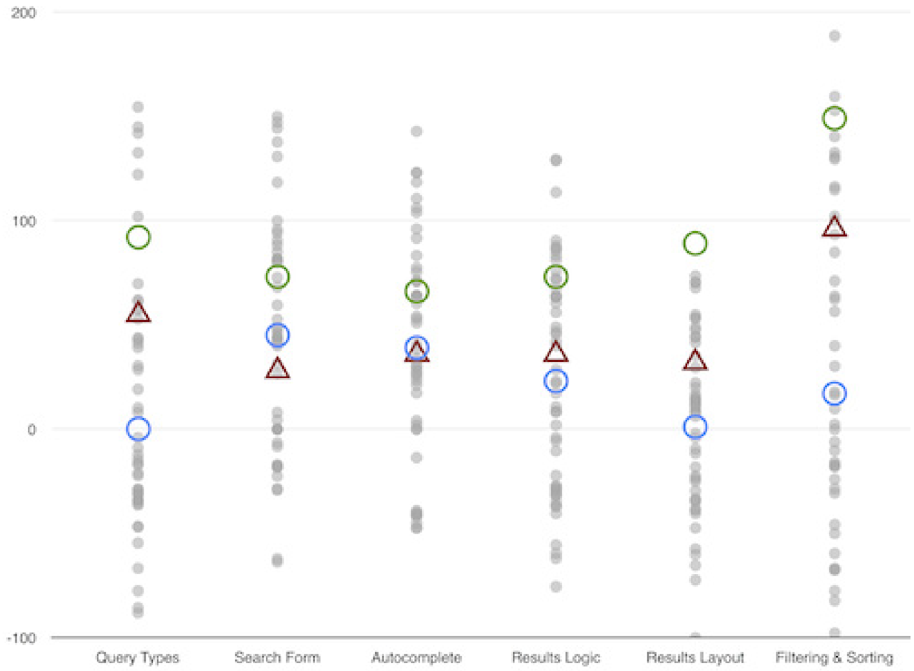
---

120. http://baymard.com/ecommerce-search/benchmark/site-reviews/167-macy-s

The State of E-Commerce Search

To give you a more general analysis of search performance in the e-commerce industry as a whole, we've summarized the entire benchmark data set in the scatter plot below.

Each of the 3,000 benchmark scores is divided into the six major areas of e-commerce search usability: query types, search form and logic, autocompletion, results logic, results layout, and results filtering and sorting. Thus, each gray dot represents the summarized score of one website's score across the 6 to 15 guidelines within that area.



To identify the search usability score of each of the top-50 websites, you can explore the interactive version of this scatter plot[121]*.*
(View large version[122]*)*

---

[121] http://baymard.com/ecommerce-search/benchmark/site-reviews

The blue circles represent the actual benchmark average for each column (an average of the gray dots). The red triangle and green circle are reference scores that we've created for comparison:

- The green circle represents the score for what is to be considered a "good" search experience – here defined as a website that partly adheres to all 60 of the search guidelines. That is, the green circle represents the standard that an e-commerce website should reach (or, better yet, surpass) in its search experience.
- The red triangle represents the score for a "mediocre" search experience – here defined as a website that partly adheres to 48 of the 60 guidelines. That is, search engines and designs that reach this standard can be assumed to directly hinder (or even obstruct) users as they search.

Besides noting the very scattered score distribution in each column, the columns to pay attention to are those that show the industry average (blue circle) significantly below a "mediocre" search experience (red triangle). This is the case for query types, results layout, and filtering and sorting – all areas of the search experience where the vast majority of e-commerce websites have significant room for improvement.

Query are the very core of e-commerce searchtypes, yet support for the 12 essential query types is lackluster at best. Points 1, 2 and 3 of this chapter are just the tip of the

---

122. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/07/22-search-benchmark-opt.jpg

iceberg (you can find all 12 query types in a white paper that we recently published[123]), but they clearly demonstrate poor support:

- 16% of e-commerce websites do not support searches by product name or model number.
- 18% handle misspellings so poorly that users would have to pass a spelling test in order to get relevant results.
- 70% require users to use the jargon of the website, failing to return relevant results when users search with common synonyms.
- 60% do not support searches with symbols or abbreviations of units of measurements (or vice versa).

Given its key role in the search experience, query types are an area that sorely needs to be prioritized on the vast majority of e-commerce websites, and they should be seriously considered and evaluated in any optimization project. When evaluating the resources required, remember that improvements to search engine logic would benefit all platforms (desktop, mobile, tablet, etc.), whereas layout changes are typically platform-specific.

Testing revealed that the results layout is a balancing act of designing a clean overview of search results and providing sufficient information for users to accurately evaluate and compare results. However, the benchmark of this metric tells a grim story, with the best websites do-

---

[123] http://baymard.com/blog/ecommerce-search-query-types

ing merely OK, and the other half of websites performing poorly.

A common cause of poor results layout is that the website relies on the same (static) layout for both search results and category product lists. From our testing, search results clearly need a more dynamic layout that adapts to the user's query and context. This could include altering how much and which information is displayed for each result, which product thumbnail is displayed, how large the thumbnail is and so on. All of these elements should dynamically adapt to more closely match the user's query and expectations. To some extent, this also includes the product page's layout, which could have dynamic links, such as history-based breadcrumbs, along with the traditional hierarchical breadcrumbs (see point 7 in this chapter).

Optimizing the results layout is a relatively manageable project, which mainly entails switching from reusing the static (category) results layout to a dedicated and slightly more dynamic search results layout. It should, therefore, be considered low-hanging fruit, given the large impact it can have on the overall search experience, especially during the product-selection process.

Filtering and sorting search results is a somewhat overlooked area. Notice the highly scattered plot in its column and the fact that nearly all websites miss out on important aspects of it, as indicated by the threshold for a "decent" search experience (red triangle). Just like the results layout, filtering and sorting features should adapt to the user's query and context.

For example, while faceted search (see point 6 in this chapter) is the foundation of a contextual filtering experience, only 40% of websites have it. Worse, the multiple elements of sorting site-wide search results that we identified during testing are overlooked entirely, with more than 70% of websites lacking key sorting types, and 90% having no scope options or suggestions when users try to sort site-wide results.

Given that filtering and sorting are much less resource-intensive to get right than query support, they should be a part of almost every optimization project for e-commerce search. Moreover, many of the improvements are manageable enough to be implemented and optimized on an ongoing basis, and much of it can be reused to improve the sorting and filtering experience in category navigation. (For more, see "An E-Commerce Study: Guidelines for Better Navigation and Categories.")

Search: A Competitive Advantage

The gloomy state of e-commerce search doesn't mean that users cannot perform and benefit from search on the benchmarked websites. However, it does clearly indicate that e-commerce search isn't as user-friendly as it should be and that users' success rate could be improved dramatically on most websites — even those of these 50 e-commerce giants.

While catching up with the few websites that have done really well from years of focused investment would require a serious prioritization of the search experience, it is achievable. Furthermore, because the poor state of search is industry-wide, most websites have an opportunity to gain a truly competitive advantage by offering a vastly superior search experience to their competitors'.

A good start would be to look into the seven points we've presented in this chapter:

1. If few results of low relevance are returned, the search logic should broaden the scope and look for closely related spellings (18% of websites don't). Furthermore, the logic needs to search through the entire product data set, to include matches for product names and copied-and-pasted model numbers (16% of websites don't).

2. Map common product-type synonyms to the spellings used on your website to ensure relevant results for a query such as "blow dryer" if you refer to it as a "hair dryer," or a query such as "multifunction printer" if "all-in-one printer" is used (70% of websites don't).

3. Map all commonly used symbols, abbreviations and full spellings to each other, so that all results are shown regardless of how something is written in the product data. For example, map "inch" to the double quotation and double prime symbols and to the abbreviation "in" (60% of websites don't).

4. Be cautious about auto-suggesting based on other users' past queries because that often leads to low-quality and redundant suggestions. Furthermore, regularly check that auto-suggestions don't lead to a dead end (36% of the websites with autocompletion don't do this).

5. Allow users to easily iterate on their query by prefilling it in the search field on the results page (66% of websites don't).
6. Implement faceted search to suggest filters that match the user's query more closely. For example, suggest product attribute filters that apply to a subset of the search results (60% of websites don't do this).
7. On product pages, provide both traditional hierarchical breadcrumbs (to support non-linear patterns of search) and history-based breadcrumbs, such as "Back to results" (72% of websites offer only one type).

Because a poorly performing search experience can look as good aesthetically as a high-performing search experience, gauging one's own or a competitor's search experience requires extensive testing and evaluation. The fact that search experience and performance are heavily influenced by non-visible factors, such as search logic and product data integration, is actually good because the competitive advantage you would gain from investing in them cannot be easily copied by competitors (unlike, say, a home page redesign). So, while creating a truly great search experience will probably require substantial resources, it's also an opportunity to create an equally substantial and lasting competitive advantage, one that competitors cannot easily piggyback on.

As a final note, the findings from our usability study give owners of small e-commerce websites a fair shot at improving their search experience, because roughly half of the 60 guidelines relate to user interface. This is especially true of the results layout and the filtering and sorting experience, which are areas that are usually easy to change but whose performance on most websites is currently below expectations.

If you're interested in exploring the search experience of each of the top-50 websites and seeing how they compare to each other (and not having to review the over 3,000 elements that our team spent months analyzing), then see our free search usability benchmark database[124].

You can find all 60 e-commerce search usability guidelines in our report "E-Commerce Search Usability[125]" (not free). ❧

---

[124] http://baymard.com/ecommerce-search/benchmark/site-reviews
[125] http://baymard.com/ecommerce-search

Better Product Pages: Turn Visitors Into Customers

BY SABINA IDLER ❧

The way you present your product or service is essential to its success — or at least it could be if you know how to do it right. On the Web, like anywhere else, the first impression you make on people is crucial. When selling a product, you want that first impression to be as positive and remarkable as possible.

Once people visit your website, make sure to attract their attention. If you have managed to draw them in, you will need to introduce the product within a few seconds. According to last year's Google Analytics benchmarking report, bounce rates in the US were as high as 42.5%[126]. If people don't understand what you are offering them or how it works, they will lose interest quickly. Show them that your product is just what they want, that it's useful and that it adds some kind of value to their lives.

A smart product presentation does all of that. Here, we will cover different aspects of a product presentation and give examples of how to use them to your advantage. The idea is to give you an overview of the different elements that make a product page successful.

---

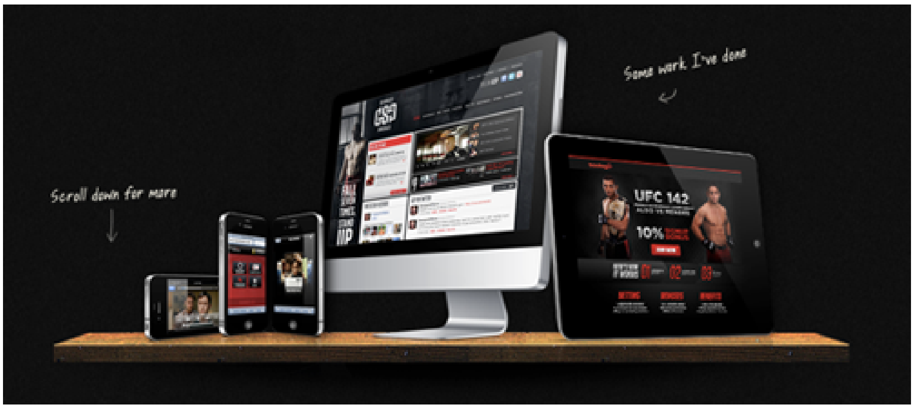
[126] http://www.simplyclicks.com/blog/2011/07/average-bounce-rate-google-analytics/

Attract Attention

Before convincing anyone of the quality of your product, you need to make sure it gets noticed. No matter whether people are looking for your particular product, once you have caught their attention, you are in a good position to arouse their interest and get them engaged. The things you can do to catch the user's eye are limited only by your creativity. Here are three examples that we believe are effective.

STAND OUT FROM THE CROWD

Countless companies and people freelance in the creative sectors, and all of them offer some kind of information about their services and prior work. Usually, you can browse portfolios to find a bunch of boring screenshots accompanied by even more boring information.



(Image: Chris Bower[127])

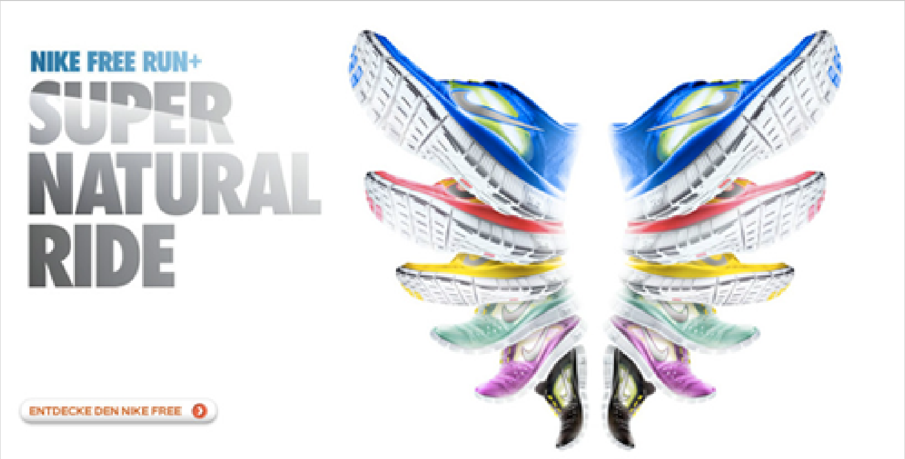
---

[127] http://www.chrisbower.co/

Web designer Chris Bower[128] has found a unique and appealing way to demonstrate his expertise. His professional presentation of his work on various devices accomplishes three things. It is the ultimate eye-catcher on an otherwise clean website; it conveys the designer's quality because it looks truly professional; and it shows that Chris designs for any device you can think of. With only a glance at his home page, you know whether to enter or leave the website.

SURPRISE YOUR VISITORS

Another great way to attract attention is by surprising visitors. Offer them something they did not expect; make them pause and think to make sense of what they see. We like to be surrounded by the familiar, and things that don't fit our expectations automatically draw our attention.



(Image: Nike[129])

---

[128] http://www.chrisbower.co/

Nike[130] presents its new running shoes in the shape of wings, with the promise of a "Super-natural ride." The arrangement of these multi-colored shoes and the fade in the middle almost force people to take a second look. The visual is not only appealing, but attracts attention because people are not sure whether they are looking at wings or shoes or both.

PEOPLE LOVE HUMOR

Plenty of products out there are easy to promote, whether because of their function, popularity or unique look. Other products are less conducive to effective marketing and require a more creative approach.

(Image: Evian[131]*)*

---

129. http://www.nike.com/nikeos/p/nike/de_DE/?&ref=
130. http://www.nike.com/nikeos/p/nike/de_DE/?&ref=
131. http://www.evian.com/en_US

One such example is the brand Evian[132]. How could boring water possibly attract attention? Quite simple, actually. Come up with a product-related slogan, such as “Live young,” and then translate that slogan into a visual campaign using some great humor. A couple of years back, Evian’s funny campaign videos[133] went viral – proof that its unique approach works.

Explain The Product

The way you present the product is crucial to people’s first impression of both you and the product – including what they think of you and whether they understand the nature of the product. Online services and new products especially need clarification in order for the audience to make sense of them. Obviously, if people don’t get your product or understand why they would need it, they won’t pay for it.

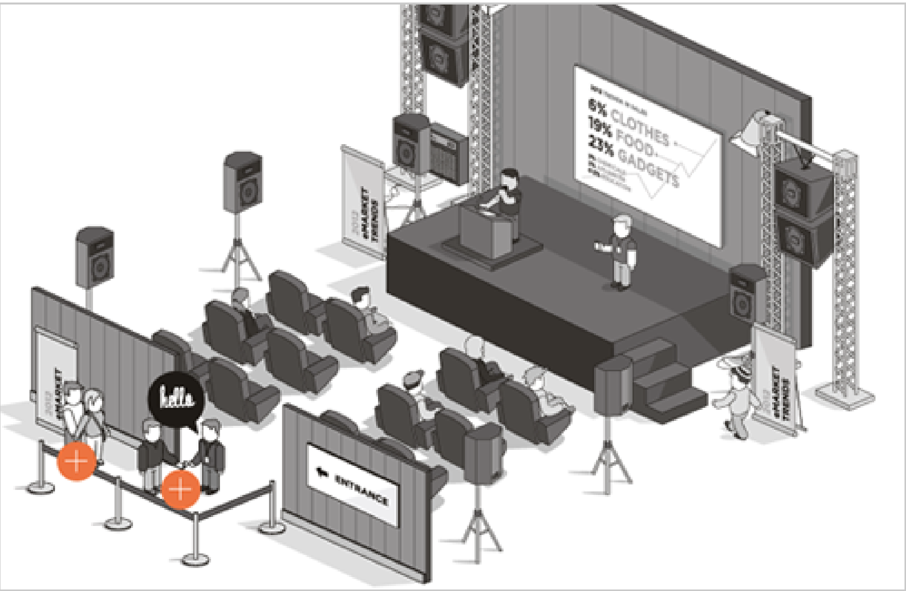
INTRODUCE THE PRODUCT

With the ease of access to technologies such as the Internet, the number of inventions has significantly increased. Any ready idea nowadays can be turned into a product or service, but some of these ideas are so abstract that they require careful explanation.

---

[132] http://www.evian.com/en_US

[133] http://www.youtube.com/watch?v=XQcVllWpwGs



(Image: Tickera[134])

The people behind Tickera[135] recognized a need to carefully explain what their system is about. Their home page is simple, and the focus is on the product and its main features. Of course, a ticketing service is not a physical product that you can arrange nicely and take pictures of. But they did a great job of translating their service into a beautiful and trustworthy visual. With only a look, it becomes clear what Tickera is about.

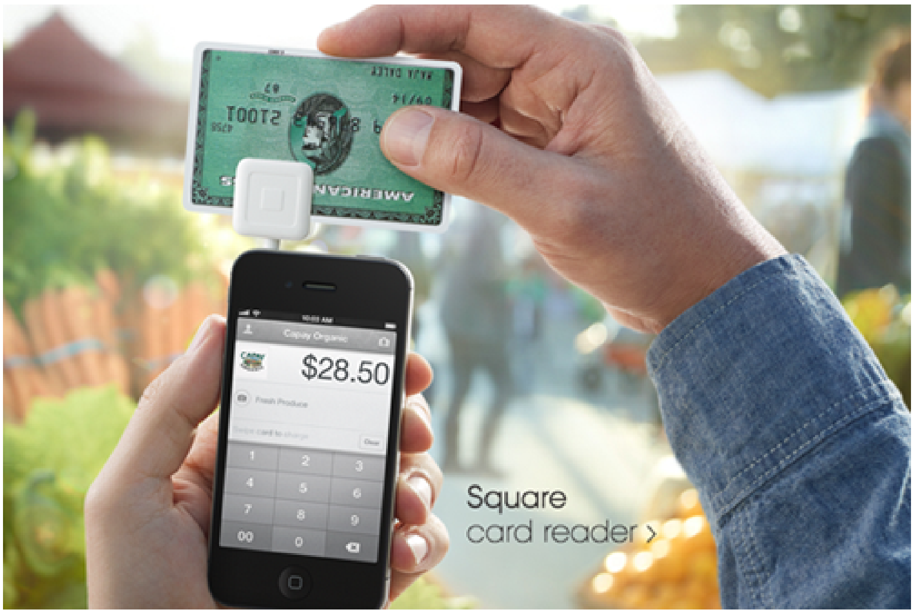
HOW DOES IT WORK?

Related to how you present the product is your explanation of how it works. Basically, you can do this by showing the product in action. And there is a big difference be-

---

[134] http://tickera.com/#&panel1-1
[135] http://tickera.com/#&panel1-1

tween showing a screenshot of software and showing the software on the device it is intended for.



(Image: Square[136])

Square[137] is a perfect example of how to present a product and demonstrate what it is and how it works. The high-resolution image shows how simple collecting and processing credit-card payments on the go can be. All you need is the little Square card reader, an iPhone and the app — no words needed to convey the value of this product.

CONVINCE PEOPLE THAT THEY NEED IT

It could happen that people understand how your product works but don't recognize its potential benefit to them.

---

[136] https://squareup.com/
[137] https://squareup.com/

This is why you should point out the advantages that people will get from your product. People consider something to be more relevant if they can relate it to themselves.

Focus On The Main Selling Point

Most products have many features but only a few or even one selling point that makes them special. Distancing yourself from competitors is important, whether through hardware features, design, service or something else. Point out this difference when presenting the product and show people that the product is different, special and better.

QUALITY

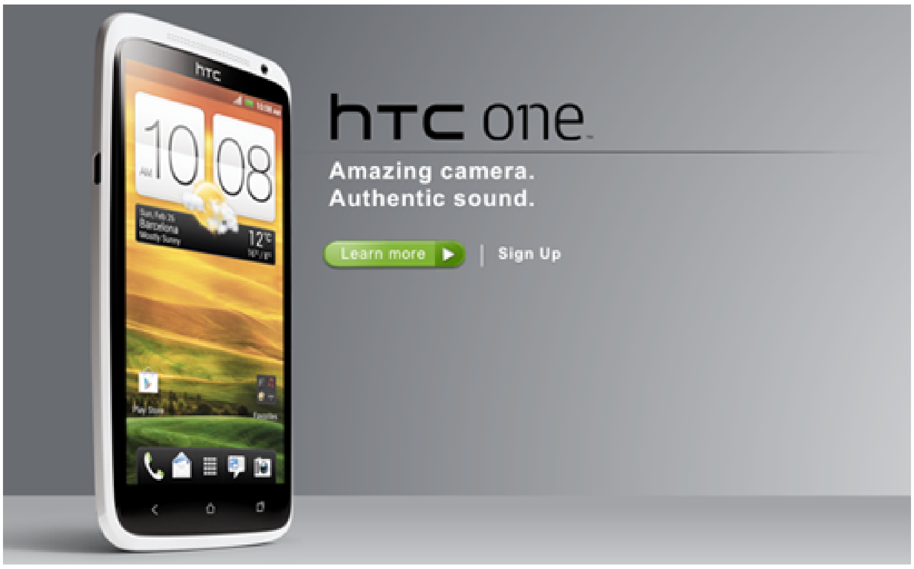
Quality is an effective selling point. And if the product costs a lot, people will want to be especially sure they are getting good quality in return. Competitors might offer the same product or feature but not the same quality. Reflect the quality of the product in your presentation of it.

(Image: Chanel[138])

Chanel[139] present all of its products in high-resolution photographs. The images were obviously taken by professionals. The white watch above is bedded in perfectly white soft feathers. The image is extremely detailed, the viewer instantly gets a feel for the quality and luxury of the brand.

FEATURES

Whatever your product, chances are high that at least one competitor offers something similar. To convince people that yours is the better choice, focus on features — particularly those that are relevant or essential to your target group.



(Image: HTC[140])

---

[138] http://www.chanel.com/en_GB/Watches/
[139] http://www.chanel.com/en_GB/Watches/
[140] http://www.htc.com/us/

All smartphones basically offer the same functions. For example, they enable people to make calls, send messages and connect to the Internet. Instead of listing all of the things that all smartphones can do, HTC[141] focuses on special features that are of concern to its target group: camera and sound.

CUSTOMIZATION

People love products that have some personal meaning for them. That's why we love to personalize our possessions, such as phone settings, laptop screens and clothing style. Customizing things helps us shape our identity, which is why customizable products are more special to us.

(Image: Converse[142])

---

[141] http://www.htc.com/us/

[142] http://www.converse.com/#/landing/create

Offer customization options to connect customers to your brand and products. Converse[143] really makes a point that people can design their own sneakers. Being able to customize your own shoes definitely adds value to the brand.

Don't Underestimate Copywriting

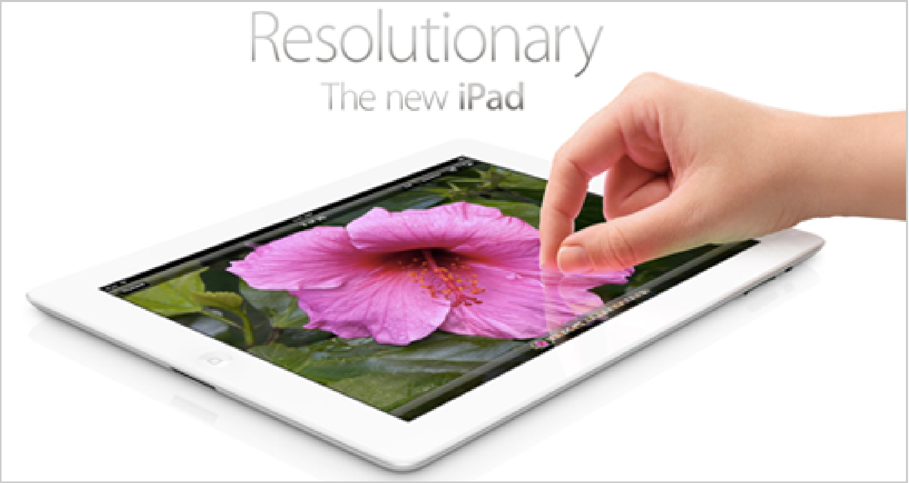
On the Web, our senses are limited. We send messages blindly, without looking our correspondent in the eyes. However, our limited senses should not limit our creativity. We can use more than plain images and text to make our point. Our message is shaped by our choice of words, typeface, font size and even punctuation.

PLAY WITH WORDS

Puns are a great way to attract attention because they wrap a message in a familiar concept. You are giving visitors something they recognize and are linking it to your own message. Wordplay can be used to explain a concept quickly and convey familiarity.

---

[143] http://www.converse.com/#/landing/create



(Image: Apple[144])

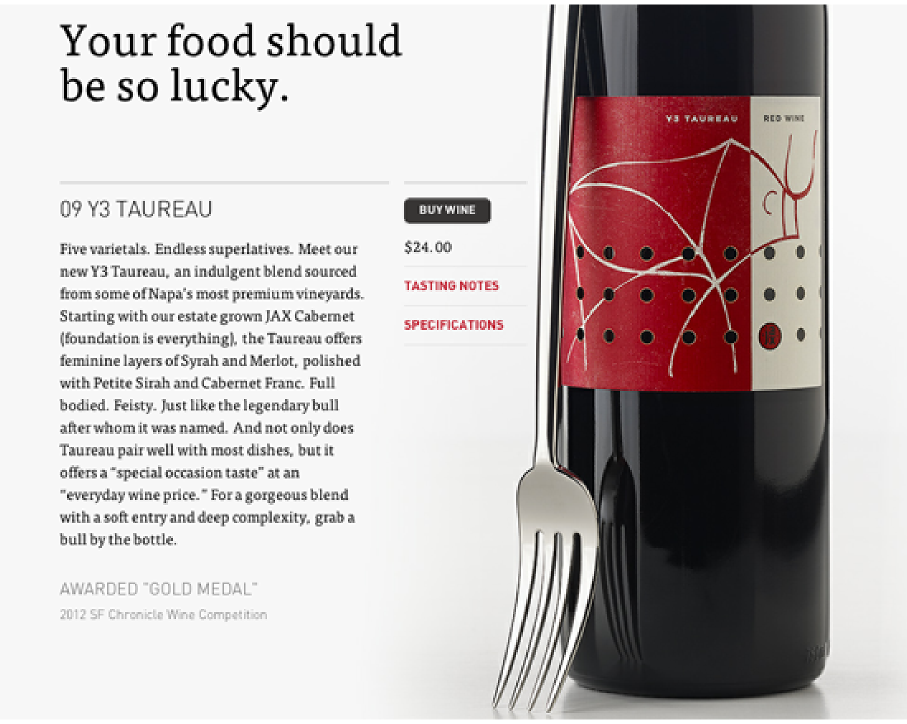
Apple[145] does this very effectively. It pioneered the tablet and puts everything into showing that it is the best in the field. The iPad 3 had a revolutionary display, which was its main selling point. The pun “Resolutionary” is powerful and demonstrates in a single word the high quality of the product.

DON’T GET TOO SERIOUS

A good laugh helps people bond. You can surely think of more than one example of an inside joke that fostered a sense of connectedness and belonging. The same can be done online. A funny or ironic headline could be all you need to sell a product. Obviously, you can do both: bond with visitors and send a meaningful message.

---

[144] http://www.apple.com/
[145] http://www.apple.com/



Your food should be so lucky.

09 Y3 TAUREAU

Five varietals. Endless superlatives. Meet our new Y3 Taureau, an indulgent blend sourced from some of Napa's most premium vineyards. Starting with our estate grown JAX Cabernet (foundation is everything), the Taureau offers feminine layers of Syrah and Merlot, polished with Petite Sirah and Cabernet Franc. Full bodied. Feisty. Just like the legendary bull after whom it was named. And not only does Taureau pair well with most dishes, but it offers a "special occasion taste" at an "everyday wine price." For a gorgeous blend with a soft entry and deep complexity, grab a bull by the bottle.

AWARDED "GOLD MEDAL"
2012 SF Chronicle Wine Competition

(Image: Jax Vineyards[146]*)*

A perfect example of a funny and powerful headline can be found on the website of Jax Vineyards[147]: "Your food should be so lucky." Of course, your food would not actually be lucky, no matter which wine you pair it with, but the idea of cherishing your food by choosing the right wine is appealing. Imagine spending hours preparing the perfect dinner; spoiling it with the wrong wine would be a shame, right?

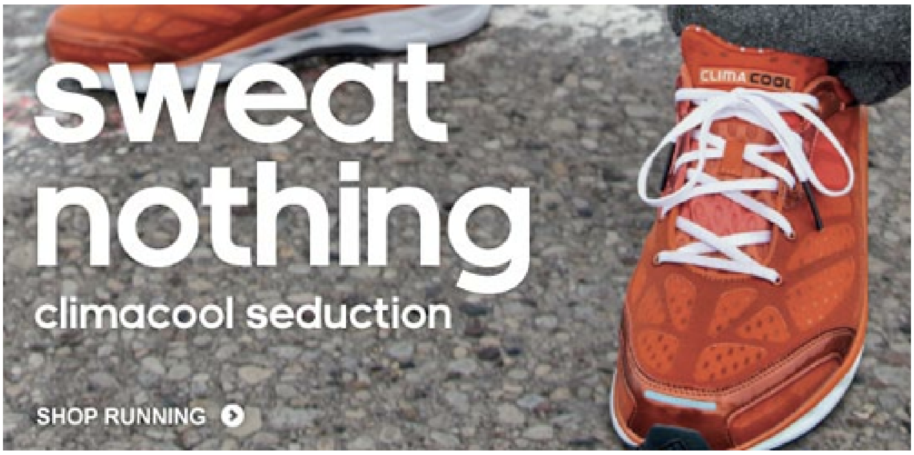
USE METAPHORS

Metaphors can bring copy – and, by extension, the product – to life. Metaphors help us understand the world

---

[146] http://jaxvineyards.com/
[147] http://jaxvineyards.com/

around us and make sense of unfamiliar things. Abstract ideas such as the reason why your product is so special could also be easily explained with the right metaphor.



(Image: Adidas[148])

Adidas[149] promotes its new running shoe with the slogan, “Sweat nothing, climacool seduction.” The melody of the words and the association triggered by the word “seduction” could easily cause us to misread the slogan as “Sweet nothing, climacool seduction.” The ad gains a risqué charm, giving off a light and comfortable feeling – perhaps acquiring an association with alluring lingerie. The link between running shoes and lingerie is not at all obvious, but it works brilliantly and transfers a positive and familiar association to a new line of running shoes.

---

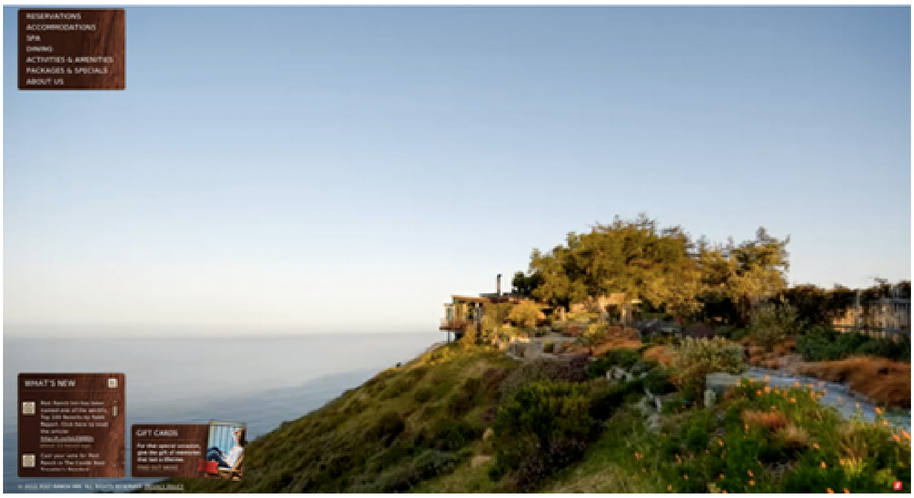
148. http://www.adidas.com/us/men/_/N-u2
149. http://www.adidas.com/us/men/_/N-u2

Make Use of Context

The context in which you present a product is just as important as the product itself, if not more so. It is the space in which you show the product in action. It is the accumulation of associations that trigger emotions in customers. It draws people in and convinces them that they need your product.

AWAKE DESIRES

Motion pictures are a great way to draw people into a different world. Why else do we go to the movies, if not to escape our everyday lives and immerse ourselves in some romantic love story or surrealistic adventure? You can use the same effect on your customers and enable them to experience, say, the pleasure of a vacation.



(Image: Post Ranch Inn[150])

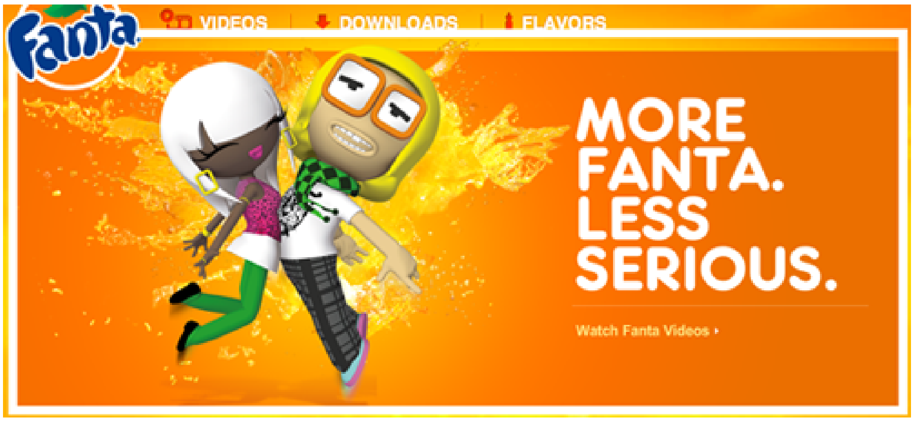
---

[150] http://www.postranchinn.com/

The 24-hour time-lapse video of the idyllic Post Ranch Inn[151] gives visitors the feeling that they have already been there. The website takes you on a journey from sunrise to sunset, whisking you away from your desk on a long-awaited and deserved vacation.

TRIGGER POSITIVE EMOTIONS

You can also use a narrative or mascot to add value to the product. Focusing not on the product itself but on the emotions that come with it is a clever strategy. Customers might have plenty of options, but if you sell them the right feeling, they will be easily convinced.



(Image: Fanta[152])

Fanta[153] uses animated characters who enjoy life to the fullest and have a lot of fun. The slogan “More Fanta. Less Serious.” communicates the idea that Fanta will relax you and let you have fun. There is no reference to the drink it-

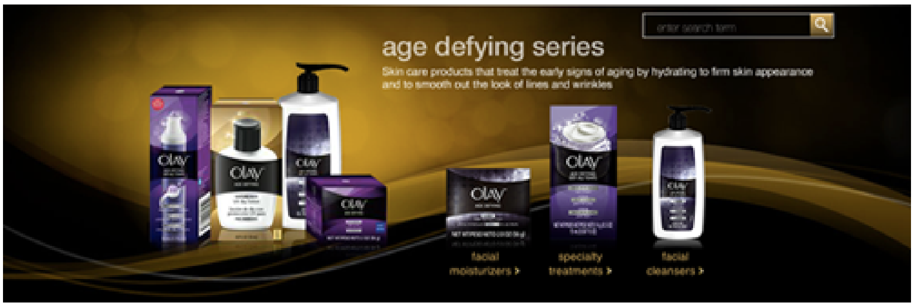
---

[151] http://www.postranchinn.com/
[152] http://www.fanta.com/en_US/pages/landing/index.html
[153] http://www.fanta.com/en_US/pages/landing/index.html

self, such as ingredients. The only thing you see is the emotional triggers of happy characters and bright positive colors.

APPEAL TO YOUR TARGET GROUP

Every target group is different, with different interests, levels of knowledge, expectations and so on. Clearly define your target group to make sure you appeal to the right people[154]. Defining a target group means truly understanding what makes them tick: their motivations, goals and habits. Only with a clear picture of who you are designing for will you be able to create a product that people really need and desire.



age defying series

Skin care products that treat the early signs of aging by hydrating to firm skin appearance and to smooth out the look of lines and wrinkles

(Image: Olay[155]*)*

Products like the age-defying line from Olay[156] have a clearly defined target group: middle-aged women. Products for the body – especially related to sensitive subjects, such as aging – are considered intimate and require a

---

[154] http://blog.usabilla.com/guaranteed-success-with-emotional-marketing%C2%A0in-only-5-steps/

[155] http://www.olay.com/skin-care-products/ADS

[156] http://www.olay.com/skin-care-products/ADS

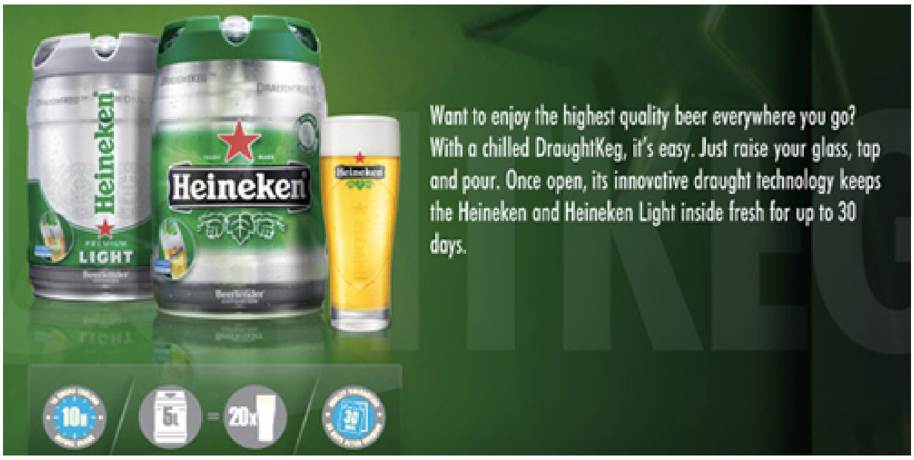
high level of trust[157]. Olay appeals to just that desire and presents its products in a professional yet familiar and trustworthy way.

Offer Sufficient Information

Factual information can be important to selling a product. People make rational decisions based on factual information, especially when purchasing expensive items – at least they like to think so. Factual information not only answers questions people might have about the product, but makes people more confident in their decision.

HIGHLIGHT ADVANTAGES

Facts are a great way to point out a product's advantages. Clear statements and factual information can be very convincing, and that's what you intend to do at the end of the day, right?



Want to enjoy the highest quality beer everywhere you go? With a chilled DraughtKeg, it's easy. Just raise your glass, tap and pour. Once open, its innovative draught technology keeps the Heineken and Heineken Light inside fresh for up to 30 days.

(Image: Heineken[158])

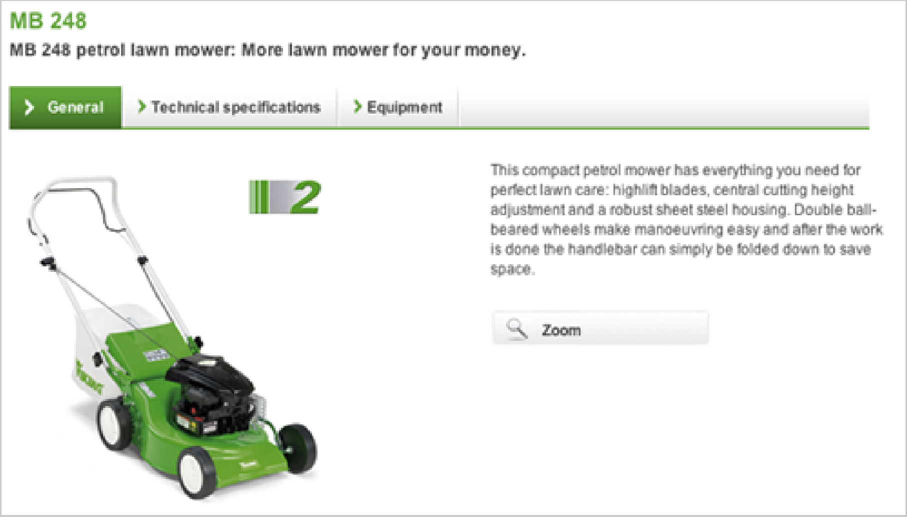
---

[157] http://blog.usabilla.com/case-study-the-emotional-pull-of-beauty-brands/

You would not necessarily expect a beer brand to volunteer factual information. Yet Heineken[159] presents its tap beer with clarity and sophistication. The information is given a serious and refined atmosphere, instead of Heineken's usual fun style.

MAKE DETAILED INFORMATION OPTIONAL

For some products, people really need certain information before being able to decide. This information could be a list of features, technical specifications or anything else. If your product requires such information, make sure people don't have to hunt for it.



MB 248

MB 248 petrol lawn mower: More lawn mower for your money.

This compact petrol mower has everything you need for perfect lawn care: highlift blades, central cutting height adjustment and a robust sheet steel housing. Double ball-beared wheels make manoeuvring easy and after the work is done the handlebar can simply be folded down to save space.

(Image: Viking[160])

---

[158] http://www.heineken.com/us/AgeGateway.aspx

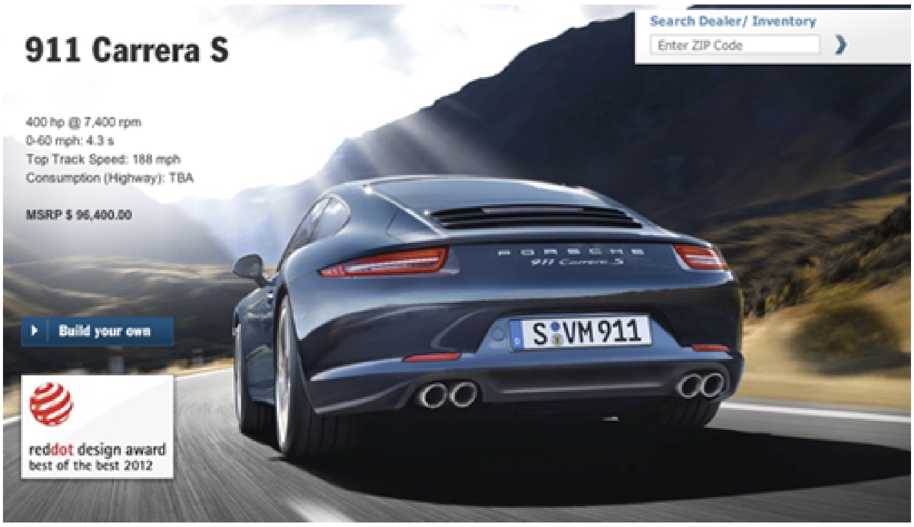
[159] http://www.heineken.com/us/AgeGateway.aspx

[160] http://www.viking-garden.com/VIKING-products/1700/Lawn-mowers.aspx

Viking[161] presents a high-resolution image along with a simple textual description. The first impression is very clean. Of course, when buying a lawn mower, a person needs more detailed information; thus, technical specifications and equipment details are neatly included in separate tabs.

CONVINCE WITH FACTS

Use facts to underpin the message that you are conveying visually. Information helps a person feel more confident if it confirms something they already feel.



911 Carrera S

400 hp @ 7,400 rpm
0-60 mph: 4.3 s
Top Track Speed: 188 mph
Consumption (Highway): TBA

MSRP $ 96,400.00

(Image: Porsche[162])

No one really needs a sports car. But people do want them, and they buy them for leisure. Porsche[163] uses a lot of great visuals to convey a feeling of speed, excitement

---

[161] http://www.viking-garden.com/VIKING-products/1700/Lawn-mowers.aspx
[162] http://www.porsche.com/usa/models/911/911-carrera/
[163] http://www.porsche.com/usa/models/911/911-carrera/

and precision. Yet it also offers some information with these visuals — some, though, not much; just enough to underpin the emotions conveyed by the image: power, independence and luxury.

Conclusion

Whether you are selling a gadget, software, service or anything else, your presentation will have a direct impact on people's first impression. And on the Web, which offers many choices and where people can leave your website in a mouse click, this first impression is crucial to your relationship with visitors and to gaining new customers.

A good presentation will draw the visitor's attention, help them understand the product and even convince them to buy it. Use sketches, detailed illustrations or vivid photographs to communicate your message. Together with thoughtfully written copy, this presentation could well be the most important asset on your website.

❧

Designing A Better Mobile Checkout Process

BY DEREK NELSON ❧

A record number of shoppers are turning to their smartphones to research potential purchases. Meanwhile, the bigger question — are those same users willing to *complete* the purchases on their mobile device? — is quickly being answered. The US, for example, saw an 81% spike in mobile e-commerce (m-commerce) sales in 2012, comprising a $25 billion market.

And it's not just apps. By a landslide, users prefer mobile websites to apps for shopping. For every shopping activity, including researching products and prices, reviewing products, participating in promotions, and purchasing, most respondents (61 to 81%) preferred using a browser to a native app.

In the days and months to come, it will become increasingly important for retailers to fuel this growth by creating seamless, user-friendly checkout processes that inspire trust and that make full use of all of the advantages the medium has to offer.

Let's dive into some examples of mobile checkout processes and see what we can learn.

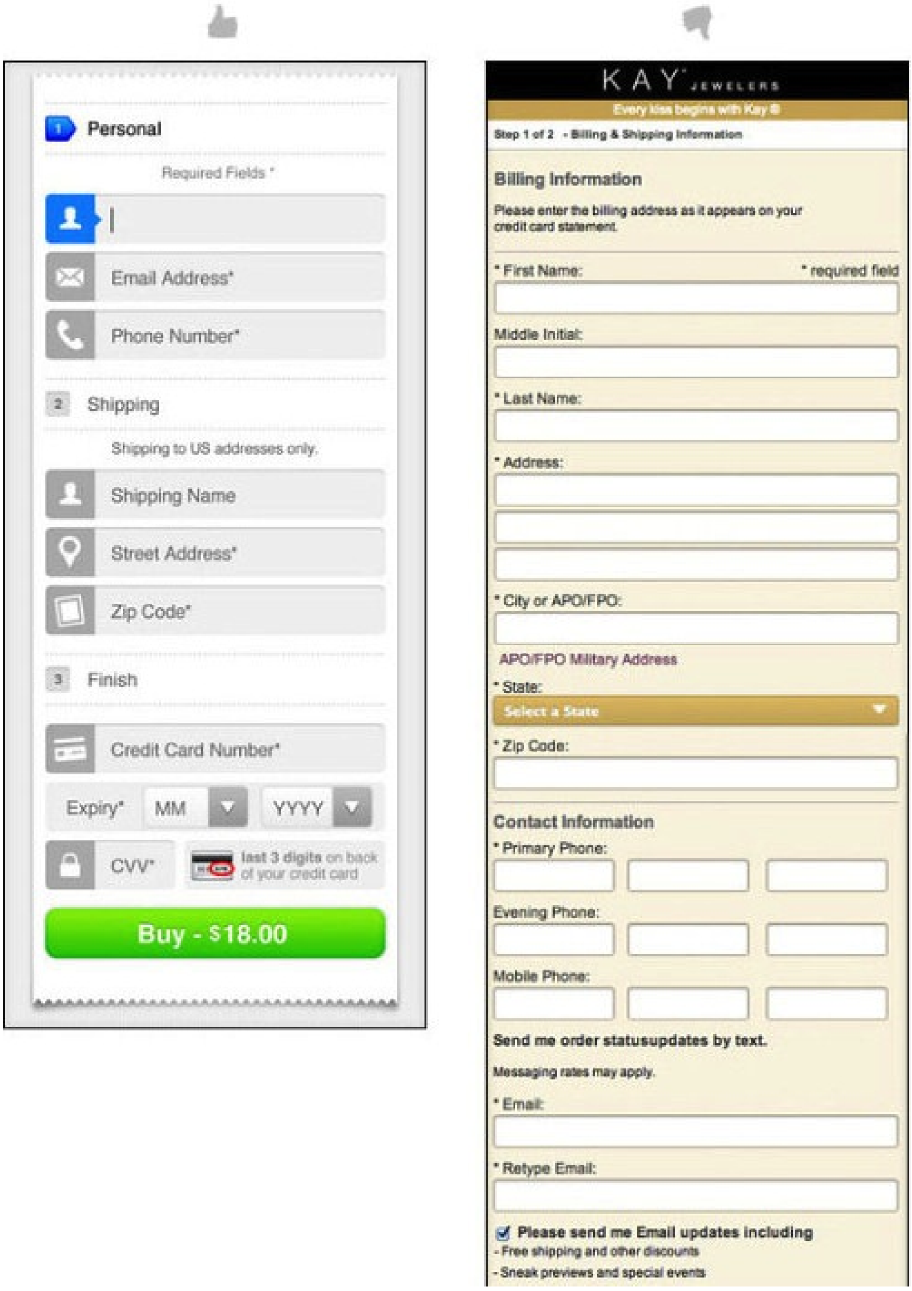
1. *Include Only Vital Fields*

We've all answered those dreaded questions, such as "How did you hear about us?" While they may serve the vendor, they do nothing for the buyer, who is offering up their hard-earned cash and deserves to call the shots here.

While these questions are annoying on a desktop, they can be fatal in mobile. Take the two examples on the following page.

On the left, the responsive mobile checkout process by Moby succeeds by reducing the fields to the bare essentials, condensing the entire process into one cohesive page.

On the right, Kay Jewelers shows how a simple experience can quickly become extraordinarily cumbersome. Three pages in total display unnecessary fields such as "Evening phone" and "Mobile phone," while breaking fields apart – the "Address" field is given three imposing lines (instead of just one for a ZIP code), and the user is required to retype their email address.



Please enter the billing address as it appears on your credit card statement.

Send me order statusupdates by text.

Messaging rates may apply.

☑ Please send me Email updates including
- Free shipping and other discounts
- Sneak previews and special events

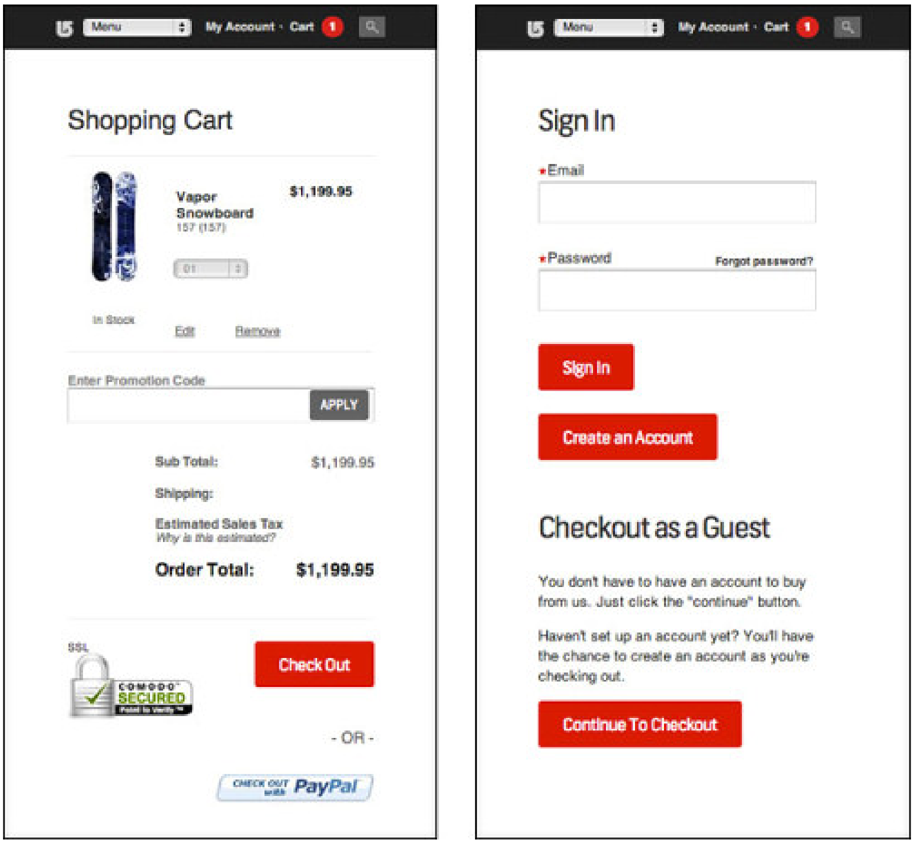
View extended version[164]

---

[164] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2013/03/images/good-vs-bad-22-500.jpg

2. *Allow Checkout As A Guest*

Providing an option to check out as a guest should be standard practice across media (although 24% of e-commerce websites don't), and especially on mobile. A user is much less likely to complete an order if they have to go through the process of creating an account and confirming it. The statistics back this up, sometimes shockingly so. One major retailer reportedly saw a $300 million leap in sales by removing the "Register" button!



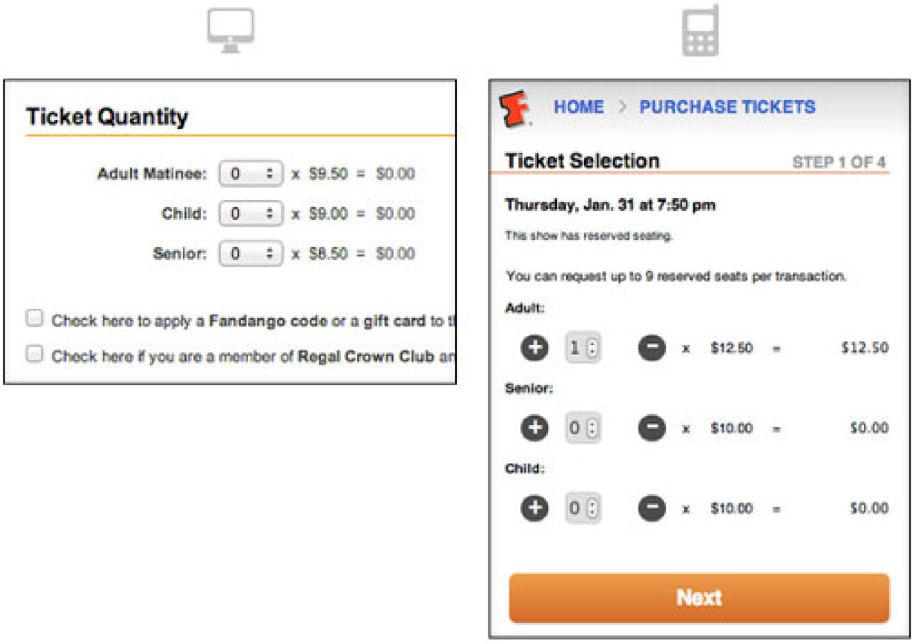
You don't have to have an account to buy from us. Just click the "continue" button.

Haven't set up an account yet? You'll have the chance to create an account as you're checking out.

Burton starts its checkout process by hedging its bet, giving the user all three options: "Sign in," "Create an account" or "Checkout as a guest.".

3. *Leverage Mobile UI Elements*

Fandango has a fluid mobile checkout experience. One big reason why is that it leverages the advantages of the medium, often relying on touch controls, which a user is much more likely to use than typing.



Ticket Quantity

Adult Matinee: 0 x $9.50 = $0.00
Child: 0 x $9.00 = $0.00
Senior: 0 x $8.50 = $0.00

☐ Check here to apply a **Fandango code or a gift card** to t
☐ Check here if you are a member of **Regal Crown Club** ar

Ticket Selection STEP 1 OF 4

Thursday, Jan. 31 at 7:50 pm

This show has reserved seating.

You can request up to 9 reserved seats per transaction.

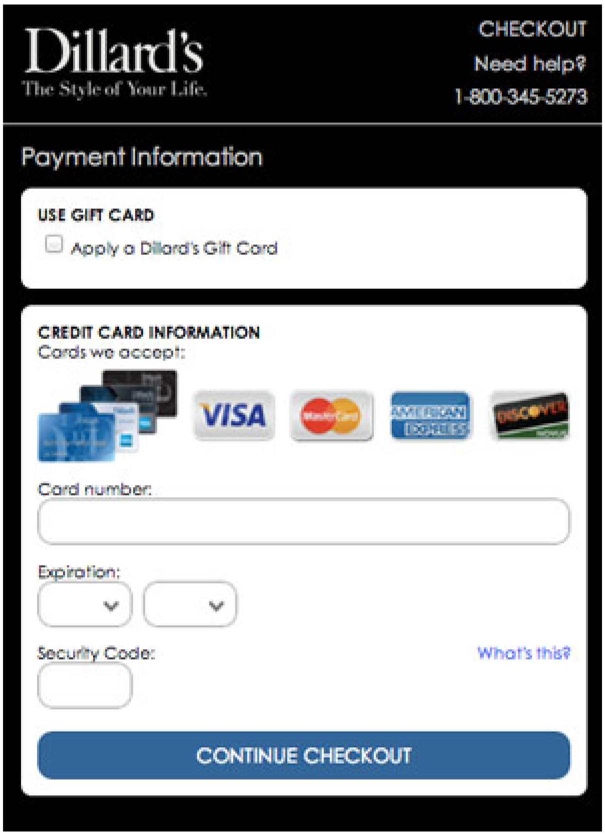
Adult:
1 x $12.50 = $12.50
Senior:
0 x $10.00 = $0.00
Child:
0 x $10.00 = $0.00

Fandango's desktop UI versus mobile UI.

In Fandango's desktop UI (left), a user is prompted to select quantities using a typical drop-down menu. In the mobile UI (right), they are prompted to update quantities using increment selectors (with an option to type as well), which is speedier in that medium.

4. *Remove Distractions, Not Content*

Once a user is in the checkout process, they have obviously expressed a willingness to buy. Put another way, the website has switched from being a salesperson to being an order fulfillment center. With that in mind, remove anything that draws their attention anywhere other than the task at hand.



Once a user is in Dillard's[165] checkout process, their only escape is to tap the logo in the top-left corner.

Conversions can rise in enclosed checkouts[166], a tactic you may have noticed when purchasing from Amazon. With this technique, the vendor removes the standard header, including the menu links and search bar, which

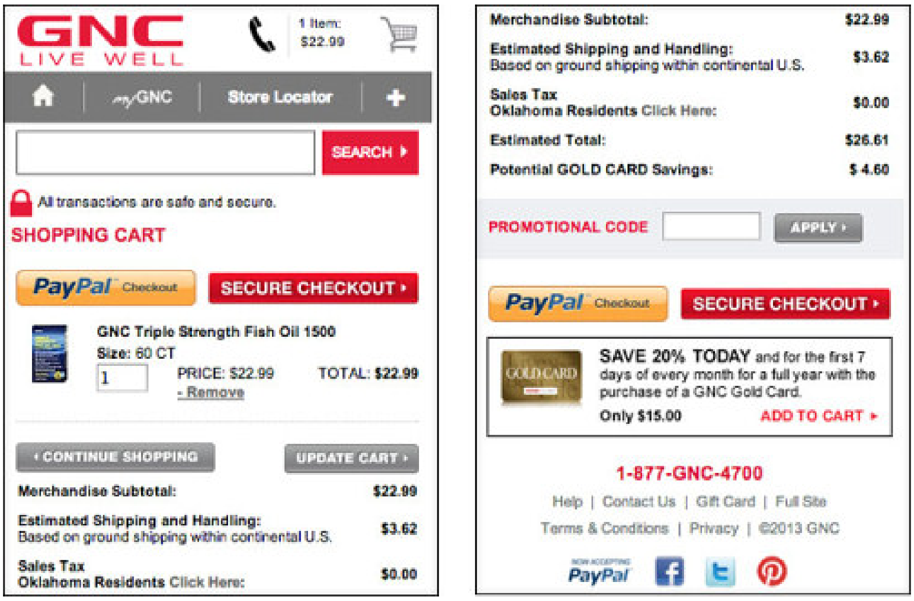
---

[165] http://m.dillards.com/search

[166] http://econsultancy.com/us/blog/6623-why-you-should-enclose-the-checkout-process

could drive the user elsewhere. A checkout page can be made especially simple on mobile.

A content-rich checkout page might seem like a good idea, but it will distract the user from their purchasing decision.



All transactions are safe and secure.

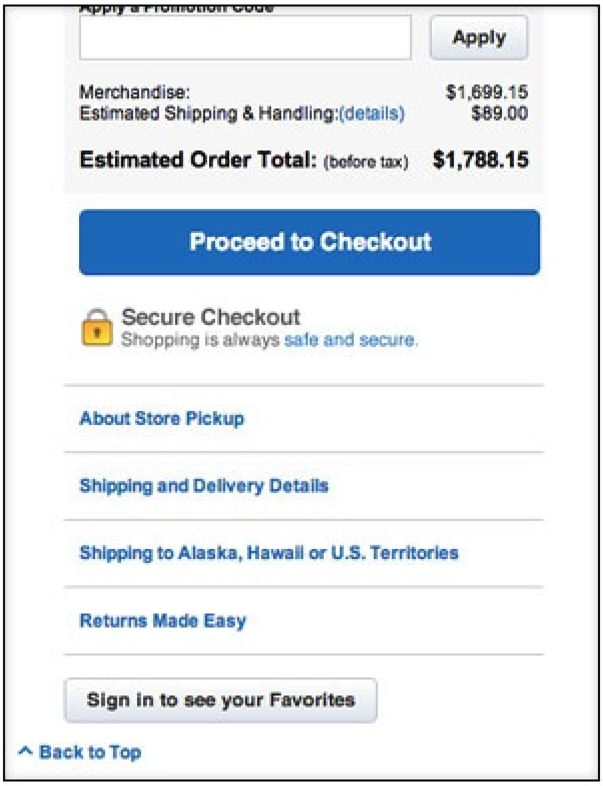
GNC Triple Strength Fish Oil 1500
Size: 60 CT
1 PRICE: $22.99 TOTAL: $22.99
- Remove

Merchandise Subtotal:	$22.99
Estimated Shipping and Handling: Based on ground shipping within continental U.S.	$3.62
Sales Tax Oklahoma Residents Click Here:	$0.00
Estimated Total:	$26.61
Potential GOLD CARD Savings:	$ 4.60

SAVE 20% TODAY and for the first 7 days of every month for a full year with the purchase of a GNC Gold Card.
Only $15.00

Social media links, like these in GNC's shopping cart, should have no place in the process and could drive users away.

This doesn't mean we should remove all content. Mobile engagements typically last 80% as long as desktop ones, and that number is rising. Users might still have questions about shipping guidelines, delivery, terms and conditions and more. A good experience should give them the option to find answers.


Apply
Proceed to Checkout
About Store Pickup
Shipping and Delivery Details
Shipping to Alaska, Hawaii or U.S. Territories
Returns Made Easy
Sign in to see your Favorites
^ Back to Top

Merchandise: $1,699.15
Estimated Shipping & Handling:(details) $89.00

Estimated Order Total: (before tax) **$1,788.15**

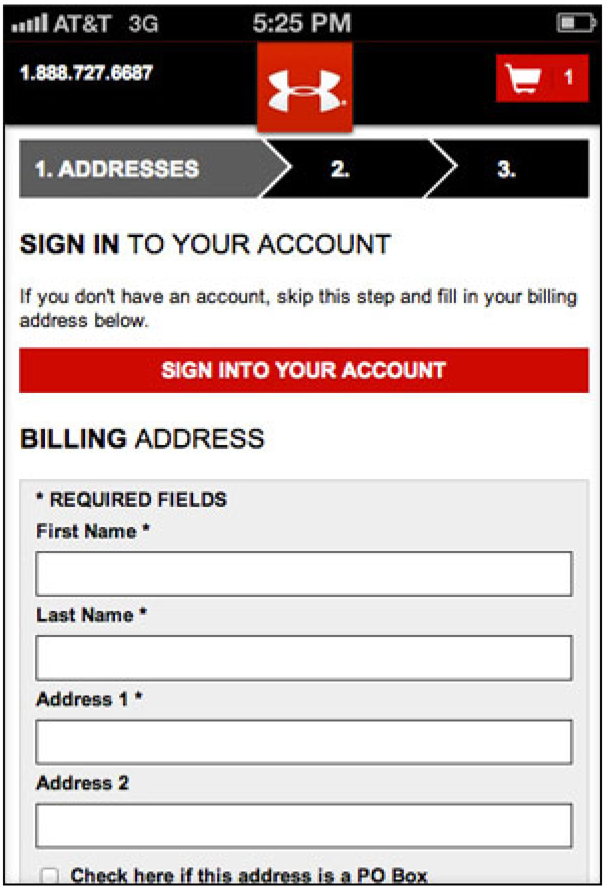
Secure Checkout
Shopping is always safe and secure.

On Crate & Barrel's mobile website, standard questions are showcased at the bottom of the shopping cart page, enabling the customer to get answers without leaving the checkout funnel.

5. *Show Progress*

A user wants to know where they are, where they are going and how much longer until they're done. Progress bars alleviate anxiety here.

Recent studies show that the majority of major e-tailers show a progress bar, although many implementations leave much to be desired.



SIGN IN TO YOUR ACCOUNT

If you don't have an account, skip this step and fill in your billing address below.

BILLING ADDRESS

* REQUIRED FIELDS

First Name *

Last Name *

Address 1 *

Address 2

☐ Check here if this address is a PO Box

While Under Armour[167]'s mobile website leads users through the process with a simple, sensible progress bar, it would improve by describing the steps to come.

6. Build Lightweight

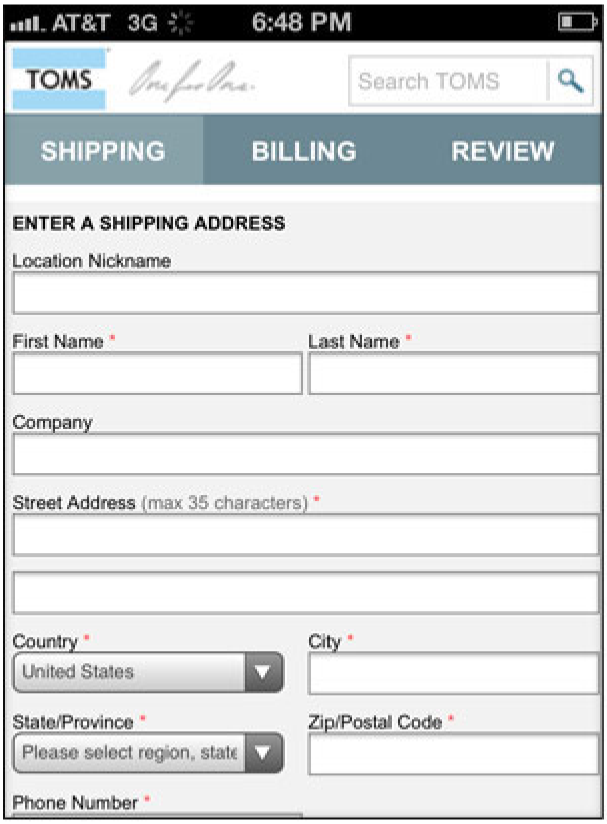
Above all, time is precious. 74% of mobile visitors[168] will leave a website if it takes longer than five seconds to load. Users have come to complete an action, and they are already convinced that it's the right thing to do, so it's best to get out of their way.

---

[167] http://www.underarmour.com/shop/us/en/

[168] http://www.digitalmall.us/1150/smartphone-users-frustrated-with-mobile-web-experience/

Adhere to the “Seven Guidelines for Designing High-Performance Mobile User Experiences.” And use a testing tool to optimize loading times; Mobitest by Akamai is my choice[169].



It’s not going to win any design awards, but Tom’s Shoes[170] has a quick-loading, bare-bones checkout page that does the trick.

7. *Provide Security Reassurances*

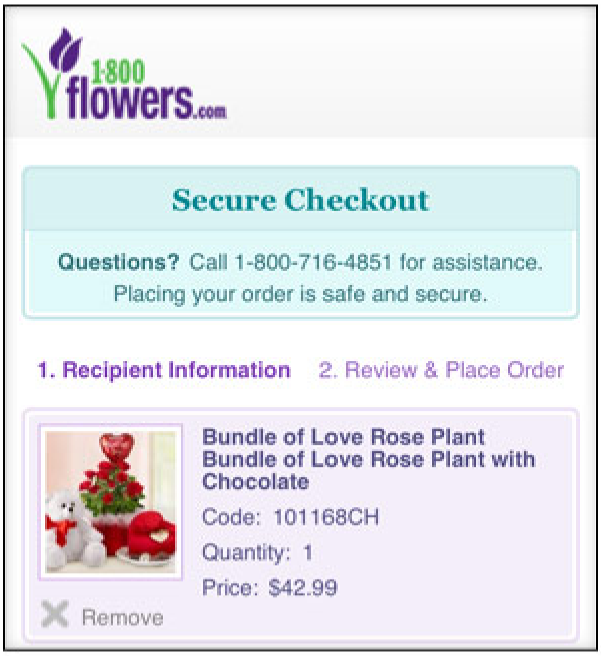
One of the biggest reservations users have left about mobile e-commerce is security. To get over this hurdle, de-

---

[169] http://www.smashingmagazine.com/2012/08/22/separate-mobile-responsive-website-presidential-smackdown/

[170] http://www.toms.com/

signers needn't be subtle: provide as many reassurances as possible that the experience is secure, and drive the point home. This means using iconography, SSL certificates and dedicated callouts in copy.



Secure Checkout

Questions? Call 1-800-716-4851 for assistance.
Placing your order is safe and secure.

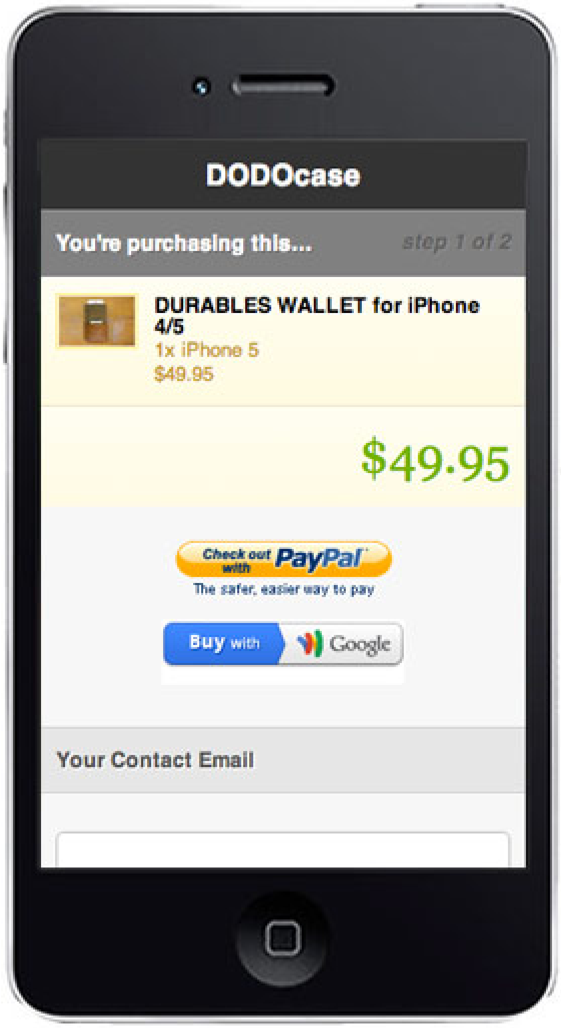
1. Recipient Information 2. Review & Place Order

Bundle of Love Rose Plant Bundle of Love Rose Plant with Chocolate
Code: 101168CH
Quantity: 1
Price: $42.99

1-800-Flowers.com actively reminds users of the security of their order using a variety of tactics.

8. Google Wallet, PayPal And Amazon Are Your Friends

Instead of forcing users to fumble through checkout forms and type their address, use a trusted service such as Google Wallet, PayPal and Amazon to get users two taps away from completing their payment. Their information will be automatically populated, and the process will be nearly complete.



DODOcase

You're purchasing this... step 1 of 2

DURABLES WALLET for iPhone 4/5
1x iPhone 5
$49.95

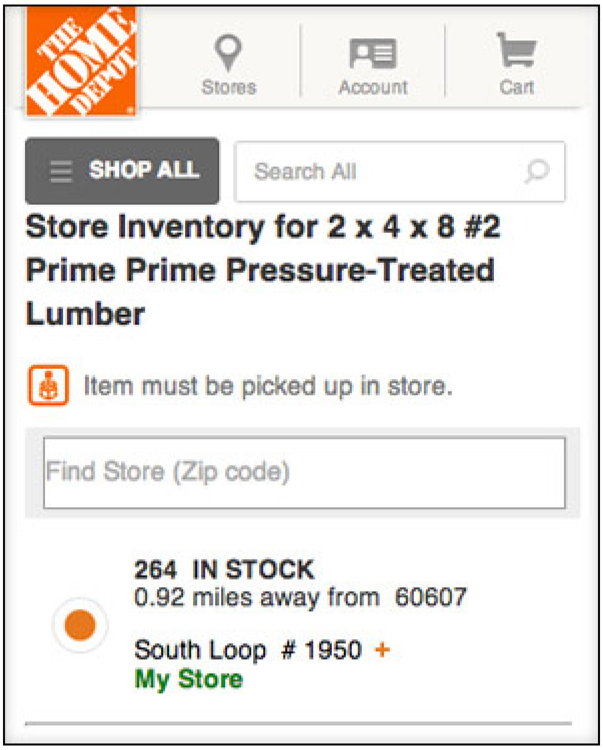
$49.95

Your Contact Email

No-frills mobile e-commerce experiences on Shopify.

Mobile e-commerce experiences on Shopify, like this one for DODOcase, aren't visually exciting, but that's not the point. They hush any noise, while allowing users to quickly check out using trusted third-party applications.

9. *Take Advantage Of Geolocation And One-Touch Calling*



Store Inventory for 2 x 4 x 8 #2 Prime Prime Pressure-Treated Lumber

Item must be picked up in store.

Find Store (Zip code)

264 IN STOCK
0.92 miles away from 60607

South Loop # 1950 +
My Store

The Home Depot[171]*'s mobile website lets users pick up items in store and uses GPS to find the closest location and check inventory.*

Use GPS information to easily point a user to a physical location, as an alternative to a Web conversion. By using a URL string like `http://maps.google.com/maps?daddr=BEST+BUY&saddr=Current+Location`[172] on mobile, Google will automatically retrieve the nearest location and provide directions. Best Buy observed that 28% of users visit-

---

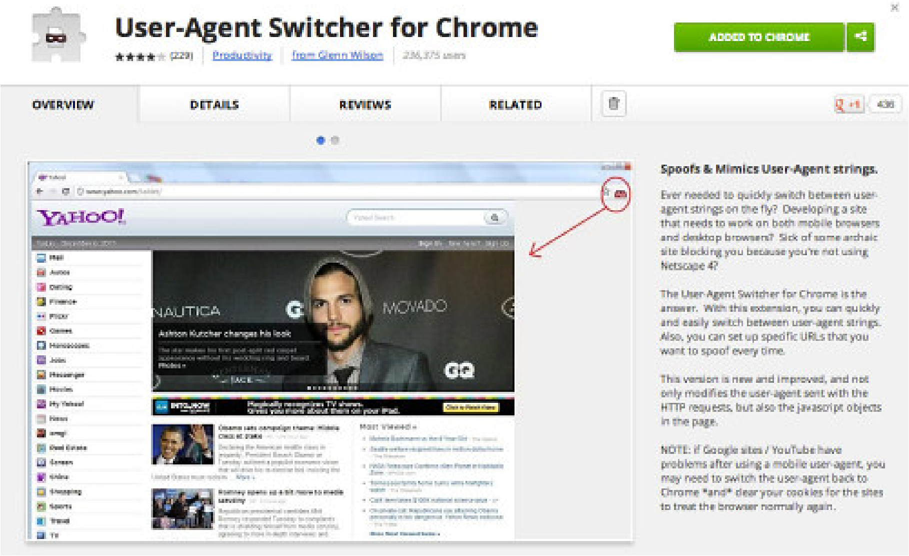
[171] http://www.homedepot.com/

[172] http://maps.google.com/maps?daddr=american+mattress&saddr=Current+Location

ing its mobile platforms were using it to make an in-store purchase, making it a successful value proposition.

Also, use one-tap calling with the `tel:` protocol to enable users to call for support with one tap — a much easier experience than jotting down a phone number.

10. As Always, Test Across Systems And Setups



Spoofs & Mimics User-Agent strings.

Ever needed to quickly switch between user-agent strings on the fly? Developing a site that needs to work on both mobile browsers and desktop browsers? Sick of some archaic site blocking you because you're not using Netscape 4?

The User-Agent Switcher for Chrome is the answer. With this extension, you can quickly and easily switch between user-agent strings. Also, you can set up specific URLs that you want to spoof every time.

This version is new and improved, and not only modifies the user-agent sent with the HTTP requests, but also the javascript objects in the page.

NOTE: if Google sites / YouTube have problems after using a mobile user-agent, you may need to switch the user-agent back to Chrome *and* clear your cookies for the sites to treat the browser normally again.

Mobile testing with the User Agent Switcher for Chrome.

Mobile testing can be difficult and time-intensive, but with the market split between an array of operating systems, prioritizing by market share[173] and testing at multiple resolutions is important. Getting your hands on a phone for each OS is always best, but if that's not possible, you can use a browser plugin named User Agent

---

[173] http://stats.areppim.com/stats/stats_mobiosxtime.htm

Switcher for Firefox and Chrome. It can be an invaluable time-saver for testing, allowing you to bounce between different OS experiences on your desktop.

The other factor in the OS conversation is design. Many designers of mobile Web experiences make the mistake of borrowing interface elements from their OS of choice. For instance, a designer who uses an iOS device might adopt Apple's button styles. While this would make sense in a native app, a mobile website is a cross-browser experience, and a native aesthetic will likely turn off users of other OS' — or, even worse, might just plain look bad.

Conclusion

At long last, the promise of m-commerce is starting to be fulfilled. Never before has the gap between a good and bad mobile checkout experience affected revenue so much.

If retailers give the user a clear, focused, streamlined and lightweight path to making their purchase — while recognizing the advantages and limitations of a mobile experience outlined above — all parties will benefit. ❧

Creating A Client-Side Shopping Cart

BY GABRIELE ROMANATO ❧

Session storage is a new feature introduced by the W3C's "Web Storage[174]" specification. It's supported in Internet Explorer 8+, Firefox, Chrome, Safari and Opera Desktop (for a complete list, please consult "Can I Use[175]"). In this chapter, we'll cover in depth a practical implementation of session storage by creating a complete e-commerce shopping cart with the `sessionStorage` object and jQuery.

Bear in mind that I'm not going to propose a new technique to replace existing server-side techniques, but rather just a proof of concept of session storage.

Session Storage: A Quick Reminder

We use sessions to store data and share such data across several pages. Usually, a user would pick a product, and we'd save the product's name along with the chosen quantity and price.

Then, the user would fill out a form with their personal information, and we'd save it in the current session before the end of the process, which is typically the checkout page and the subsequent redirection to the payment gateway (for example, PayPal).

---

[174] http://www.w3.org/TR/webstorage/

[175] http://caniuse.com/#feat=namevalue-storage

How are shopping carts built? PHP, for instance, makes frequent use of associative arrays to create the basic structure of a shopping cart. Associative arrays enable PHP Web developers to keep session data structured and organized.

JavaScript sessions work differently. Generally, a session expires when the user closes their browser (but bear in mind that the concept of “closing a browser” is not clear on mobile devices). When a session expires, all data stored in the session storage of a Web browser is removed. There’s no need to explicitly initialize a session because in JavaScript a session takes the form of the global `sessionStorage` object and is always present. It’s up to us to write data into the current session.

Session data comes in the form of key-value pairs, and the value of each key may contain only strings. To write data, we can use the `sessionStorage.setItem( name, value )` method:

```
sessionStorage.setItem( "total", 120 );
```

In this case, the key named `total` now contains the value `120` as a string, although we’ve used an integer in our call to the `.setItem()` method. This value will be available until the session expires, unless we use `sessionStorage.removeItem( "total" )` to remove the named key or we call `sessionStorage.clear()` to entirely remove all keys and values from the session storage.

Note that when a key doesn’t exist in session storage, its value is always `null`. Then, when we remove a key from session storage and try again to get its value, we’d simply get `null`.

As you may have guessed, our key now is always available, even as the user navigates the pages of our website. To get its value, we simply write the following:

```
var total = sessionStorage.getItem( "total" );
console.log( total ); // '120', a string
```

We can also update its value by using `sessionStorage.setItem()` again with a new value:

```
var total = parseInt( sessionStorage.getItem( "total"
) );
var quantity = 2;
var updatedTotal = total * quantity;
sessionStorage.setItem( "total", updatedTotal ); //
'240', a string
```

Now, the key named `total` has a value of `240` with our last update. Why did we call `parseInt()`? This is a simple technique to convert a numerical string into a true number, ensuring that our calculation will be consistent. Remember that all values in session storage are strings, and our calculations must be between only numbers.

But wait! What about objects? Objects may be stored in session storage by first turning them into JSON strings (with `JSON.stringify()`) and then back into JavaScript objects (with `JSON.parse()`):

```
var cart = {
        item: "Product 1",
        price: 35.50,
        qty: 2
};
var jsonStr = JSON.stringify( cart );
sessionStorage.setItem( "cart", jsonStr );
// now the cart is {"item":"Product 1","price":35.50,
"qty":2}
var cartValue = sessionStorage.getItem( "cart" );
var cartObj = JSON.parse( cartValue );
// original object
```

To update our object, we simply extend it and then repeat the procedure above.

Security Considerations

Security is important. If we read the security notes[176] of the W3C's specification, then we'd be aware of the security risks of even a client-side technology such as Web storage.

The US Computer Emergency Readiness Team's technical paper on website security[177] (PDF) clearly states:

> *Every community organization, corporation, business, or government agency relies on an outward-facing website to provide information about themselves, announce an event, or sell a product or service. Consequently, public-facing websites are often the most targeted attack vectors for malicious activity.*

---

[176] http://www.w3.org/TR/webstorage/#security-storage

[177] http://www.us-cert.gov/sites/default/files/publications/TIP-12-298-01-Website-Security.pdf

Even if a browser session ends when the browser itself is closed, malicious attacks can still take place, especially if the browser has been compromised by certain exploits. Moreover, compromised websites can often be used to spread malware that targets particular browsers.

For this reason, make sure your website is safe before relying on any technique to store data in the browser. Keeping a website safe is beyond the scope of this chapter, but by simply following security best practices, you should be able to benefit from Web storage without worrying too much about its security implications.

Our Sample Project: Winery

Our sample project is an online store that sells wine. It's a simple e-commerce website whose only complication is in how its shipping charges are calculated.

In short, wines are sold in packages of six bottles. This means that the total quantity of bottles sold must always be in multiples of six. Shipping charges are calculated, then, according to the total quantity of bottles sold.

Our store will rely on PayPal, so we'll have to create a Business account in PayPal Sandbox[178] to test our code.

The user may add and remove products from their shopping cart, update the cart, change the quantity of each product, and empty the cart. They have to fill a form with their contact information, specifying whether their billing address is the same as their shipping address.

---

[178] https://www.sandbox.paypal.com/

Before being redirected to PayPal, the user will see a summary page with their personal data, their cart, and the cart's total price plus shipping charges.

After completing their purchase, the user should be redirected back to our website. This is the only step of the process that we can't handle only with JavaScript. PayPal will send back various data over an HTTP request that has to be processed with a server-side language (such as PHP). If you need more information to get started with this kind of processing, please consult PayPal's tutorial[179].

HTML Structure

Our project is made up of the following sections:

- `index.html`
  This contains the list from which users may add products to their shopping cart, specifying the quantity for each product.

- `cart.html`
  This is the shopping cart page where users may update or empty their cart. Alternatively, they can go back to the main page to continue shopping or proceed to the checkout page.

- `checkout.html`
  On this page, users fill out a form with their personal information — specifically, their billing and shipping addresses.

---

[179] https://developer.paypal.com/docs/classic/ipn/gs_IPN/

- `order.html`
  This page contains a brief summary of the user's order plus the PayPal form. Once a user submits the form, they will be redirected to PayPal's landing page.

  We'll go over the markup for this project in the following sections.

INDEX.HTML

The main components of this page are the forms that enable the user to add products to their shopping cart.

```
<div class="product-description" data-name="Wine #1"
data-price="5">
        <h3 class="product-name">Wine #1</h3>
                <p class="product-price">&euro; 5</p>
                <form class="add-to-cart"
                action="cart.html" method="post">
                        <div>
                                <label for="qty-1">
                                Quantity</label>
                                <input type="text"
                                name="qty-1"
                                id="qty-1"
                                class="qty"
                                value="1" />
                        </div>
                        <p><input type="submit"
                        value="Add to cart"
                        class="btn" /></p>
                </form>
</div>
```

The data attributes used here for storing product names and prices can be accessed via jQuery using the .data()[180] and $.data()[181] methods.

CART.HTML

Our shopping cart page is made up of three components: a table with the product's information, an element that displays the subtotal, and a list of cart actions.

```
<form id="shopping-cart" action="cart.html"
method="post">
        <table class="shopping-cart">
                <thead>
                        <tr>
                                <th scope="col">
                                Item</th>
                                <th scope="col">
                                Qty</th>
                                <th scope="col">
                                Price</th>
                        </tr>
                </thead>
                <tbody></tbody>
        </table>
        <p id="sub-total">
```

---

[180] http://api.jquery.com/data/
[181] http://api.jquery.com/jquery.data/

```
                <strong>Sub Total</strong>: <span id=
                "stotal"></span>
        </p>
        <ul id="shopping-cart-actions">
                <li>
                        <input type="submit"
                        name="update" id="update-cart"
                        class="btn" value="Update
                        Cart" />
                </li>
                <li>
                        <input type="submit"
                        name="delete" id="empty-cart"
                        class="btn" value="Empty
                        Cart" />
                </li>
                <li>
                        <a href="index.html"
                        class="btn">Continue Shopping
                        </a>
                </li>
                <li>
                        <a href="checkout.html"
                        class="btn">Go To Checkout</a>
                </li>
        </ul>
</form>
```

The table contained in this page is empty, and we'll fill it with data via JavaScript. The element that displays the subtotal works just as a placeholder for JavaScript. The first two actions, “Update Cart” and “Empty Cart,” will be handled by JavaScript, while the latter two actions are just plain links to the product’s list page and the checkout page, respectively.

CHECKOUT.HTML

This page has four components:

- a table that shows the ordered items (the same table shown earlier in the shopping cart section), plus the final price and shipping charges;
- a form in which the user must fill in their billing details;
- a form with shipping information;
- a checkbox to enable the user to specify that their billing details are the same as their shipping details.

```
<table id="checkout-cart" class="shopping-cart">
        <thead>
                <tr>
                        <th scope="col">Item</th>
                        <th scope="col">Qty</th>
                        <th scope="col">Price</th>
                </tr>
        </thead>
        <tbody>

        </tbody>
</table>
```

```
<div id="pricing">
        <p id="shipping">
                <strong>Shipping</strong>: <span id=
                "sshipping"></span>
        </p>

        <p id="sub-total">
                <strong>Total</strong>: <span id=
                "stotal"></span>
        </p>
</div>

<form action="order.html" method="post"
id="checkout-order-form">
        <h2>Your Details</h2>
                <fieldset id="fieldset-billing">
                        <legend>Billing</legend>
                                <!-- Name, Email,
                                City, Address,
                                ZIP Code, Country
                                (select box) -->

<div>
        <label for="name">Name</label>
        <input type="text" name="name" id="name"
        data-type="string" data-message="This field
        may not be empty" />
</div>

<div>
```

```
        <label for="email">Email</label>
        <input type="text" name="email" id="email"
        data-type="expression" data-message="Not a
        valid email address" />
</div>

<div>
        <label for="city">City</label>
        <input type="text" name="city" id="city"
        data-type="string" data-message="This field
        may not be empty" />
</div>

<div>
        <label for="address">Address</label>
        <input type="text" name="address"
        id="address" data-type="string"
        data-message="This field may not be empty" />
</div>

<div>
        <label for="zip">ZIP Code</label>
        <input type="text" name="zip" id="zip"
        data-type="string" data-message="This field
        may not be empty" />
</div>

<div>
        <label for="country">Country</label>
                <select name="country" id="country"
                data-type="string" data-message="This
                field may not be empty">
                        <option value="">Select
                        </option>
                        <option value="US">USA
                        </option>
                        <option value="IT">Italy
                        </option>
                </select>
</div>
</fieldset>

<div id="shipping-same">Same as Billing <input
type="checkbox" id="same-as-billing" value=""/></div>

<fieldset id="fieldset-shipping">
<legend>Shipping</legend>
        <!-- Same fields as billing -->
</fieldset>

<p><input type="submit" id="submit-order"
value="Submit" class="btn" /></p>

</form>
```

Data attributes are used here for validation. The `data-type` attribute specifies the type of data we're validating, and `data-message` contains the error message to be shown in case of failure.

I didn't use the email validation built into Web browsers just for the sake of simplicity, but you could use it if you want.

ORDER.HTML

This final page contains a brief recap of the user's order, their details and the PayPal form.

```
<h1>Your Order</h1>

<table id="checkout-cart" class="shopping-cart">
        <thead>
                <tr>
                        <th scope="col">Item</th>
                        <th scope="col">Qty</th>
                        <th scope="col">Price</th>
                </tr>
        </thead>
        <tbody>
        </tbody>
</table>

<div id="pricing">
        <p id="shipping">
                <strong>Shipping</strong>: <span id=
                "sshipping"></span>
        </p>

        <p id="sub-total">
                <strong>Total</strong>: <span id=
                "stotal"></span>
        </p>
</div>

<div id="user-details">
        <h2>Your Data</h2>
                <div id="user-details-content"></div>
</div>


<form id="paypal-form" action="" method="post">
        <input type="hidden" name="cmd" value="_cart"
        />
        <input type="hidden" name="upload" value="1"
        />
        <input type="hidden" name="business" value=""
        />

        <input type="hidden" name="currency_code"
        value="" />
        <input type="submit" id="paypal-btn"
        class="btn" value="Pay with PayPal" />
</form>
```

The PayPal form and other elements of this page are initially empty, except for those fields that don’t need to be generated dynamically.

JavaScript Code

The CSS layout of this project will have no actual influence on the goal we want to achieve. Even if we disabled CSS entirely, the project would continue to function, thanks to the strong relationship between the HTML's structure and the JavaScript's behavior.

We'll use an object-oriented approach because of the complexity of our goals. Our object will be based on a simple constructional pattern and will use both private and public methods.

OBJECT STRUCTURE

Our object has a very simple structure. The constructor function both initializes the top-level element that wraps our DOM's entire structure and invokes the initialization method.

```
(function( $ ) {
        $.Shop = function( element ) {
                this.$element = $( element ); //
                top-level element
                this.init();
        };

        $.Shop.prototype = {
                init: function() {
                        // initializes properties and
                        methods
                }
        };
        $(function() {
                var shop = new $.Shop( "#site" ); //
                object's instance
        });

})( jQuery );
```

The object's instance is created when the DOM is ready. We can test that everything has worked fine as follows:

```
$(function() {
        var shop = new $.Shop( "#site" );
        console.log( shop.$element );
});
```

This outputs the following:

```
x.fn.x.init[1]
        0: div#site
        context: document
        length: 1
        selector: "#site"
```

Now that we know our object has been instantiated correctly, we can define its properties.

OBJECT PROPERTIES

The properties of our object break down into two categories: first, the properties for handling calculations, forms and validation, and secondly, the references to HTML elements.

```
$.Shop.prototype = {
        init: function() {
                // Properties

                        this.cartPrefix = "winery-";
                        // prefix string to be
                        prepended to the cart's name
                        in session storage
                        this.cartName =
                        this.cartPrefix + "cart";
                        // cart's name in session
                        storage
                        this.shippingRates=
                        this.cartPrefix +
                        "shipping-rates"; // shipping
                        rates key in session storage
                        this.total = this.cartPrefix
                        + "total"; // total key in the
                        session storage
                        this.storage = sessionStorage;
                        // shortcut to sessionStorage
                        object

                        this.$formAddToCart =
                        this.$element.find( "form.
                        add-to-cart" ); // forms for
                        adding items to the cart
                        this.$formCart = this.$element
                        .find( "#shopping-cart" ); //
                        Shopping cart form
```

```
this.$checkoutCart =
this.$element.find(
"#checkout-cart" ); //
checkout form cart
this.$checkoutOrderForm =
this.$element.find(
"#checkout-order-form" ); //
checkout user details form
this.$shipping =
this.$element.find(
"#sshipping" ); // element
that displays the shipping
rates
this.$subTotal =
this.$element.find( "#stotal"
); // element that displays
the subtotal charges
this.$shoppingCartActions =
this.$element.find(
"#shopping-cart-actions" );
// cart actions links
this.$updateCartBtn =
this.$shoppingCartActions
.find( "#update-cart" ); //
update cart button
this.$emptyCartBtn =
this.$shoppingCartActions
.find( "#empty-cart" ); //
empty cart button
this.$userDetails =
this.$element.find(
"#user-details-content" ); //
element that displays the
user's information
this.$paypalForm =
this.$element.find(
"#paypal-form" ); // PayPal
form

this.currency = "&euro;"; //
HTML entity of the currency to
be displayed in layout
this.currencyString = "€"; //
currency symbol as text string
this.paypalCurrency = "EUR";
// PayPal's currency code
this.paypalBusinessEmail =
"yourbusiness@email.com";
// your PayPal Business
account email address
this.paypalURL =
"https://www.sandbox.paypal.
com/cgi-bin/webscr"; // URL
of the PayPal form

// object containing patterns
for form validation
this.requiredFields = {
        expression: {
                value:
```

```
                                        /^([w-.]+)@
                                        ((?:[w]+.)+)
                                        ([a-z]){2,4}$/
                                },

                                str: {
                                        value: ""
                                }

                        };

                        // public methods invocation
        }
};
```

Let’s go over these properties one by one.

Storage and other properties:

- `cartPrefix`
  A prefix to be prepended to the cart’s name key in session storage
- `cartName`
  The cart’s name key in session storage (combines the `cartPrefix` string with the `cart` string)
- `shippingRates`
  The shipping rate key in session storage
- `total`
  The total’s key in session storage

- `storage`
  Shortcut to the `sessionStorage` object.

- `currency`
  An HTML entity used to display the current currency in the layout

- `currencyString`
  The current currency symbol used in the element's text

- `paypalCurrency`
  PayPal's currency text code

- `paypalBusinessEmail`
  The email address of your PayPal Business account

- `paypalURL`
  The URL of PayPal's form (defaults to the URL of PayPal Sandbox)

- `requiredFields`
  An object containing the patterns and rules for form validation

References to elements:

- `$formAddToCart`
  The forms for adding products to the shopping cart

- `$formCart`
  The shopping cart form

- `$checkoutCart`
  The checkout's shopping cart form

- `$checkoutOrderForm`
  The checkout's form where users input their personal information
- `$shipping`
  The element that contains and displays shipping rates
- `$subTotal`
  The element that contains and displays the total charges
- `$shoppingCartActions`
  The elements that contain the actions related to the shopping cart
- `$updateCartBtn`
  The button to update the shopping cart
- `$emptyCartBtn`
  The button for emptying the cart
- `$userDetails`
  The element that contains and displays the information entered by the user
- `$paypalForm`
  PayPal's form

All of the elements are prefixed with the `$` sign, meaning that they're jQuery objects. But not all of these elements are available on all pages. To check whether a jQuery element exists, simply test its `length` property:

```
if( $element.length ) {
        // the element exists
}
```

Another approach, not used in our project, is to add a particular ID or class to the `body` element and perform actions conditionally:

```
var $body = $( "body" ),
        page = $body.attr( "id" );

        switch( page ) {
                case "product-list":
                        // actions for handling
                        products
                        break;
                case "shopping-cart":
                        // actions for handling the
                        shopping cart
                        break;
                case "checkout":
                        // actions for handling the
                        checkout's page
                        break;
                default:
                        break;
        }
```

OBJECT METHODS

The actions of our code take place in our object's methods, which, in turn, can be divided into public and private methods. Private methods operate in the background, so to speak, and help the public methods perform their tasks. These methods are prefixed with an underscore and are never used directly.

Public methods, meanwhile, operate directly on page elements and data, and they're unprefixed. We've already seen the `init()` method, which simply initializes properties and other public methods in the object's constructor function. The other methods will be explained below.

PRIVATE METHODS (HELPERS)

The first private method, `_emptyCart()`, simply empties the current session storage in the browser:

```
$.Shop.prototype = {
        // empties session storage

        _emptyCart: function() {
                this.storage.clear();
        }
};
```

To format a number by a set number of decimal places, we implement the `_formatNumber()` method:

```
/* Format a number by decimal places
 * @param num Number the number to be formatted
 * @param places Number the decimal places
 * @returns n Number the formatted number
*/
```

```
_formatNumber: function( num, places ) {
        var n = num.toFixed( places );
        return n;
}
```

This method makes use of JavaScript's toFixed()[182] method of the `Number` object. Its role in our project is to properly format prices.

Because not all of the prices in our pages are contained in data attributes, we need a specialized method to extract the numeric portion of a string from text nodes. This method is named `_extractPrice()`:

```
/* Extract the numeric portion from a string
 * @param element Object the jQuery element that
contains the relevant string
 * @returns price String the numeric string
 */

_extractPrice: function( element ) {
        var self = this;
        var text = element.text();
        var price = text.replace(
        self.currencyString, "" ).replace( " ", "" );
        return price;
}
```

Above, `self` is a reference to the `$.Shop` object, and we'll need it every time we want to access a property or a

---

[182] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Number/toFixed

method of our object without worrying much about scope.

You can bulletproof this method by adding a further routine that strips out all trailing white space:

```
var text = $.trim( element.text() );
```

Bear in mind that jQuery's $.trim()[183] method removes all new lines, spaces (including non-breaking spaces) and tabs from the beginning and end of a string. If these white space characters occur in the middle of a string, they are preserved.

Then, we need two methods to convert strings into numbers and numbers into strings. This is necessary to perform calculations and to display the results on our pages.

```
/* Converts a numeric string into a number
 * @param numStr String the numeric string to be
 * converted
 * @returns num Number the number, or false if the
 * string cannot be converted
 */

_convertString: function( numStr ) {
        var num;
        if( /^[-+]?[0-9]+.[0-9]+$/.test( numStr ) ) {
                num = parseFloat( numStr );
        } else if( /^d+$/.test( numStr ) ) {
```

---

[183] https://api.jquery.com/jQuery.trim/

```
                num = parseInt( numStr );
        } else {
                num = Number( numStr );
        }

        if( !isNaN( num ) ) {
                return num;
        } else {
                console.warn( numStr + " cannot be
                converted into a number" );
                return false;
        }
},

/* Converts a number to a string
 * @param n Number the number to be converted
 * @returns str String the string returned
 */

_convertNumber: function( n ) {
        var str = n.toString();
        return str;
}
```

Above, `_convertString()` runs the following tests:

1. Does the string have a decimal format? If so, it uses the parseFloat()[184] function.

---

[184] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/parseFloat

2. Does the string have an integer format? If so, it uses the parseInt()[185] function.
3. If the format of the string cannot be detected, it uses the Number()[186] constructor.
4. If the result is a number (tested with the isNaN()[187] function), it returns the number. Otherwise, it outputs a warning to the JavaScript console and returns `false`.

By contrast, `_convertNumber()` simply invokes the toString()[188] method to convert a number into a string.

The next step is to define two methods to convert a JavaScript object into a JSON string and a JSON string back into a JavaScript object:

```
/* Converts a JSON string to a JavaScript object
 * @param str String the JSON string
 * @returns obj Object the JavaScript object
 */

_toJSONObject: function( str ) {
        var obj = JSON.parse( str );
        return obj;
},
```

---

[185] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/parseInt
[186] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Number
[187] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/isNaN
[188] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Number/toString

```
/* Converts a JavaScript object to a JSON string
 * @param obj Object the JavaScript object
 * @returns str String the JSON string
 */

_toJSONString: function( obj ) {
        var str = JSON.stringify( obj );
        return str;
}
```

The first method makes use of the `JSON.parse()` method, while the latter invokes the `JSON.stringify()` method (see Mozilla Developer Network's article on "Using Native JSON[189]").

Why do we need these methods? Because our cart will also store the information related to each product using the following data format (spaces added for legibility):

Key	Value
`winery-cart`	`{ "items": [ { "product": "Wine #1", "qty": 5, "price": 5 } ] }`

The `winery-cart` key contains a JSON string that represents an array of objects (i.e. `items`) in which each object shows the relevant information about a product added by the user — namely, the product's name, the quantity and the price.

---

[189] https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Using_native_JSON

It's pretty obvious that we also now need a specialized method to add items to this particular key in session storage:

```
/* Add an object to the cart as a JSON string
 * @param values Object the object to be added to the
 * cart
 * @returns void
 */

_addToCart: function( values ) {
        var cart = this.storage.getItem(
        this.cartName );
        var cartObject = this._toJSONObject( cart );
        var cartCopy = cartObject;
        var items = cartCopy.items;
        items.push( values );

        this.storage.setItem( this.cartName,
        this._toJSONString( cartCopy ) );
}
```

This method gets the cart's key from session storage, converts it to a JavaScript object and adds a new object as a JSON string to the cart's array. The newly added object has the following format:

```
this._addToCart({
        product: "Test",
        qty: 1,
        price: 2
});
```

Now, our cart key will look like this:

Key	Value
`winery-cart`	`{"items":[{"product":"Wine #1","qty":5,"price":5},{"product":"Test","qty":1,"price":2}]}`

Shipping is calculated according to the overall number of products added to the cart, not the quantity of each individual product:

```
/* Custom shipping rates calculated based on total
 * quantity of items in cart
 * @param qty Number the total quantity of items
 * @returns shipping Number the shipping rates
 */

_calculateShipping: function( qty ) {
        var shipping = 0;
        if( qty >= 6 ) {
                shipping = 10;
        }
        if( qty >= 12 && qty <= 30 ) {
                shipping = 20;
        }

        if( qty >= 30 && qty <= 60 ) {
                shipping = 30;
        }

        if( qty > 60 ) {
                shipping = 0;
        }

        return shipping;
}
```

You can replace this method's routines with your own. In this case, shipping charges are calculated based on specific amounts.

We also need to validate the checkout form where users insert their personal information. The following method takes into account the special visibility toggle by which the user may specify that their billing information is the same as their shipping information.

```
/* Validates the checkout form
 * @param form Object the jQuery element of the
 * checkout form
 * @returns valid Boolean true for success, false for
 * failure
 */

_validateForm: function( form ) {
                var self = this;
                var fields = self.requiredFields;
                var $visibleSet = form.find(
                "fieldset:visible" );
                var valid = true;

                form.find( ".message" ).remove();
```

```
$visibleSet.each(function() {

$( this ).find( ":input" ).each(
function() {
var $input = $( this );
var type = $input.data( "type" );
var msg = $input.data( "message" );

if( type == "string" ) {
        if( $input.val() ==
        fields.str.value ) {
                $( "<span class=
                'message'/>" ).text(
                msg ).
                insertBefore( $input
                );

                valid = false;
        }
} else {
        if( !fields.expression.value
        .test( $input.val() ) ) {
                $( "<span class=
                'message'/>" ).text(
                msg ).
                insertBefore( $input
                );

                valid = false;
```

```
                        }
                }

        });
        });

        return valid;
}
```

When validation messages are added upon the form being submitted, we need to clear these messages before going any further. In this case, we take into account only the fields contained in a `fieldset` element that is still visible after the user has checked the visibility toggle.

Validation takes place by checking whether the current field requires a simple string comparison (`data-type="string"`) or a regular expression test (`data-type="expression"`). Our tests are based on the `requiredFields` property. If there's an error, we'll show a message by using the `data-message` attribute of each field.

Note that the validation routines used above have been inserted just for demonstration purposes, and they have several flaws. For better validation, I recommend a dedicated jQuery plugin, such as jQuery Validation[190].

Last but not least is registering the information that the user has entered in the checkout form:

---

190. http://bassistance.de/jquery-plugins/jquery-plugin-validation/

```
/* Save the data entered by the user in the checkout
 * form
 * @param form Object the jQuery element of the
 * checkout form
 * @returns void
 */

_saveFormData: function( form ) {
        var self = this;
        var $visibleSet = form.find(
        "fieldset:visible" );

        $visibleSet.each(function() {
                var $set = $( this );
                if( $set.is( "#fieldset-billing" ) ) {
                        var name = $( "#name", $set
                        ).val();
                        var email = $( "#email", $set
                        ).val();
                        var city = $( "#city", $set
                        ).val();
                        var address = $( "#address",
                        $set ).val();
                        var zip = $( "#zip", $set
                        ).val();
                        var country = $( "#country",
                        $set ).val();

                        self.storage.setItem(
                        "billing-name", name );
        self.storage.setItem(
        "billing-email", email );
        self.storage.setItem(
        "billing-city", city );
        self.storage.setItem(
        "billing-address", address );
        self.storage.setItem(
        "billing-zip", zip );
        self.storage.setItem(
        "billing-country", country );
} else {
        var sName = $( "#sname", $set
        ).val();
        var sEmail = $( "#semail",
        $set ).val();
        var sCity = $( "#scity", $set
        ).val();
        var sAddress = $( "#saddress",
        $set ).val();
        var sZip = $( "#szip", $set
        ).val();
        var sCountry = $( "#scountry",
        $set ).val();

        self.storage.setItem(
        "shipping-name", sName );
        self.storage.setItem(
        "shipping-email", sEmail );
        self.storage.setItem(
        "shipping-city", sCity );
```

```
                        self.storage.setItem(
                        "shipping-address", sAddress
                        );
                        self.storage.setItem(
                        "shipping-zip", sZip );
                        self.storage.setItem(
                        "shipping-country", sCountry
                        );

                }
        });
}
```

Again, this method takes into account the visibility of the fields based on the user's choice. Once the form has been submitted, our session storage may have the following details added to it:

Key	Value
`billing-name`	John Doe
`billing-email`	jdoe@localhost
`billing-city`	New York
`billing-address`	Street 1
`billing-zip`	1234
`billing-country`	USA

PUBLIC METHODS

Our public methods are invoked in the initialization method (`init()`). The first thing to do is create the initial keys and values in session storage.

```
// Creates the cart keys in session storage

createCart: function() {
        if( this.storage.getItem( this.cartName ) ==
        null ) {

                var cart = {};
                cart.items = [];

                this.storage.setItem( this.cartName,
                this._toJSONString( cart ) );
                this.storage.setItem(
                this.shippingRates, "0" );
                this.storage.setItem( this.total, "0"
                );
        }
}
```

The first check tests whether our values have already been added to session storage. We need this test because we could actually overwrite our values if we run this method every time a document has finished loading. Now, our session storage looks like this:

Key	Value
`winery-cart`	{"items":[]}
`winery-shipping-rates`	0
`winery-total`	0

Now, we need to handle the forms where the user may add products to their shopping cart:

```
// Adds items to shopping cart

handleAddToCartForm: function() {
        var self = this;
        self.$formAddToCart.each(function() {
                var $form = $( this );
                var $product = $form.parent();
                var price = self._convertString(
                $product.data( "price" ) );
                var name =  $product.data( "name" );

                $form.on( "submit", function() {
                        var qty = self._convertString
                        ( $form.find( ".qty" ).val()
                        );
                        var subTotal = qty * price;
                        var total =
                        self._convertString(
                        self.storage.getItem(
                        self.total ) );
                        var sTotal = total + subTotal;
                        self.storage.setItem(
                        self.total, sTotal );
                        self._addToCart({
                                product: name,
                                price: price,
                                qty: qty
                        });
                        var shipping =
                        self._convertString(
                        self.storage.getItem(
                        self.shippingRates ) );
                        var shippingRates =
                        self._calculateShipping( qty
                        );
                        var totalShipping = shipping
                        + shippingRates;

                        self.storage.setItem(
                        self.shippingRates,
                        totalShipping );
                });
        });
}
```

Every time a user submits one of these forms, we have to read the product quantity specified by the user and multiply it by the unit price. Then, we need to read the total's key contained in session storage and update its value accordingly. Having done this, we call the `_addToCart()` method to store the product's details in storage. The quantity specified will also be used to calculate the shipping rate by comparing its value to the value already stored.

Suppose that a user chooses the first product, Wine #1, whose price is €5.00, and specifies a quantity of 5. The session storage would look like this once the form has been submitted:

Key	Value
`winery-cart`	{“items”:[{"product":"Wine #1","price":5,"qty":5}]}
`winery-shipping-rates`	0
`winery-total`	25

Suppose the same user goes back to the product list and chooses Wine #2, whose price is €8.00, and specifies a quantity of 2:

Key	Value
`winery-cart`	{“items”:[{"product":"Wine #1","price":5,"qty":5},{"product":"Wine #2","price":8,"qty":2}]}
`winery-shipping-rates`	0
`winery-total`	41

Finally, our eager user returns again to the product list, chooses Wine #3, whose price is €11.00, and specifies a quantity of 6:

Key	Value
`winery-cart`	{“items”:[{"product":"Wine #1","price":5,"qty":5},{"product":"Wine #2","price":8,"qty":2},{"product":"Wine #3","price":11,"qty":6}]}
`winery-shipping-rates`	10
`winery-total`	107

At this point, we need to accurately display the cart when the user goes to the shopping cart page or checkout page:

```
// Displays the shopping cart

displayCart: function() {
        if( this.$formCart.length ) {
                var cart = this._toJSONObject(
                this.storage.getItem( this.cartName )
                );
                var items = cart.items;
                var $tableCart = this.$formCart.find(
                ".shopping-cart" );
                var $tableCartBody = $tableCart.find(
                "tbody" );
                for( var i = 0; i < items.length; ++i
                ) {
                        var item = items[i];
                        var product = item.product;
                        var price = this.currency +
                        " " + item.price;
                        var qty = item.qty;
                        var html = "<tr><td class=
                        'pname'>" + product + "</td>"
                        + "<td class='pqty'><input
                        type='text' value='" + qty +
                        "' class='qty'/></td>" +
                        "<td class='pprice'>" + price
                        + "</td></tr>";

                        $tableCartBody.html(
                        $tableCartBody.html()
                        + html );
                }

                var total = this.storage.getItem(
                this.total );
                this.$subTotal[0].innerHTML =
                this.currency + " " + total;
        } else if( this.$checkoutCart.length ) {
                var checkoutCart =
                this._toJSONObject(
                this.storage.getItem( this.cartName
                ) );
```

```
var cartItems = checkoutCart.items;
var $cartBody =
this.$checkoutCart.find( "tbody" );

for( var j = 0; j < cartItems.length;
++j ) {
        var cartItem = cartItems[j];
        var cartProduct =
        cartItem.product;
        var cartPrice = this.currency
        + " " + cartItem.price;
        var cartQty = cartItem.qty;
        var cartHTML = "<tr><td class=
        'pname'>" + cartProduct +
        "</td>" + "<td class='pqty'>"
        + cartQty + "</td>" + "<td
        class='pprice'>" + cartPrice +
        "</td></tr>";

        $cartBody.html( $cartBody.html
        () + cartHTML );
}

var cartTotal = this.storage.getItem(
this.total );
var cartShipping =
this.storage.getItem(
this.shippingRates );
var subTot = this._convertString(
cartTotal ) + this._convertString(
                cartShipping );

                this.$subTotal[0].innerHTML =
                this.currency + " " +
                this._convertNumber( subTot );
                this.$shipping[0].innerHTML =
                this.currency + " " + cartShipping;

        }
}
```

If the cart's table is on the shopping cart page, then this method iterates over the array of objects contained in the `winery-cart` key and populates the table by adding a text field to allow users to modify the quantity of each product. For the sake of simplicity, I didn't include an action to remove an item from the cart, but that procedure is pretty simple:

1. Get the `items` array, contained in session storage.
2. Get the product's name, contained in the `td` element with the `pname` class.
3. Create a new array by filtering out the item with the product's name, obtained in step 2 (you can use $.grep()[191]).
4. Save the new array in the `winery-cart` key.
5. Update the total and shipping charge values.

---

[191] https://api.jquery.com/jQuery.grep/

```
var items = [
        {
                product: "Test",
                qty: 1,
                price: 5
        },
        {
                product: "Foo",
                qty: 5,
                price: 10
        },
        {
                product: "Bar",
                qty: 2,
                price: 8
        }
];

items = $.grep( items, function( item ) {
        return item.product !== "Test";

});

console.log( items );

/*
        Array[2]
                0: Object
                        price: 10
                        product: "Foo"
                        qty: 5
                1: Object
                        price: 8
                        product: "Bar"
                        qty: 2
*/
```

Then, we need a method that updates the cart with a new quantity value for each product:

```
// Updates the cart

updateCart: function() {
                var self = this;
        if( self.$updateCartBtn.length ) {
                self.$updateCartBtn.on( "click",
                function() {
                        var $rows =
                        self.$formCart.find( "tbody
                        tr" );
                        var cart =
                        self.storage.getItem(
                        self.cartName );
                        var shippingRates =
                        self.storage.getItem(
                        self.shippingRates );
                        var total =
                        self.storage.getItem(
                        self.total );

                        var updatedTotal = 0;
                        var totalQty = 0;
                        var updatedCart = {};
                        updatedCart.items = [];

                        $rows.each(function() {
                                var $row = $( this );
                                var pname = $.trim(
                                $row.find( ".pname" )
                                .text() );
                                var pqty = self.
                                _convertString(
                                $row.find( ".pqty >
                                .qty" ).val() );
                                var pprice = self
                                ._convertString( self
                                ._extractPrice(
                                $row.find( ".pprice"
                                ) ) );

                                var cartObj = {
                                        product:
                                        pname,
                                        price: pprice,
                                        qty: pqty
                                };



updatedCart.items.push( cartObj );

                                var subTotal = pqty *
```

```
                                pprice;
                                updatedTotal +=
                                subTotal;
                                totalQty += pqty;
                        });

                        self.storage.setItem(
                        self.total,
                        self._convertNumber(
                        updatedTotal ) );
                        self.storage.setItem(
                        self.shippingRates,
                        self._convertNumber(
                        self._calculateShipping(
                        totalQty ) ) );
                        self.storage.setItem(
                        self.cartName,
                        self._toJSONString(
                        updatedCart ) );

                });
        }
}
```

Our method loops through all of the relevant table cells of the cart and builds a new object to be inserted in the `winery-cart` key. It also recalculates the total price and shipping charge by taking into account the newly inserted values of the quantity fields.

Suppose that a user changes the quantity of Wine #2 from 2 to 6:

Key	Value
`winery-cart`	{“items”:[{"product":"Wine #1","price":5,"qty":5},{"product":"Wine #2","price":8,"qty":6},{"product":"Wine #3","price":11,"qty":6}]}
`winery-shipping-rates`	20
`winery-total`	139

If the user wants to empty their cart and start over, we simply have to add the following action:

```
// Empties the cart by calling the _emptyCart() method
// @see $.Shop._emptyCart()

emptyCart: function() {
        var self = this;
        if( self.$emptyCartBtn.length ) {
                self.$emptyCartBtn.on( "click",
                function() {
                        self._emptyCart();
                });
        }
}
```

Now, session storage has been emptied entirely, and the user may start making purchases again. However, if they decide to finalize their order instead, then we need to handle the checkout form when they insert their personal information.

```
// Handles the checkout form by adding a validation
routine and saving user’s info in session storage

handleCheckoutOrderForm: function() {
        var self = this;
        if( self.$checkoutOrderForm.length ) {
                var $sameAsBilling = $(
                "#same-as-billing" );
                $sameAsBilling.on( "change",
                function() {
                        var $check = $( this );
                        if( $check.prop( "checked" )
) {
                                $( "#fieldset-
                                shipping" ).slideUp(
                                "normal" );
                        } else {
                                $( "#fieldset-
                                shipping" ).slideDown(
                                "normal" );
                        }
                });

                self.$checkoutOrderForm.on( "submit",
                function() {
                        var $form = $( this );
                        var valid = self._validateForm
                        ( $form );
                        if( !valid ) {
                                return valid;
                        } else {
                                self._saveFormData(
                                $form );
                        }
                });
        }
}
```

The first thing we need to do is hide the shipping fields if the user checks the toggle that specifies that their billing information is the same as their shipping information. We use the `change` event, combined with jQuery's .prop()[192] method. (If you're curious about the difference between `.prop()` and `.attr()`, StackOverflow has a good discussion[193] of it.)

Then, we validate the form by returning a `false` value in case of errors, thus preventing the form from being submitted. If validation succeeds, we save the user's data in storage. For example:

Key	Value
`winery-cart`	{"items":[{"product":"Wine #1","price":5,"qty":5},{"product":"Wine #2","price":8,"qty":6},{"product":"Wine #3","price":11,"qty":6}]}

---

[192] http://api.jquery.com/prop/

[193] http://stackoverflow.com/questions/5874652/prop-vs-attr

`winery-shipping-rates`	20
`winery-total`	139
`billing-name`	John Doe
`billing-email`	jdoe@localhost
`billing-city`	New York
`billing-address`	Street 1
`billing-zip`	1234
`billing-country`	USA

The final step is the page with the PayPal form. First, we need to display the user's information gathered on the checkout page:

```
// Displays the user's information

displayUserDetails: function() {
        if( this.$userDetails.length ) {
                if( this.storage.getItem(
                "shipping-name" ) == null ) {
                        var name =
this.storage.getItem(
"billing-name" );
var email =
this.storage.getItem(
"billing-email" );
var city =
this.storage.getItem(
"billing-city" );
var address =
this.storage.getItem(
"billing-address" );
var zip =
this.storage.getItem(
"billing-zip" );
var country =
this.storage.getItem(
"billing-country" );

var html = "<div class=
'detail'>";
        html += "<h2>Billing
        and Shipping</h2>";
        html += "<ul>";
        html += "<li>" + name
        + "</li>";
        html += "<li>" +
        email + "</li>";
        html += "<li>" + city
        + "</li>";
        html += "<li>" +
                              address + "</li>";
                              html += "<li>" + zip
                              + "</li>";
                              html += "<li>" +
                              country + "</li>";
                              html += "</ul></div>";


this.$userDetails[0].innerHTML = html;
                } else {
                      var name =
                      this.storage.getItem(
                      "billing-name" );
                      var email =
                      this.storage.getItem(
                      "billing-email" );
                      var city =
                      this.storage.getItem(
                      "billing-city" );
                      var address =
                      this.storage.getItem(
                      "billing-address" );
                      var zip =
                      this.storage.getItem(
                      "billing-zip" );
                      var country =
                      this.storage.getItem(
                      "billing-country" );

                      var sName =
this.storage.getItem(
"shipping-name" );
var sEmail =
this.storage.getItem(
"shipping-email" );
var sCity =
this.storage.getItem(
"shipping-city" );
var sAddress =
this.storage.getItem(
"shipping-address" );
var sZip =
this.storage.getItem(
"shipping-zip" );
var sCountry =
this.storage.getItem(
"shipping-country" );

var html = "<div class=
'detail'>";
        html += "<h2>Billing
        </h2>";
        html += "<ul>";
        html += "<li>" + name
        + "</li>";
        html += "<li>" +
        email + "</li>";
        html += "<li>" + city
        + "</li>";
        html += "<li>" +
                    address + "</li>";
                    html += "<li>" + zip +
                    "</li>";
                    html += "<li>" +
                    country + "</li>";
                    html += "</ul></div>";

                    html += "<div class=
                    'detail right'>";
                    html += "<h2>Shipping
                    </h2>";
                    html += "<ul>";
                    html += "<li>" +
                    sName + "</li>";
                    html += "<li>" +
                    sEmail + "</li>";
                    html += "<li>" +
                    sCity + "</li>";
                    html += "<li>" +
                    sAddress + "</li>";
                    html += "<li>" + sZip
                    + "</li>";
                    html += "<li>" +
                    sCountry + "</li>";
                    html += "</ul></div>";


this.$userDetails[0].innerHTML = html;

          }
```

```
        }
}
```

Our method first checks whether the user has inputted either billing or shipping information or both. Then, it simply builds an HTML fragment by getting the user's data from session storage.

Finally, the user may buy the products by submitting the PayPal form. The form redirects them to PayPal, but the fields need to be filled in properly before the form can be submitted.

```
// Appends the required hidden values to PayPal's
form before submitting

populatePayPalForm: function() {
        var self = this;
        if( self.$paypalForm.length ) {
                var $form = self.$paypalForm;
                var cart = self._toJSONObject(
                self.storage.getItem( self.cartName )
                );
                var shipping = self.storage.getItem(
                self.shippingRates );
                var numShipping = self._convertString(
                shipping );
                var cartItems = cart.items;
                var singShipping = Math.floor(
                numShipping / cartItems.length );

                $form.attr( "action", self.paypalURL
                );
                $form.find( "input[name='business']"
                ).val( self.paypalBusinessEmail );
                $form.find( "input[name='currency_
                code']" ).val( self.paypalCurrency );

                for( var i = 0; i < cartItems.length;
                ++i ) {
                        var cartItem = cartItems[i];
                        var n = i + 1;
                        var name = cartItem.product;
                        var price = cartItem.price;
                        var qty = cartItem.qty;

                        $( "<div/>" ).html( "<input
                        type='hidden' name='quantity_"
                        + n + "' value='" + qty +
                        "'/>" ).
                        insertBefore( "#paypal-btn" );
                        $( "<div/>" ).html( "<input
                        type='hidden'
                        name='item_name_" + n +
                        "' value='" + name + "'/>" ).
                        insertBefore( "#paypal-btn" );
                        $( "<div/>" ).html( "<input
                        type='hidden'
                        name='item_number_" + n +
                        "' value='SKU " + name +
                        "'/>" ).
                        insertBefore( "#paypal-btn" );
```

```
            $( "<div/>" ).html( "<input
            type='hidden' name='amount_"
            + n + "' value='" +
            self._formatNumber( price, 2
            ) + "'/>" ).
            insertBefore( "#paypal-btn" );
            $( "<div/>" ).html( "<input
            type='hidden' name='shipping_"
            + n + "' value='" +
            self._formatNumber(
            singShipping, 2 ) + "'/>" ).
            insertBefore( "#paypal-btn" );

        }

    }
}
```

First, we get some important information from session storage — namely, the shipping rate and the total number of items in the cart. We divide the total shipping amount by the number of items to get the shipping rate for each item.

Then, we set the URL for the `action` attribute of the form, together with our business email and currency code (taken from the `paypalBusinessEmail` and `paypalCurrency` properties, respectively).

Finally, we loop through the items of our cart, and we append to the form several hidden input elements containing the quantities, the names of the products, the number of items for each product, the prices (amounts), and the unit shipping rates.

The monetary values are formatted as `00,00`. Explaining all of the possible values of a PayPal form and the various types of PayPal forms goes well beyond the scope of this chapter. If you want to go deeper, I recommend the following reading:

- "HTML Form Basics for PayPal Payments Standard[194]," PayPal Developer
- "HTML Variables for PayPal Payments Standard[195]," PayPal Developer

Source Code

Get the code from the GitHub repository[196]. Just change the `paypalBusinessEmail` property of the `$.Shop` object to your PayPal Sandbox email account.

OTHER RESOURCES

- "DOM Storage Guide[197]," Mozilla Developer Network
- "Introduction to Session Storage[198]," Nicholas C. Zakas

---

[194] https://developer.paypal.com/docs/classic/paypal-payments-standard/integration-guide/formbasics/
[195] https://developer.paypal.com/docs/classic/paypal-payments-standard/integration-guide/Appx_websitestandard_htmlvariables/
[196] https://github.com/gabrieleromanato/jQuery-sessionStorage-shopping-cart
[197] https://developer.mozilla.org/en-US/docs/Web/Guide/API/DOM/Storage
[198] http://www.nczonline.net/blog/2009/07/21/introduction-to-sessionstorage/

- "Using data-* Attributes[199]," Mozilla Developer Network

❧

---

[199] https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/Using_data_attributes

Reducing Abandoned Shopping Carts In E-Commerce

BY KEIR WHITAKER ❧

In March 2014, the Baymard Institute, a web research company based in the UK, reported that 67.91%[200] of online shopping carts are abandoned. An abandonment means that a customer has visited a website, browsed around, added one or more products to their cart and then left without completing their purchase. A month later in April 2014, Econsultancy stated[201] that global retailers are losing $3 trillion (USD) in sales every year from abandoned carts.

Clearly, reducing the number of abandoned carts would lead to higher store revenue — the goal of every online retailer. The question then becomes how can we, as designers and developers, help convert these "warm leads" into paying customers for our clients?

Before Cart Abandonment

Let's begin by looking at recognized improvements we can make to an online store to reduce the number of "before cart" abandonments. These improvements focus on

---

[200] http://baymard.com/lists/cart-abandonment-rate

[201] https://econsultancy.com/blog/64680-six-tactics-for-reducing-cart-abandonment-rates#i.weabnjzqdeyu10

changes that aid the customer's experience prior to reaching the cart and checkout process, and they include the following:

- **Show images of products.**
  This reinforces what the customer is buying, especially on the cart page.
- **Display security logos and compliance information.**
  This can allay fears related to credit-card and payment security.
- **Display contact details.**
  Showing offline contact details (including a phone number and mailing address) in addition to an email address adds credibility to the website.
- **Make editing the cart easier.**
  Make it as simple as possible for customers to change their order prior to checking out.
- **Offer alternative payment methods.**
  Let people check out with their preferred method of payment (such as PayPal and American Express, in addition to Visa and MasterCard).
- **Offer support.**
  Providing a telephone number and/or online chat functionality on the website and, in particular, on the checkout page will give shoppers confidence and ease any concerns they might have.
- **Don't require registration.**
  This one resonates with me personally. I often click away

from websites that require lengthy registration forms to be filled out. By allowing customers to “just” check out, friction is reduced.

- **Offer free shipping.**
  While merchants might include shipping costs in the price, “free shipping” is nevertheless an added enticement to buy.

- **Be transparent about shipping costs and time.**
  Larger than expected shipping costs and unpublished lead times will add unexpected costs and frustration.

- **Show testimonials.**
  Showcasing reviews from happy customers will alleviate concerns any people might have about your service.

- **Offer price guarantees and refunds.**
  Offering a price guarantee gives shoppers the confidence that they have found the best deal. Additionally, a clear refund policy will add peace of mind.

- **Optimize for mobile.**
  Econsultancy reports that sales from mobile devices increased by 63% in 2013. This represents a real business case to move to a “responsive” approach.

- **Display product information.**
  Customers shouldn’t have to dig around a website to get the information they need. Complex navigation and/or a lack of product information make for a frustrating experience.

Unfortunately, even if you follow all of these recommendations, the reality is that customers will still abandon their carts — whether through frustration, bad design or any other reason they see fit.

After Cart Abandonment

The second approach is to look at things we can do once a cart has been abandoned. One tactic is to email the customer with a personalized message and a link to a prepopulated cart containing the items they had selected. This is known as an "abandoned cart email."

The concept is pretty simple. At the right time, a customizable email is sent, complete with a personalized message and a link to the customer's abandoned cart. Of course, this approach assumes that the customer has submitted their email address — effectively, they've done everything but paid. Abandoned cart emails represent one last attempt by the merchant to convince the buyer to check out.

In September 2013, Econsultancy outlined[202] how an online cookie retailer recaptured 29% of its abandoned shopping carts via email. This is a huge figure and one we might naturally be skeptical of.

To get a more realistic perspective, I asked my colleagues at Shopify[203] to share some of their data on this, and they kindly agreed. Shopify introduced "abandoned

---

[202] https://econsultancy.com/blog/63466-nine-case-studies-and-infographics-on-cart-abandonment-and-email-retargeting#i.weabnjzqdeyu10

[203] http://shopify.com

cart recovery" (ACR) in mid-September 2013 (just over a year ago at the time of writing). Here's a summary of its effectiveness:

- In the 12 months since launching automatic ACR, $12.9 million have been recovered through ACR emails in Shopify.
- 4,085,592 emails were sent during this period, of which 147,021 carts were completed as a result. This represents a 3.6% recovery rate.
- Shop owners may choose to send an email 6 or 24 hours after abandonment. Between the two, 6-hour emails convert much better: a 4.1% recovery rate for 6 hours versus 3% for 24 hours.

It's worth noting that the 3.6% recovery rate is from Shopify's ACR emails. Many merchants use third-party apps[204] instead of Shopify's native feature. Given that Shopify is unable to collect data on these services, the number of emails sent and the percentage of recovered carts may well be higher.

Given the statistics, abandoned cart emails are clearly an important part of an online retailer's marketing strategy. Luckily, most leading e-commerce platforms enable merchants to send custom emails, either in plain text or HTML. Knowing how to implement these notifications is a useful skill if you are designing for e-commerce, and they represent added value to your services.

---

[204] https://apps.shopify.com/search/query?utf8=%E2%9C%93&q=abandoned

Creating An HTML Abandoned Cart Email

The implementation of abandoned cart emails varies from platform to platform. Some platforms require third-party plugins, whereas others have the functionality built in. For example, both plain-text and HTML versions are available on Shopify. While the boilerplates are very usable, you might want to create a custom HTML version to complement the branding of your store. We'll look at options and some quick wins shortly.

In recent years, HTML email newsletters have really flourished. You only have to look at the many galleries[205] to see how far this form of marketing has progressed. Sending an HTML version, while not essential, certainly allows for more flexibility and visual design (although always sending a plain-text version, too, is recommended). However, it's not without its pain points.

If you've been developing and designing for the web since the 1990s, then you will remember, fondly or otherwise, the "fun" of beating browsers into shape. Designing HTML newsletters is in many ways a throwback to this era. Table-based layouts are the norm, and we also have to contend with email clients that render HTML inconsistently.

Luckily for us, the teams at both Campaign Monitor[206] and MailChimp[207] have written extensively on this sub-

---

[205] http://inspiration.mailchimp.com/
[206] http://campaignmonitor.com
[207] http://mailchimp.com

ject and provide many solutions to common problems. For example, Campaign Monitor maintains a matrix and provides a downloadable poster[208] outlining the CSS support of each major desktop and mobile email client. MailChimp, for its part, provides numerous resources on CSS[209] and email template design[210]. Familiarizing yourself with the basics before tackling your first HTML email is worthwhile – even if you ultimately use a template.

Open-Source Responsive Email Templates

While many of you might wish to "roll your own" template, I often find it easier to build on the great work of others. For example, a number of great open-source projects focus on HTML email templates, including Email Blueprints[211] by MailChimp.

Another example comes from Lee Munroe. His "transactional HTML email templates[212]" differ in that they are not intended for use as newsletters, but rather as "transactional" templates. To clarify the difference, Lee breaks down transactional email into three categories:

- **action emails**
  "Activate your account," "Reset your password"

---

[208] https://www.campaignmonitor.com/css/
[209] http://templates.mailchimp.com/resources/email-client-css-support/
[210] http://templates.mailchimp.com/
[211] https://github.com/mailchimp/Email-Blueprints
[212] http://blog.mailgun.com/transactional-html-email-templates/

- **email alerts**
  “You’ve reached a limit,” “A problem has occurred”
- **billing emails**
  monthly receipts and invoices

The templates are purposefully simple yet elegant. They also have the added benefit of having been throughly tested in all major email clients. Finally, because they are responsive, they cater to the 50+%[213] of emails opened via mobile devices.

The Challenge

Lee’s templates are a good option for creating a simple HTML email for abandoned carts. Therefore, let’s move on from the theory and look at how to create an HTML template for the Shopify platform.

Let’s begin by setting some constraints on the challenge:

1. make the fewest number of markup changes to Lee’s template;
2. make use of the boilerplate text that is set as the default in the abandoned cart HTML template in Shopify;
3. inline all CSS (a best practice for HTML email);
4. send a test email with dummy data, and review the results in Airmail, Gmail and Apple Mail (on iOS).

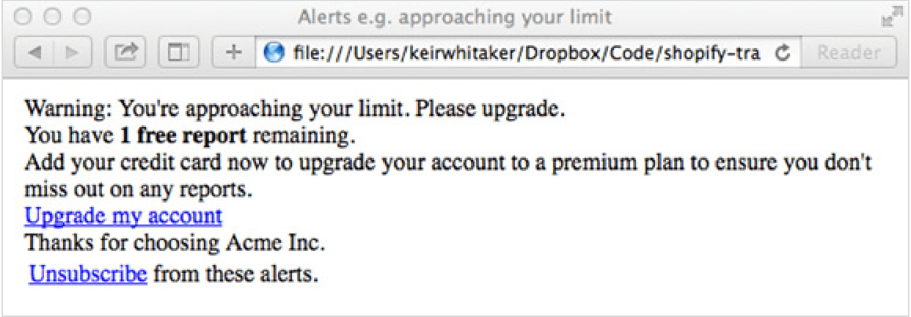
---

213. http://emailclientmarketshare.com/

1. CREATE A LOCAL COPY OF THE ACTION EMAIL TEMPLATE

Having looked at the three templates, the "action" version appears to offer the best starting point. You can download the HTML for this template directly from GitHub[214] if you wish to follow along.

The first step is to take the contents of Lee's template and save it locally as `abandoned-cart.html`. A quick sanity check in a browser shows that the style sheet isn't being picked up.



Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Warning: You're approaching your limit. Please upgrade.
You have **1 free report** remaining.
Add your credit card now to upgrade your account to a premium plan to ensure you don't miss out on any reports.
Upgrade my account
Thanks for choosing Acme Inc.
Unsubscribe from these alerts.

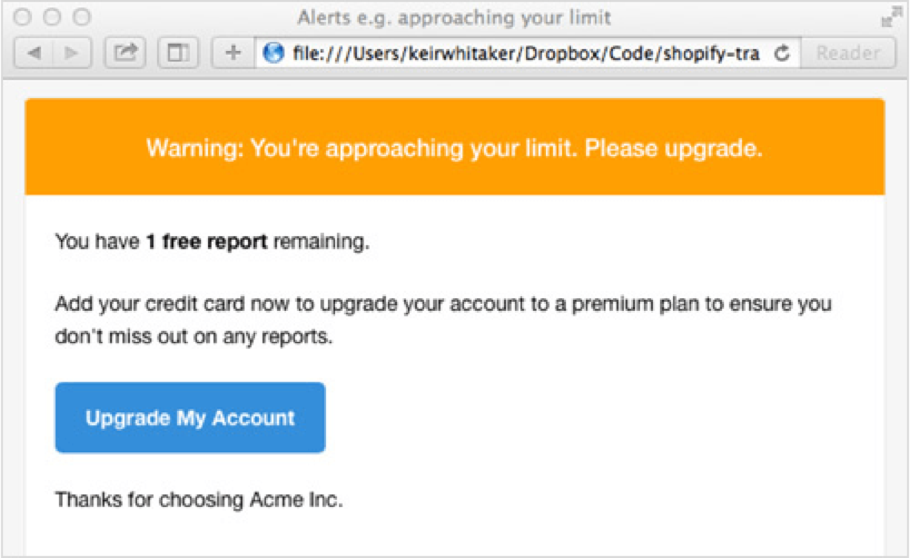
Basic template setup.

Inlining all CSS is recommended (we'll look at this in a later step), so add the styles to the `<head>` section of `abandoned-cart.html`. You can copy the CSS in its entirety from GitHub[215] and then paste it in a `<style>` element. Another check in the browser shows that the styles are being applied.

---

[214] https://raw.githubusercontent.com/mailgun/transactional-email-templates/master/templates/alert.html

[215] https://raw.githubusercontent.com/mailgun/transactional-email-templates/master/templates/styles.css


Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Warning: You're approaching your limit. Please upgrade.

You have **1 free report** remaining.

Add your credit card now to upgrade your account to a premium plan to ensure you don't miss out on any reports.

Thanks for choosing Acme Inc.

CSS applied.

2. ADD THE CONTENT

Now that the template is working as a standalone document, it's time to look at integrating Liquid[216]'s boilerplate code from Shopify's default template. This can be found in the Shopify admin section under "Settings" → "Notifications" → "Abandoned cart." If you wish to follow along with these code examples, you can set up a free fully featured development store[217] by signing up to Shopify's Partner Program[218].

```
Hey{% if billing_address.name %} {{
billing_address.name }}{% endif %},
Your shopping cart at {{ shop_name }} has been
reserved and is waiting for your return!
```

---

[216] http://docs.shopify.com/themes/liquid-documentation/basics

[217] http://docs.shopify.com/themes/theme-development/getting-started/development-environment

[218] http://www.shopify.com/partners

```
In your cart, you left:
{% for line in line_items %}{{ line.quantity }}x {{
line.title }}{% endfor %}
But it’s not too late! To complete your purchase,
click this link:
{{ url }}
Thanks for shopping!
{{ shop_name }}
```

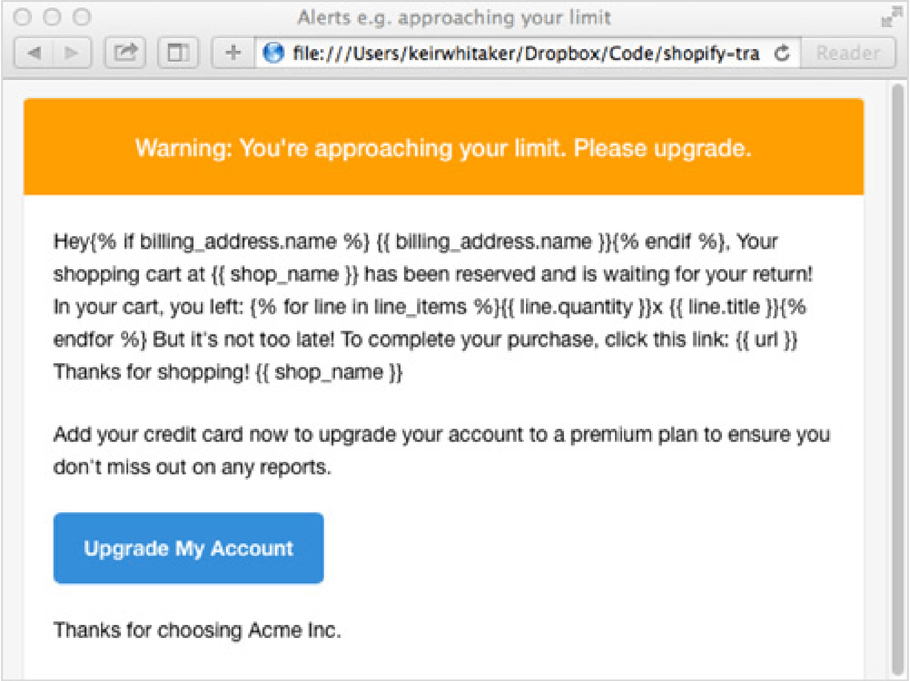
All notification emails in Shopify make use of Liquid, the templating language developed by Shopify and now available as an open-source project and found in tools such as Mixture[219] and software such as Jekyll[220] and SiteLeaf[221]. Liquid makes it possible to pull data from the store — in this case, all of the details related to the abandoned cart and the user it belonged to.

Having studied the markup, I’ve decided to place the boilerplate content in a single table cell, starting on line 27[222] of Lee’s original document.

After pasting in the boilerplate code, let’s double-check that the template renders as expected in the browser. At this stage, Liquid’s code is appearing “as is.” Only once the template is applied to Shopify’s template will this be replaced with data from the store.

---

219. http://mixture.io
220. http://jekyllrb.com/
221. http://www.siteleaf.com/
222. https://github.com/mailgun/transactional-email-templates/blob/master/templates/alert.html#L27


Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Warning: You're approaching your limit. Please upgrade.

Hey{% if billing_address.name %} {{ billing_address.name }}{% endif %}, Your shopping cart at {{ shop_name }} has been reserved and is waiting for your return! In your cart, you left: {% for line in line_items %}{{ line.quantity }}x {{ line.title }}{% endfor %} But it's not too late! To complete your purchase, click this link: {{ url }} Thanks for shopping! {{ shop_name }}

Add your credit card now to upgrade your account to a premium plan to ensure you don't miss out on any reports.

Thanks for choosing Acme Inc.

Boilerplate text added.

3. MODIFY THE BOILERPLATE CODE

The next stage involves tidying up some of the boilerplate code, including wrapping the boilerplate text in `<p>` tags. Then, it's time to work out how best to display the cart's contents in markup. For speed, I've chosen an unordered list. Liquid's refactored `for` loop[223] is pretty straightforward:

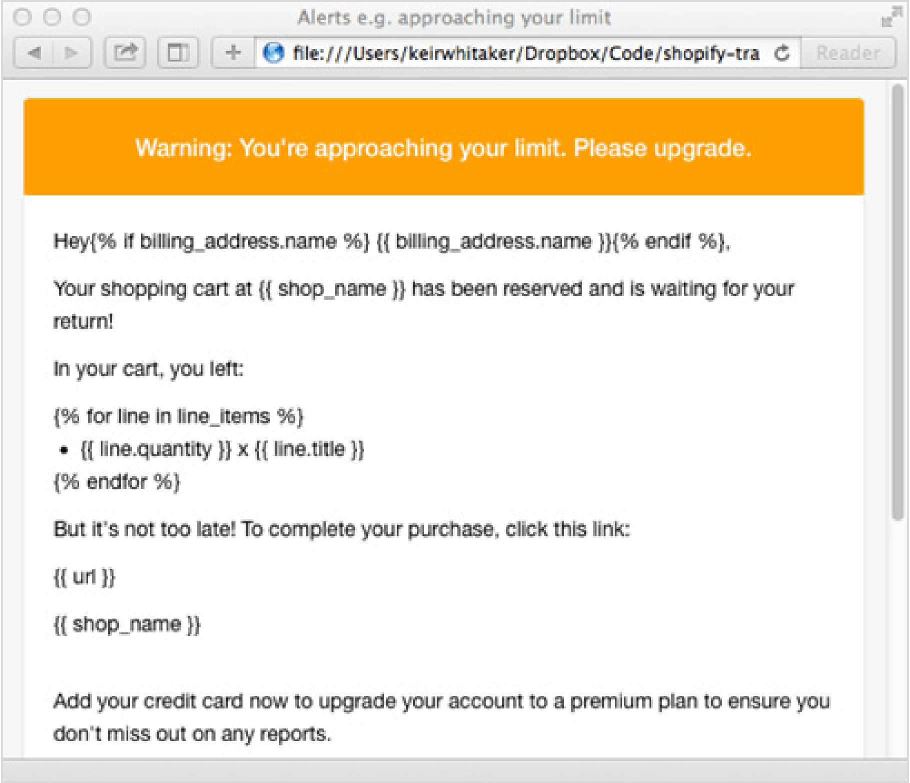
```
<ul>
{% for line in line_items %}
<li>{{ line.quantity }} x {{ line.title }}</li>
{% endfor %}
</ul>
```

---

[223] http://docs.shopify.com/themes/liquid-documentation/objects/for-loops

After another sanity check, things are looking much more promising. However, we need to make a few final tweaks to make it work:

- remove unwanted table rows,
- add the correct link to the blue call-to-action button,
- change the contents of the footer.


Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Warning: You're approaching your limit. Please upgrade.

Hey{% if billing_address.name %} {{ billing_address.name }}{% endif %},

Your shopping cart at {{ shop_name }} has been reserved and is waiting for your return!

In your cart, you left:

{% for line in line_items %}
- {{ line.quantity }} x {{ line.title }}

{% endfor %}

But it's not too late! To complete your purchase, click this link:

{{ url }}

{{ shop_name }}

Add your credit card now to upgrade your account to a premium plan to ensure you don't miss out on any reports.

Tidying up.

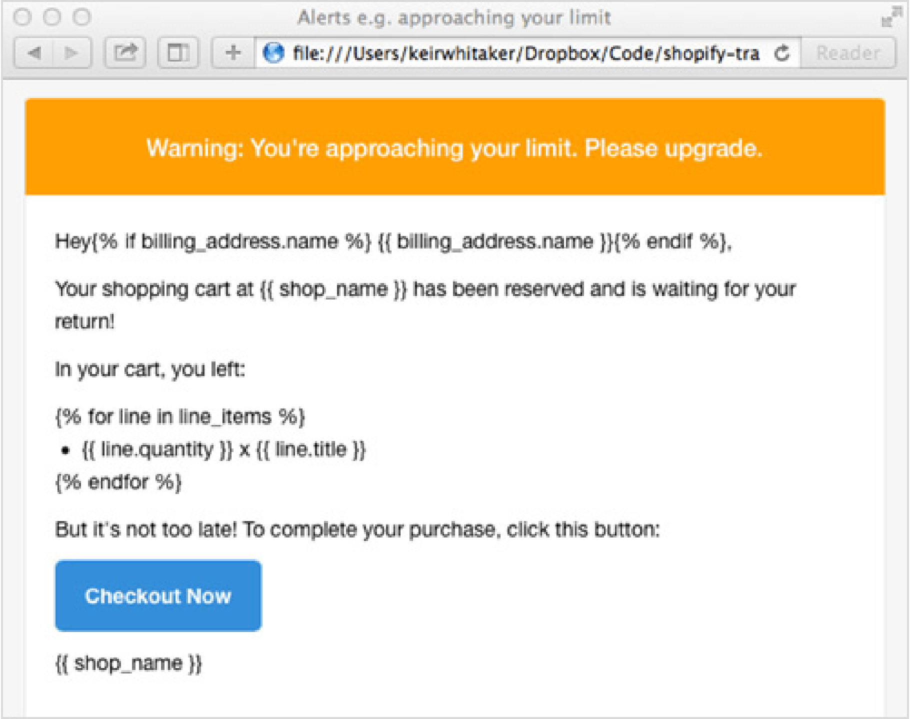
4. Make Final Adjustments

Lee's template includes markup to create a big blue "Click me" button. You can see this on line 38[224]:

```
<a href="http://www.mailgun.com"
class="btn-primary">Upgrade my account</a>
```

Let’s turn this into a relevant link by changing the markup to this:

```
<p><a href="{{ url }}" class="btn-primary">Check out
now</a></p>
```


Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Warning: You're approaching your limit. Please upgrade.

Hey{% if billing_address.name %} {{ billing_address.name }}{% endif %},

Your shopping cart at {{ shop_name }} has been reserved and is waiting for your return!

In your cart, you left:

{% for line in line_items %}
- {{ line.quantity }} x {{ line.title }}

{% endfor %}

But it's not too late! To complete your purchase, click this button:

{{ shop_name }}

Adding the call-to-action URL.

In this case, `{{ url }}` represents the link to the abandoned (and saved) cart. I’ve enclosed the anchor in a paragraph to ensure consistent spacing when the email is rendered, and I’ve moved it up into the main section.

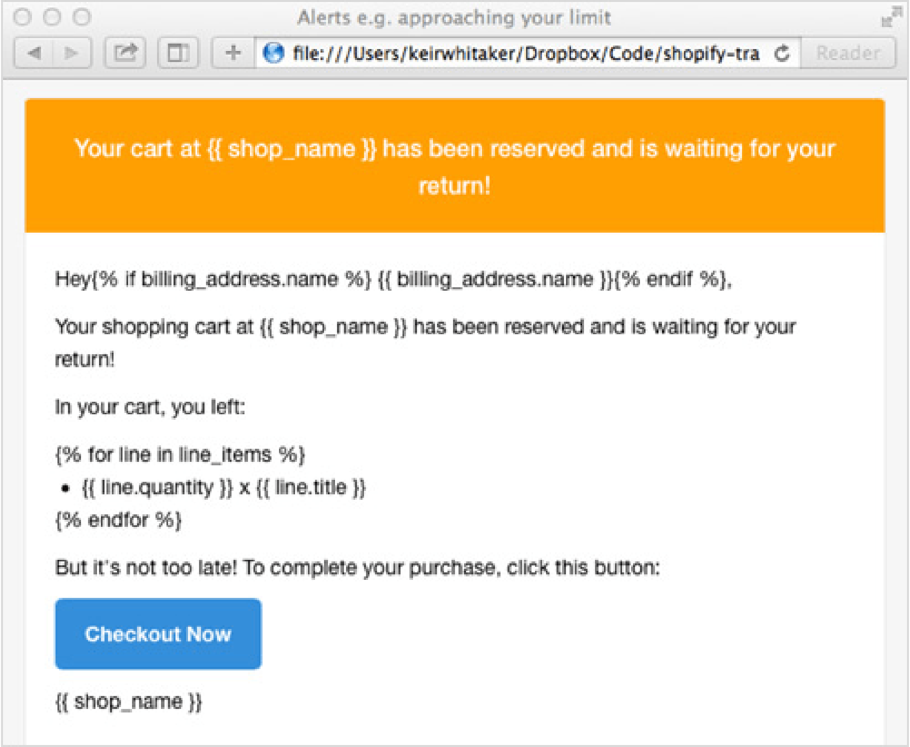
---

224. https://github.com/mailgun/transactional-email-templates/blob/master/templates/alert.html#L38

Finally, we've changed the unsubscribe link in the footer to a link to the shop:

```
<a href="{{ shop.url }}">Visit {{ shop_name }}</a>
```

After a few minutes of editing, the template looks more than respectable. However, we've neglected one section, the text in the yellow highlighted "alert" section. I've changed this, along with the `title` element in the HTML, to this:



Alerts e.g. approaching your limit
file:///Users/keirwhitaker/Dropbox/Code/shopify-tra
Reader

Your cart at {{ shop_name }} has been reserved and is waiting for your return!

Hey{% if billing_address.name %} {{ billing_address.name }}{% endif %},

Your shopping cart at {{ shop_name }} has been reserved and is waiting for your return!

In your cart, you left:

{% for line in line_items %}
- {{ line.quantity }} x {{ line.title }}

{% endfor %}

But it's not too late! To complete your purchase, click this button:

{{ shop_name }}

Changing the header text and footer link.

```
Your cart at {{ shop_name }} has been reserved and is
waiting for your return!
```

Email notifications in Shopify have access to a number of variables that can be accessed via Liquid. A full list is available in Shopify's documentation[225].

5. INLINE THE CSS

To recap, we've changed the template's markup very little, and the CSS is identical to Lee's original (albeit in the template, rather than in an external file). Shopify's boilerplate text is also intact, albeit with a very small change to Liquid's `for` loop.

The next step is to inline the CSS in the HTML file. Because some email clients remove `<head>` and `<style>` tags from email, moving the CSS inline means that our email should render as intended. Chris Coyier penned "Using CSS in HTML Emails: The Real Story[226]" back in November 2007 – the landscape hasn't changed much since.

Thankfully, taking your CSS inline isn't a long or difficult process. In fact, it's surprisingly easy. A number of free services[227] enable you to paste markup and will effectively add your styles inline.

I've chosen Premailer[228] principally because it has a few extra features, including the ability to remove native CSS from the `<head>` section of the HTML document, which saves a few kilobytes from the file's size. After

---

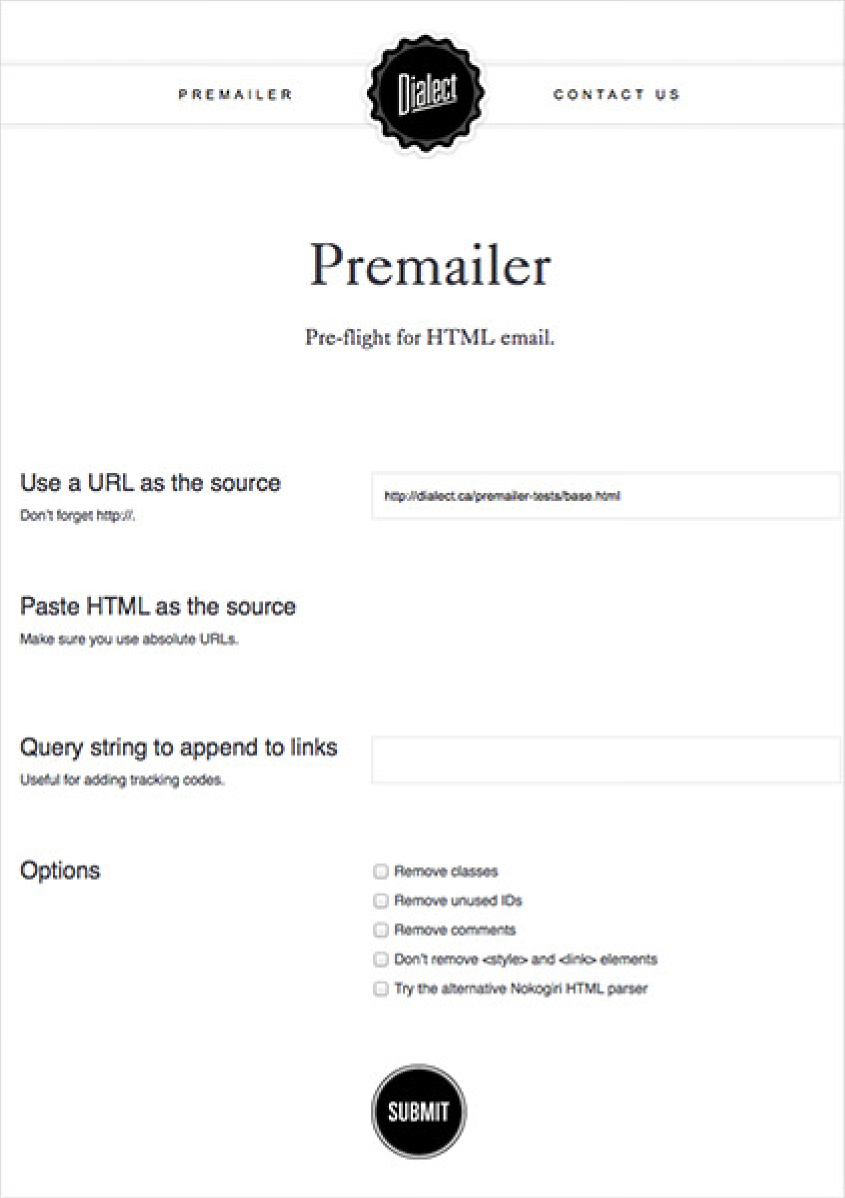
[225] http://docs.shopify.com/manual/settings/notifications/email-variables

[226] http://css-tricks.com/using-css-in-html-emails-the-real-story/

[227] https://www.google.co.uk/webhp?sourceid=chrome-instant&amp;ion=1&amp;espv=2&amp;ie=UTF-8#q=inline+css+html+email

[228] http://premailer.dialect.ca/

pasting in the markup and pressing “Submit,” Premailer generates a new HTML version that you can copy and paste back into your document. It also creates a plain-text version of the email, should you need it.



Premailer

Pre-flight for HTML email.

Use a URL as the source
Don't forget http://.
http://dialect.ca/premailer-tests/base.html

Paste HTML as the source
Make sure you use absolute URLs.

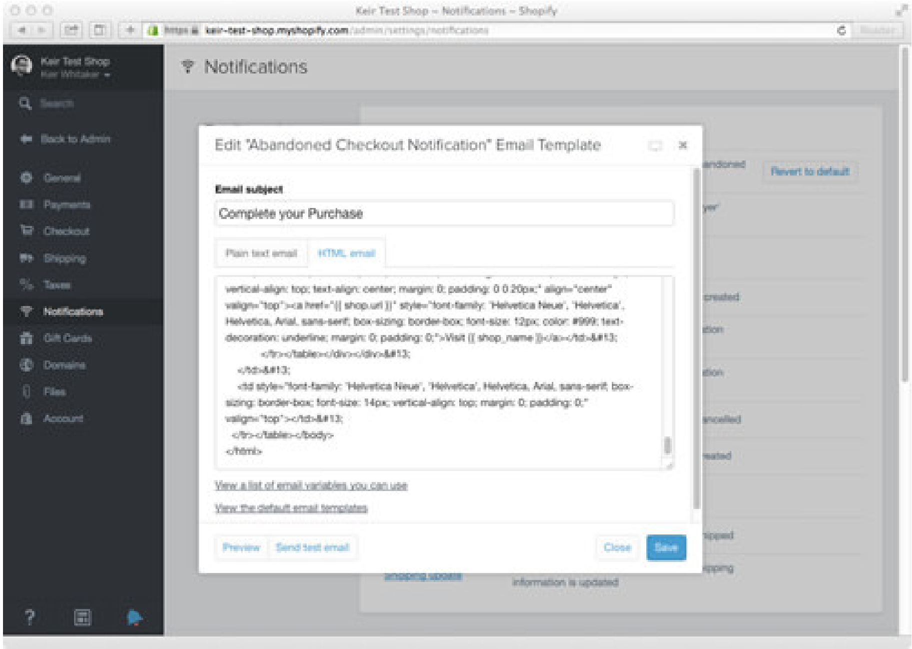
Query string to append to links
Useful for adding tracking codes.

Options
☐ Remove classes
☐ Remove unused IDs
☐ Remove comments
☐ Don't remove <style> and <link> elements
☐ Try the alternative Nokogiri HTML parser

Premailer has the ability to remove native CSS which saves a few kilobytes. (View large version[229]*)*

Another great feature of Premailer is that you can view the new markup in the browser. You'll find a link above the text box containing the new markup, titled "Click to View the HTML Results." Clicking the link opens a hosted version of the new markup, which you can use to check your sanity or share with colleagues and clients.

If you are keen to automate the creation of e-commerce notification emails, then Premailer also offers an API[230]. A number of libraries that support it are also available on GitHub, including PHP-Premailer[231].


Keir Test Shop – Notifications – Shopify
keir-test-shop.myshopify.com/admin/settings/notifications
Keir Test Shop
Keir Whitaker
Search
Back to Admin
General
Payments
Checkout
Shipping
Taxes
Notifications
Gift Cards
Domains
Files
Account
Notifications
Edit "Abandoned Checkout Notification" Email Template
Plain text email
HTML email
View a list of email variables you can use
View the default email templates
Preview
Send test email
Close
Save
Revert to default

Email subject

Complete your Purchase

```
vertical-align: top; text-align: center; margin: 0; padding: 0 0 20px;" align="center"
valign="top"><a href="{{ shop.url }}" style="font-family: 'Helvetica Neue', 'Helvetica',
Helvetica, Arial, sans-serif; box-sizing: border-box; font-size: 12px; color: #999; text-
decoration: underline; margin: 0; padding: 0;">Visit {{ shop_name }}</a></td>&#13;
          </tr></table></div></div>&#13;
    </td>&#13;
    <td style="font-family: 'Helvetica Neue', 'Helvetica', Helvetica, Arial, sans-serif; box-
sizing: border-box; font-size: 14px; vertical-align: top; margin: 0; padding: 0;"
valign="top"></td>&#13;
  </tr></table></body>
</html>
```

Shopify admin. (View large version[232])

---

[229] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/07-premailer-opt.jpg

[230] http://premailer.dialect.ca/api

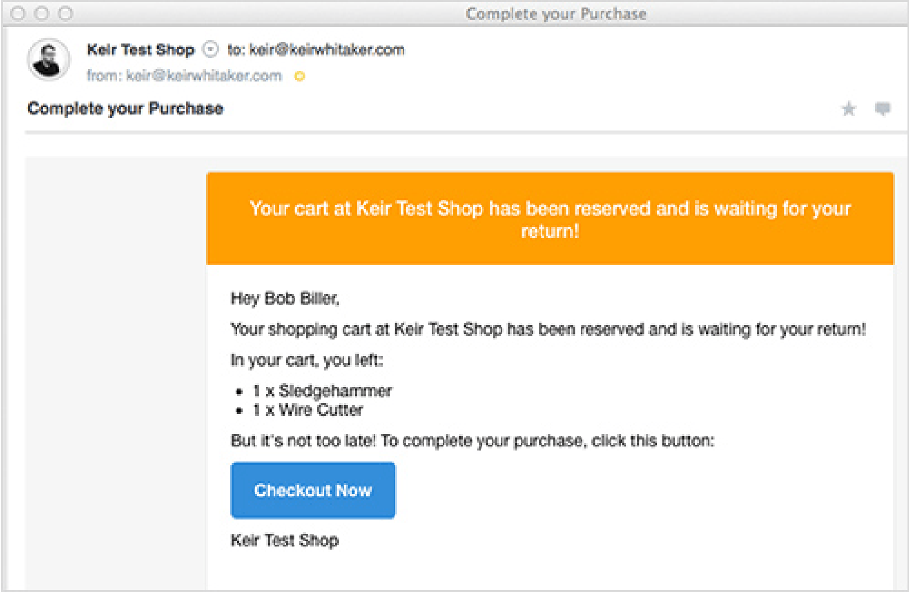
[231] https://github.com/onassar/PHP-Premailer

[232] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/08-template-8-opt.jpg

The final task is to copy the new HTML code and paste it in the “HTML” tab of our abandoned cart notification in Shopify’s admin area. Once it’s applied, you can preview the email in the browser, as well as send a dummy copy to an email address.

Below are the results in various email clients (both mobile and desktop).

AIRMAIL



Your cart at Keir Test Shop has been reserved and is waiting for your return!

Hey Bob Biller,

Your shopping cart at Keir Test Shop has been reserved and is waiting for your return!

In your cart, you left:

- 1 x Sledgehammer
- 1 x Wire Cutter

But it's not too late! To complete your purchase, click this button:

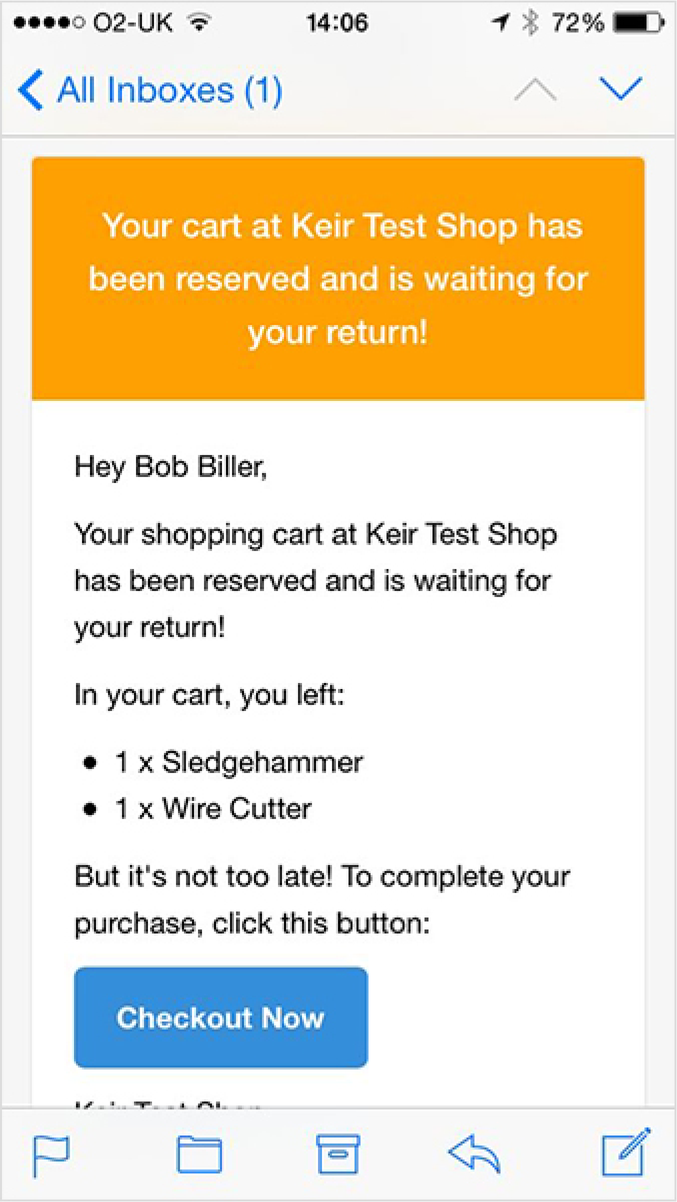
Keir Test Shop

Airmail rendering. (View large version[233]*)*

---

[233] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/09-airmail-opt.png

APPLE MAIL



Your cart at Keir Test Shop has been reserved and is waiting for your return!

Hey Bob Biller,

Your shopping cart at Keir Test Shop has been reserved and is waiting for your return!

In your cart, you left:

- 1 x Sledgehammer
- 1 x Wire Cutter

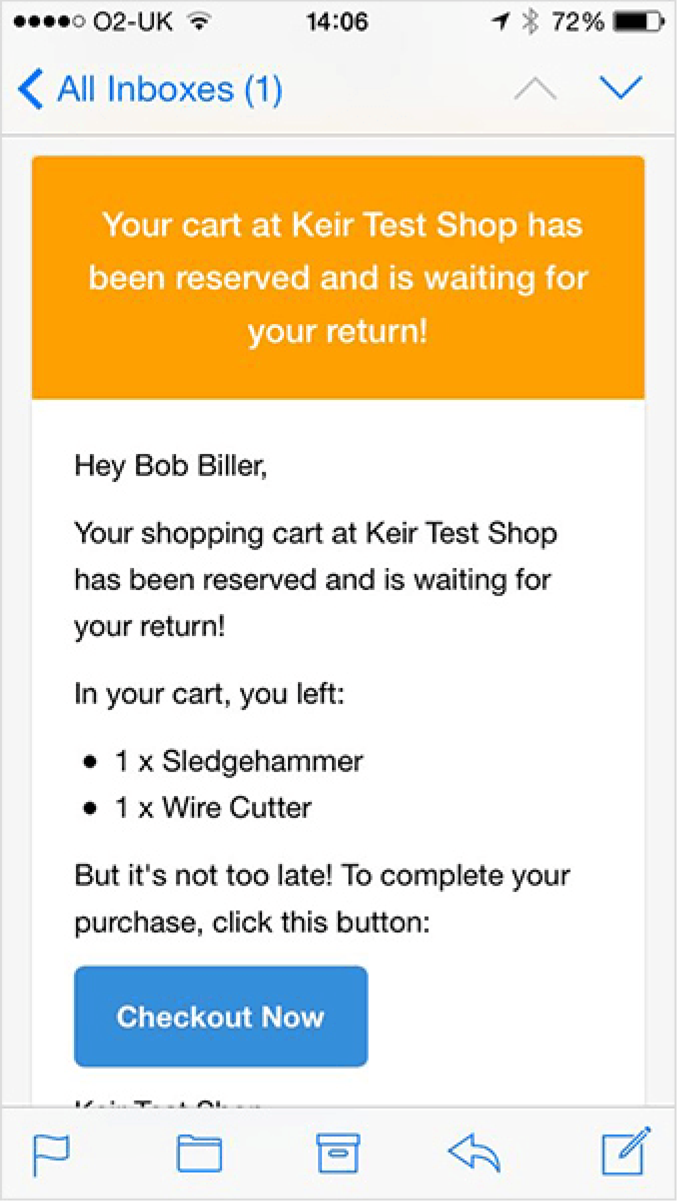
But it's not too late! To complete your purchase, click this button:

Apple Mail rendering. (View large version[234])

---

[234] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/10-ios-opt.jpg

APPLE MAIL ON IOS



Your cart at Keir Test Shop has been reserved and is waiting for your return!

Hey Bob Biller,

Your shopping cart at Keir Test Shop has been reserved and is waiting for your return!

In your cart, you left:

- 1 x Sledgehammer
- 1 x Wire Cutter

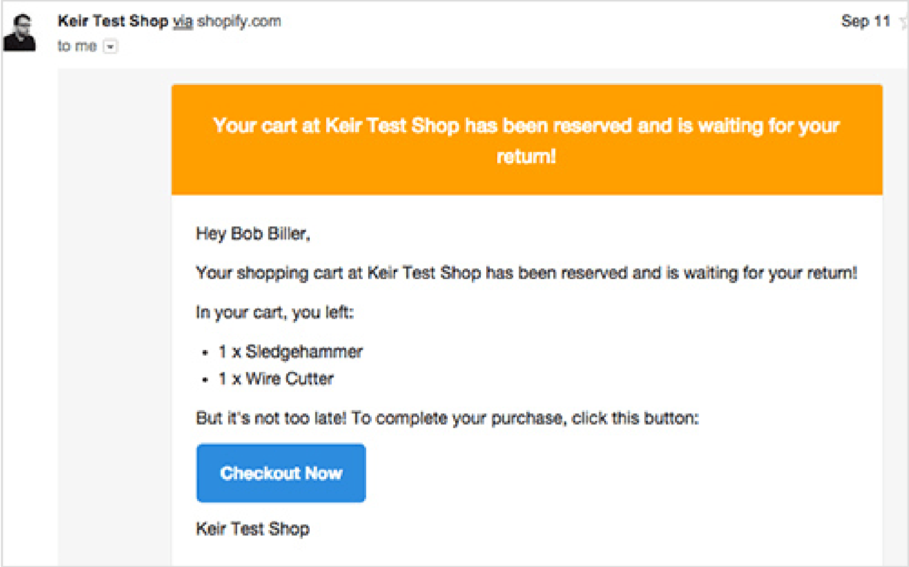
But it's not too late! To complete your purchase, click this button:

Apple Mail on iOS rendering. (View large version[235]*)*

---

[235] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/12-mail-opt.png

GMAIL (BROWSER)



Keir Test Shop via shopify.com
to me

Sep 11

Your cart at Keir Test Shop has been reserved and is waiting for your return!

Hey Bob Biller,

Your shopping cart at Keir Test Shop has been reserved and is waiting for your return!

In your cart, you left:

- 1 x Sledgehammer
- 1 x Wire Cutter

But it's not too late! To complete your purchase, click this button:

Keir Test Shop

Gmail rendering. (View large version[236]*)*

The process of turning Lee's template into a usable email took around 30 minutes, and I am pretty pleased with the result from such little input.

Of course, this process screams out for automation. For those who are interested, Lee has also posted about his workflow for creating HTML email templates[237] and the toolkit he uses (Sketch, Sublime, Grunt, SCSS, Handlebars, GitHub, Mailgun, Litmus).

---

[236] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/11-gmail-opt.png

[237] http://www.leemunroe.com/email-design-workflow/

Taking It Further

The template produced above is admittedly quite basic and only scratches the surface of what is possible. We could do plenty more to customize our email for abandoned carts, such as:

- consider tone of voice,
- show product images to jog the customer's memory,
- add a discount code to encourage the user to return and buy,
- add upsells,
- list complementary products.

DODO CASE

Tone of voice is a key consideration and goes a long way to engaging the customer. Dodo Case[238] has a great example (see next page).

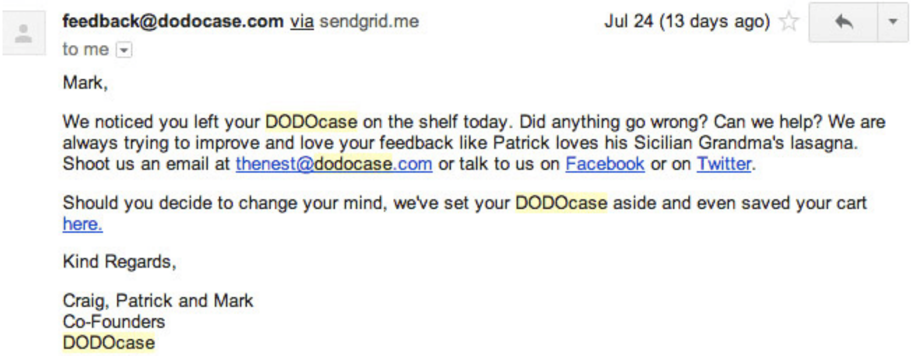
As always, context is very important when it comes to tone of voice. What's right for Dodo Case might not be right for a company specializing in healthcare equipment.

Let's review a few examples (taken from Shopify's blog[239]) to get a taste of what other companies are doing.

---

[238] http://www.dodocase.com/

[239] http://www.shopify.co.uk/blog/12522201-13-amazing-abandoned-cart-emails-and-what-you-can-learn-from-them



feedback@dodocase.com via sendgrid.me

to me

Jul 24 (13 days ago)

Mark,

We noticed you left your DODOcase on the shelf today. Did anything go wrong? Can we help? We are always trying to improve and love your feedback like Patrick loves his Sicilian Grandma's lasagna. Shoot us an email at thenest@dodocase.com or talk to us on Facebook or on Twitter.

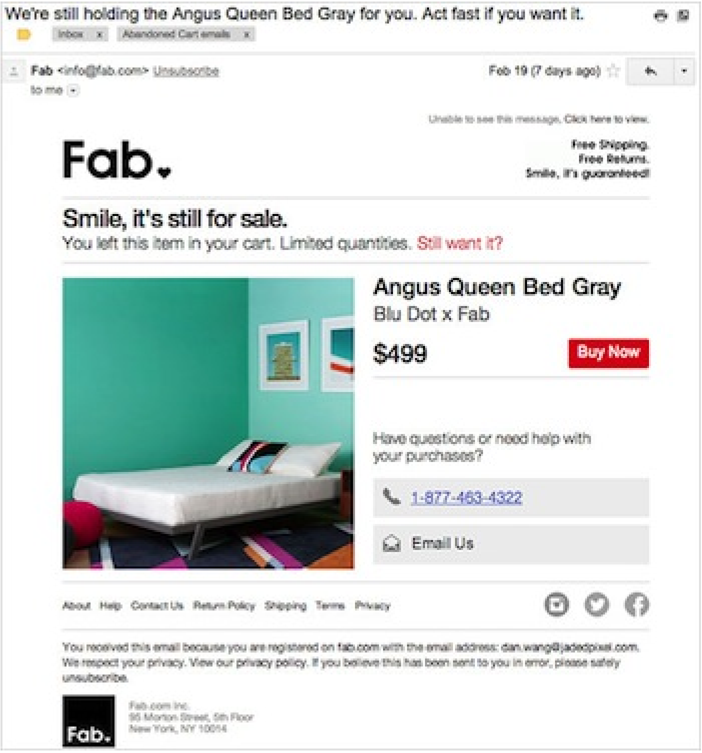
Should you decide to change your mind, we've set your DODOcase aside and even saved your cart here.

Kind Regards,

Craig, Patrick and Mark
Co-Founders
DODOcase

Dodo Case[240]'s email for abandoned carts. (View large version[241])

FAB



We're still holding the Angus Queen Bed Gray for you. Act fast if you want it.

Fab <info@fab.com> Unsubscribe

to me

Feb 19 (7 days ago)

Unable to see this message, Click here to view.

Free Shipping.
Free Returns.
Smile, it's guaranteed!

Smile, it's still for sale.

You left this item in your cart. Limited quantities. Still want it?

Angus Queen Bed Gray
Blu Dot x Fab
$499

Have questions or need help with your purchases?

☎ 1-877-463-4322

Email Us

You received this email because you are registered on fab.com with the email address: dan.wang@jadedpixel.com. We respect your privacy. View our privacy policy. If you believe this has been sent to you in error, please safely unsubscribe.

Fab.com Inc.
95 Morton Street, 5th Floor
New York, NY 10014

Fab[242]'s email for abandoned carts. (View large version[243])

---

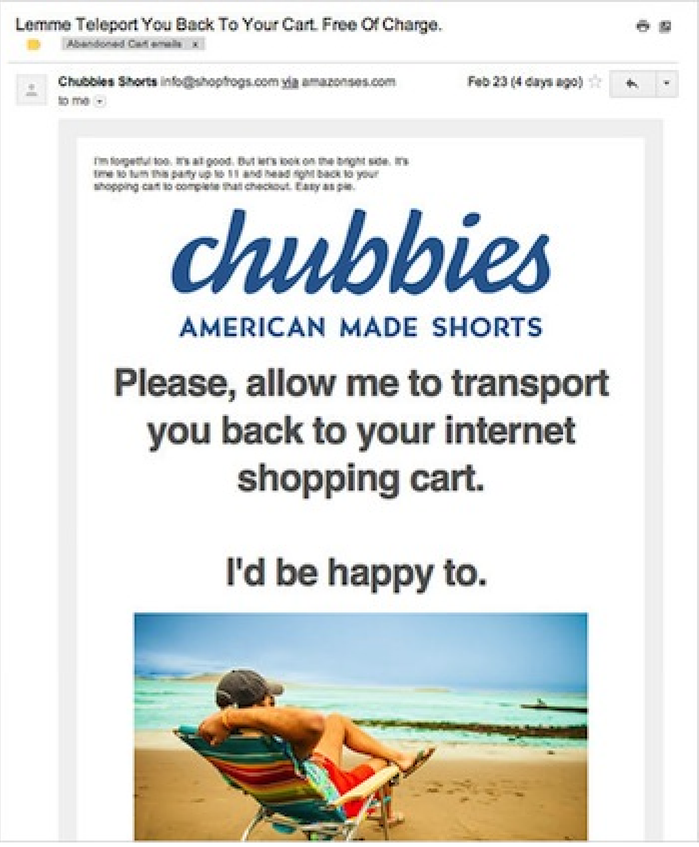
[240] http://www.dodocase.com/

[241] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/13-dodocase-opt.png

[242] http://www.fab.com

While this email from Fab[244] is pretty standard, the subject line is very attention-grabbing and is a big call to action.

CHUBBIES



Lemme Teleport You Back To Your Cart. Free Of Charge.

Chubbies Shorts info@shopfrogs.com via amazonses.com
to me

Feb 23 (4 days ago)

I'm forgetful too. It's all good. But let's look on the bright side. It's time to turn this party up to 11 and head right back to your shopping cart to complete that checkout. Easy as pie.

chubbies
AMERICAN MADE SHORTS

Please, allow me to transport you back to your internet shopping cart.

I'd be happy to.

Chubbies[245]' email for abandoned carts. (View large version[246])

---

[243] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/14-fab-opt.jpg

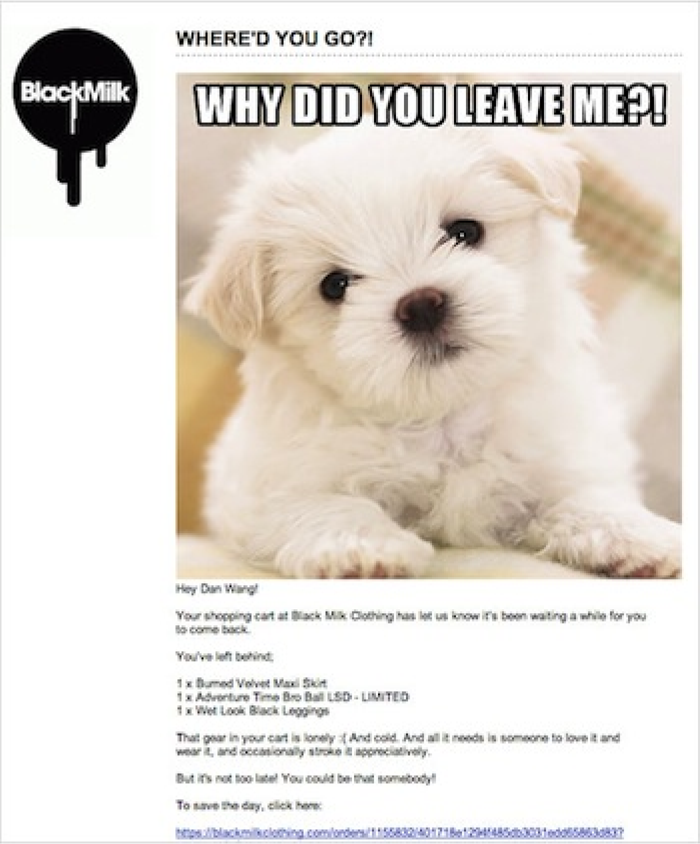
[244] http://www.fab.com

[245] http://www.chubbiesshorts.com/

[246] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/15-chubbies-opt.jpg

The language and tone used in Chubbies' email really stands out and is in line with the brand: fun-loving people. There's also no shortage of links back to the cart, including the title, the main image and the call to action towards the bottom of the email.

BLACK MILK CLOTHING



WHERE'D YOU GO?!

Hey Dan Wang!

Your shopping cart at Black Milk Clothing has let us know it's been waiting a while for you to come back.

You've left behind:

1 x Burned Velvet Maxi Skirt
1 x Adventure Time Bro Ball LSD - LIMITED
1 x Wet Look Black Leggings

That gear in your cart is lonely :(And cold. And all it needs is someone to love it and wear it, and occasionally stroke it appreciatively.

But it's not too late! You could be that somebody!

To save the day, click here:

Black Milk[247]*'s email for abandoned carts. (View large version*[248]*)*

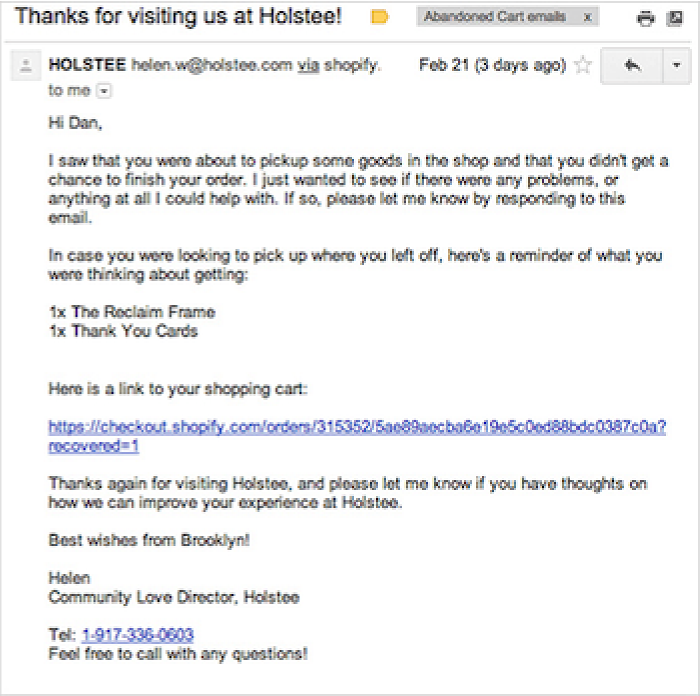
---

[247] http://blackmilkclothing.com/

[248] http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/16-blackmilk-opt.jpg

Black Milk Clothing[249] includes a dog photo and employs playful language, such as "Your shopping cart at Black Milk Clothing has let us know it's been waiting a while for you to come back."

HOLSTEE



Thanks for visiting us at Holstee!

HOLSTEE helen.w@holstee.com via shopify. Feb 21 (3 days ago)
to me

Hi Dan,

I saw that you were about to pickup some goods in the shop and that you didn't get a chance to finish your order. I just wanted to see if there were any problems, or anything at all I could help with. If so, please let me know by responding to this email.

In case you were looking to pick up where you left off, here's a reminder of what you were thinking about getting:

1x The Reclaim Frame
1x Thank You Cards

Here is a link to your shopping cart:

https://checkout.shopify.com/orders/315352/5ae89aecba6e19e5c0ed88bdc0387c0a?recovered=1

Thanks again for visiting Holstee, and please let me know if you have thoughts on how we can improve your experience at Holstee.

Best wishes from Brooklyn!

Helen
Community Love Director, Holstee

Tel: 1-917-336-0603
Feel free to call with any questions!

Holstee[250]'s email for abandoned carts. (View large version[251])

Finally, Holstee[252] asks if there's a problem they can help with. It even goes so far as to include a direct phone number to its "Community Love Director." Having worked

---

249. http://blackmilkclothing.com/
250. http://holstee.com
251. http://media.mediatemple.netdna-cdn.com/wp-content/uploads/2014/10/17-holstee-opt.png
252. http://holstee.com

with Holstee, I can confirm that this is a real position within the company!

Conclusion

While there are many tactics to persuade customers to buy, inevitably some people will get to the payment screen and decide not to continue. Any tactic that helps to seal the deal is certainly worth considering, and given the small amount of work involved in implementing an email to recover abandoned carts, it's a great place to start. Designers and developers are in a powerful position to help their clients increase their revenue, and being armed with tactics such as the ones outlined in this chapter will hopefully enable them to offer a wider range of services.

FURTHER READING

- "Nine Case Studies and Infographics on Cart Abandonment and Email Retargeting[253]," David Moth, Econsultancy
- "13 Best Practices for Email Cart Abandonment Programs[254]," Kyle Lacy, Salesforce Marketing Cloud Blog
- "Lost Sales Recovery, Part 2,: Crafting a Perfect Remarketing Message[255]," Vitaly Gonkov, The MageWorx Blog

---

[253] https://econsultancy.com/blog/63466-nine-case-studies-and-infographics-on-cart-abandonment-and-email-retargeting#i.weabnjzqdeyu10

[254] http://www.exacttarget.com/blog/13-best-practices-for-email-cart-abandonment-programs/

[255] http://blog.mageworx.com/2014/04/cart-abandonment-email/

- "Why Online Retailers Are Losing 67.45% of Sales and What to Do About It[256]," Mark Macdonald, Shopify Ecommerce Marketing Blog ❧

---

[256] http://www.shopify.co.uk/blog/8484093-why-online-retailers-are-losing-67-45-of-sales-and-what-to-do-about-it

About The Authors

Christian Holst

Christian Holst is co-founder of Baymard Institute where he writes bi-weekly articles on web usability and e-commerce optimization. He's also the author of the *E-Commerce Checkout Usability*[257] and *Mobile E-Commerce Usability*[258] research reports. Twitter: @Baymard[259]. Google Profile: https://plus.google.com/+ChristianHolst

Derek Nelson

Derek is a Partner and Creative Director at CLIQUE[260], a leading Chicago digital agency that he co-founded when he was 19. Clique has grown every year and launched over 300 web and mobile experiences, winning awards for its design and development work in E-Commerce, healthcare, energy, education and startups. He teaches Designing for Conversion at the Startup Institute, is a veteran of the 2008 Obama campaign, and graduated with honors from the Missouri School of Journalism. You can follow him on Twitter at @_dereknelson[261].

---

[257] http://baymard.com/checkout-usability
[258] http://baymard.com/mcommerce-usability
[259] http://www.twitter.com/Baymard
[260] http://cliquestudios.com/
[261] https://twitter.com/_dereknelson

Gabriele Romanato

Gabriele Romanato is a web developer. Contributor of the W3C CSS Test Suite, he is also skilled with jQuery and WordPress. You can find more about him by visiting his website[262] or his Facebook page[263]. He is also on Twitter[264].

Keir Whitaker

Keir Whitaker[265] works at Shopify[266] and co-hosts The Back to Front Show[267] podcast. He regulary writes about, and shares links on, e-commerce, the web industry and podcasting. Twitter: @keirwhitaker.

Lawrence Howlett

Lawrence Howlett has a real passion for user experience and lead generation. He owns and runs Newedge[268] — a full service digital agency, started from his bedroom, that now operates websites and manages digital marketing campaigns for high street brands and house hold names. Lawrence also shares his expert knowledge through eLearning courses, eBooks and blogging — connect over at lawrencehowlett.co.uk[269].Twitter: @lawrencehowlett[270].

---

[262] http://gabrieleromanato.com/
[263] http://www.facebook.com/gabrieleromanatopage/
[264] http://www.twitter.com/gabromanato/
[265] http://keirwhitaker.com/about/
[266] http://keirwhitaker.com/work/#shopify
[267] http://backtofrontshow.com
[268] http://www.newedge.co.uk
[269] http://lawrencehowlett.co.uk/

Sabina Idler

Sabina is passionate about designing and improving interactive media for all ages. With her own company, UXkids[271], Sabina leverages her academic research expertise, know how in child development, and strategic vision to help companies build successful digital products for kids. Twitter: @SabinaIdler[272].

---

270. http://www.twitter.com/lawrencehowlett
271. http://uxkids.com/
272. http://www.twitter.com/SabinaIdler

About Smashing Magazine

Smashing Magazine[273] is an online magazine dedicated to Web designers and developers worldwide. Its rigorous quality control and thorough editorial work has gathered a devoted community exceeding half a million subscribers, followers and fans. Each and every published article is carefully prepared, edited, reviewed and curated according to the high quality standards set in Smashing Magazine's own publishing policy[274].

Smashing Magazine publishes articles on a daily basis with topics ranging from business, visual design, typography, front-end as well as back-end development, all the way to usability and user experience design. The magazine is—and always has been—a professional and independent online publication neither controlled nor influenced by any third parties, delivering content in the best interest of its readers. These guidelines are continually revised and updated to assure that the quality of the published content is never compromised. Since its emergence back in 2006 Smashing Magazine has proven to be a trustworthy online source.

---

[273] http://www.smashingmagazine.com
[274] http://www.smashingmagazine.com/publishing-policy/