



Amazon.com: An evaluation of usability and useful function integration

Count: 1987

TABLE OF CONTENTS

TABLE OF CONTENTS.....	2
TABLE OF FIGURES	3
BUSINESS ENVIRONMENT	4
Amazon's Business Model.....	4
CUSTOMER JOURNIES	7
Three Basic Functions	7
Alex's User Journey	8
HEURISTIC EVALUATION	12
Use Cases.....	12
Evaluations	13
PROPOSED REDESIGN	20
CONCLUSION	21
BIBLIOGRAPHY.....	22

TABLE OF FIGURES

Figure 1: Amazon's flywheel for success	4
Figure 2: Amazon's AI integrated custom recommendations	5
Figure 3: Amazon's revenue model (source: visual-capitalist.com)	6
Figure 4: Alex's Use Case Scenario (The purchasing section is not discussed).....	7
Figure 5: Alex's User Story.....	7
Figure 6: The landing page screen – as seen by Alex	7
Figure 7: The product search result screen – as seen by Alex	8
Figure 8: The product pre-purchase screen – as seen by Alex.....	9
Figure 9: Colour hues and complements of: the purchase buttons and; the navigation bars.....	10
Figure 10: Alex's Activity Diagram (The purchasing section is not discussed)	11
Figure 11: Dataflow diagram of the two use cases	12
Figure 12: Heuristic evaluation utilising Schneiderman's eight golden rules of user interface design	13
Figure 13: Amazon.com's colour palette.....	13
Figure 14: Asos.com's men's section	14
Figure 15: The hover-over change to a single product – The 2 nd from the left.....	14
Figure 16: The highlighting of a hovered-over filter - Size	15
Figure 17: Sub-menu overlay – akin to but more detailed than Amazon's search function.....	15
Figure 19: Amazon as seen by one with Deuteranopia	15
Figure 19: Amazon as seen by one with Tritanopia	15
Figure 20: Heuristic evaluation utilising Tognazzini's First Principles of Interaction Design.....	16
Figure 21: The navigation bar at the top is glued to the screen at load (top), even if one scrolls halfway down (bottom).....	17
Figure 22 Division of page according to the Golden Ratio Rule	18
Figure 23 Demetri's journey dependent on if settings are easily accessed – note that without product purchase, the read/write operations on the database cost Amazon with no benefit.....	19
Figure 24: Heuristic evaluation utilising Nielsen's 10 usability heuristics	19
Figure 25: Proposed redesign of Amazon.com – Search results screen.....	20
Figure 26: Proposed redesign of Amazon.com – Singular product page.....	20

BUSINESS ENVIRONMENT

Amazon's Business Model

Jeff Bezos' Amazon is built on a number of simple principles, including (Amazon.com, no date):

- Aiming to be *Earth's most customer-centric company*
- Aiming to *obsess over customers*
- Recognising that *some decisions are consequential and irreversible [...], But most decisions aren't like that*

The flywheel designed by Bezos encapsulates this (Amazon.com, no date):

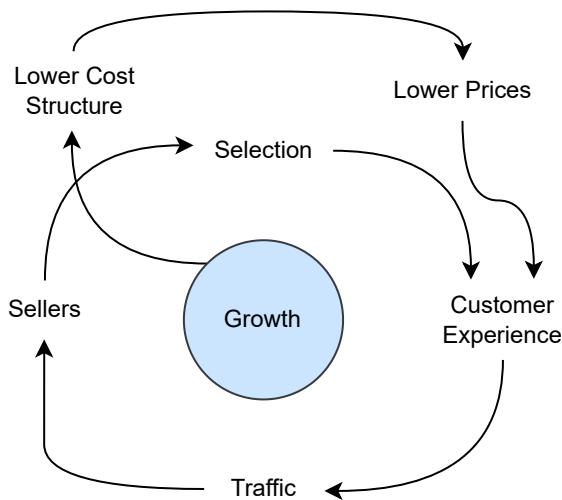


Figure 1: Amazon's flywheel for success

An evaluation of Amazon's e-commerce strategy reveals Amazon.com's target areas (Slater, no date): Providing customer value through *lower prices*; huge selection range and; *customer convenience*: striving to better the diffusion of innovation curve, evidenced by Bezos himself (Rogers, 1983; Amazon.com, no date):

- *We want to be a large company that's also an invention machine*
- *Day 2 is stasis. Followed by irrelevance. Followed by excruciating, painful decline... And that is why it is always Day 1*

Amazon aims to increase the number of innovators and early adopters while decreasing the laggards. Thus frontier technology is pushed, changing their e-commerce presentation. To achieve this, their e-commerce platform encourages a two-way network of buying and selling between parties; facilitated by in-house technologies (Jewell, 2017; TipRanks, 2023; SimilarWeb, 2023; Semrush, 2023):

- Cloud53: Their custom configurable DNS
- CloudFront: which reduces latency through data-packet route specification
- AWS WAF: offering pingback attack protection via filtering
- AWS Shield: which Protects HTTP layers 3-7 against DDoS attacks
- DynamoDB: Their non-relational database to handle the 2.5 – 3B visits/month to Amazon.com

Amazon's distribution is aimed at continuous improvement, via innovation; while their financial strategy stems from fast cash flow, aided by partnerships and brand deals, benefitting Amazon in the long-term.

Amazon.com's website is predicated on both SQL and NoSQL databases, having successfully migrated from Oracle-leased databases to their own: Aurora, and DynamoDB; reducing annual expenditure (Bar, 2019; TelcoDR, 2022). This accounts for the fast speed of Amazon's search engine and information display – increasing usability (Deloitte, no date; Ruihan & Zong-Mou, 2017).

Furthermore, a feature that is not covered in later heuristic inspections (discernable via pluralistic walkthrough or feature inspection) is Amazon.com's use of Artificial Intelligence to recommend products (Nielsen, 1994; Virinchi, 2022; Hardesty, 2022). Products are recommended based on previous searches, recording user activity during sessions.

Your Amazon.com Your Browsing History Recommended For You

Top picks for you

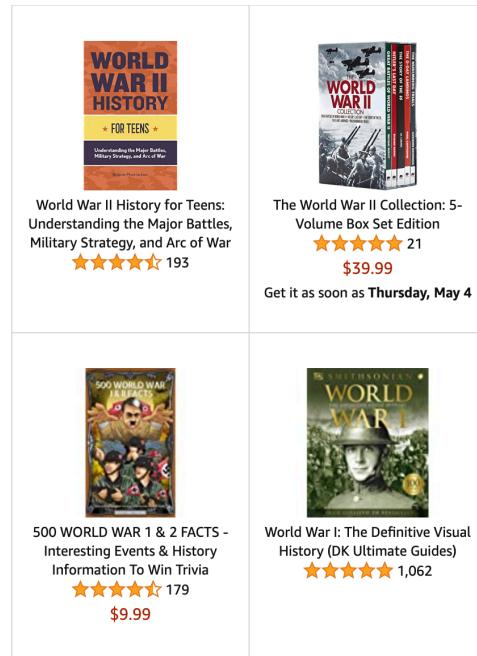


Figure 2: Amazon's AI integrated custom recommendations

THE SUM OF ITS PARTS

A breakdown of Amazon's revenue model

Amazon has become the world's most valuable retailer, despite the fact it's projected to make up less than 5% of U.S. retail sales by the end of 2020.



While most people are familiar with Amazon's core business, there are a number of business segments fueling the company's growing revenue.

ONLINE STORES 50.6%

\$163 B (NET SALES JUN 2019-2020)

This category includes product sales made on Amazon's eCommerce website.

COMPETITORS

JD.COM Walmart

AMAZON WEB SERVICES 12.4%

\$40 B

Amazon Web Services (AWS) offers hundreds of cloud-based services, including storage, analytics, and AI.

COMPETITORS

Google Cloud Microsoft Azure

THIRD-PARTY SELLING SERVICES 19.7%

\$63 B

Third-party vendors can sell products through Amazon's online marketplace, and Amazon makes money by charging commission and shipping fees.

COMPETITORS

eBay Etsy

OTHER 5.3%

\$17 B

This category includes ad revenue and co-branded credit cards.

COMPETITORS

Google

PHYSICAL STORES 5.3%

\$17 B

Amazon owns Whole Foods Market, but it also operates four other physical stores—Amazon Books, Amazon 4-star, Amazon Go, and Amazon Pop Up.

COMPETITORS

Walmart Costco Wholesale Barnes & Noble

SUBSCRIPTION SERVICES 6.8%

\$22 B

Amazon has various subscription services. The most popular is Amazon Prime, which offers a bundle of digital services including Prime Video, Prime Music, and Prime Reading.

COMPETITORS

Netflix Disney+

Footnote: Numbers have been rounded for clarity.
Source: Statista, Investopedia, TechCrunch

Figure 3: Amazon's revenue model (source: visual-capitalist.com)

CUSTOMER JOURNIES

Three Basic Functions

Amazon.com's non-negotiable functions: navigation, input handling and output; are achieved (Zhang, 2023): A user story can illustrate this. **User A – Alex** is a young football player who wishes to purchase playing boots:

Alex
Wants football boots
Wants product ASAP
18 Years Old
Small income to spend

Figure 5: Alex's User Story

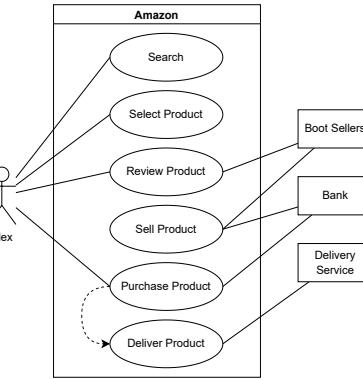


Figure 4: Alex's Use Case Scenario (The purchasing section is not discussed)

This annotated screenshot of the Amazon landing page highlights several design elements and their intended user experience impact:

- Department filter: accelerates search process** (points to the 'All Departments' dropdown menu).
- Large department headings: draw user attention** (points to 'Arts & Crafts', 'Gaming accessories', and 'Dresses').
- Icon: grabs attention via colour and expectation** (points to the shopping cart icon).
- Modularised layout: emphasize options to customer** (points to the 'Shop Toys & Games' banner and the 'Your Space' section).
- Promise to user: account ownership will enhance experience** (points to the 'Sign in for the best experience' button).
- Search bar: instantly obvious navigation** (points to the search bar at the top).
- Reduced emphasis on menu: push user to explore products** (points to the overall layout which minimizes the main navigation menu in favor of product banners).

Figure 6: The landing page screen – as seen by Alex

Alex wishes to search, and Amazon.com accommodates this with a function at the screen's summit, coupled with a label: *Search Amazon*, and looking-glass icon, synonymous with computer search (Sherwin, 2014). Additionally, one can specify the search department: increasing search speed and narrowing options (Inci, 2020).

In conjunction, user input is not limited to words, allowing criterion selection, or screen manipulation to select categories from the landing. The output is near instantaneous, producing a formatted set of results.

Alex's User Journey

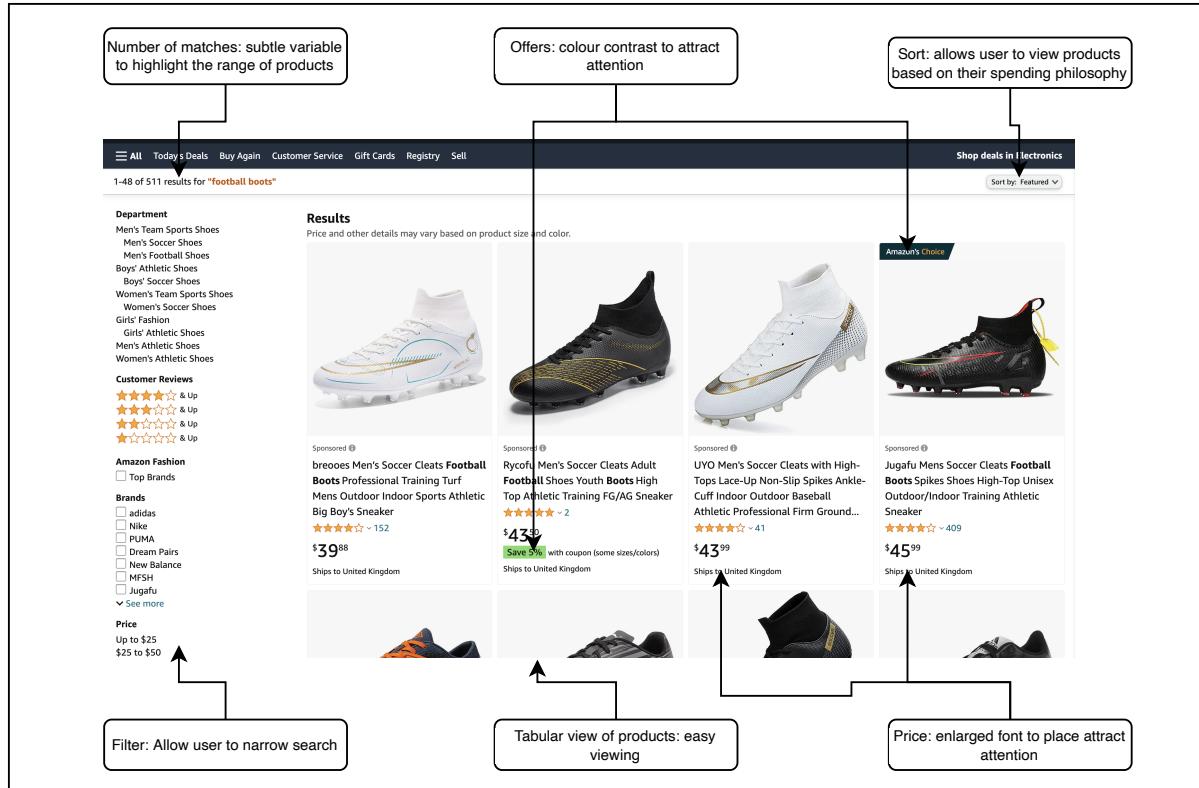


Figure 7: The product search result screen – as seen by Alex

Alex's perspective on usability is guided by numerous stylistic decisions. The aforementioned landing page emphasizes search, while the product page aims to entice Alex to select certain product choices, for Amazon's benefit (Nielsen, 1999). The subtle use of colour to draw attention towards product promotion evidences this: with *save 5%* and *Amazon's Choice* attracting the user's gaze via colour contrast (Beaird, 2008).

The display is efficient, with a tabularised, reusable layout for each item, and a design that meets customer expectations to display: brand, name and price; although size is omitted (for clothing) – possibly deliberately: if users knew their item was unavailable, it would reduce the chance of entertaining alternatives (Cilliers & Meyer, 2023; Davis, 2019).

Amazon's customer focus informs their use of product images as focal points on the page, with the price being of secondary concern to entice buyers to select products that match their aesthetic. Between two pages, the three essential requirements for a good e-commerce site are met, yet their minutiae warrants discussion.

The product page (assuming boot selection) is tripartite, with the product's information emphasised through having the largest, centrally-positioned section (Beaird, 2008). This information is split horizontally with the most valuable information taking precedence: name → price → colour → size, then additional information. This embraces the concept of continual flow of sight; guiding the user to view the most important information first and proceed naturally down towards information that less concerning to Amazon itself (Lupton, 2008).

Breaking this slightly, the price is placed in a position that is roughly central, in an emboldened font style, attracting attention to Amazon's flywheel philosophy of *lower pricing*, which instigates positive *customer experience* (Amazon.com, no date).

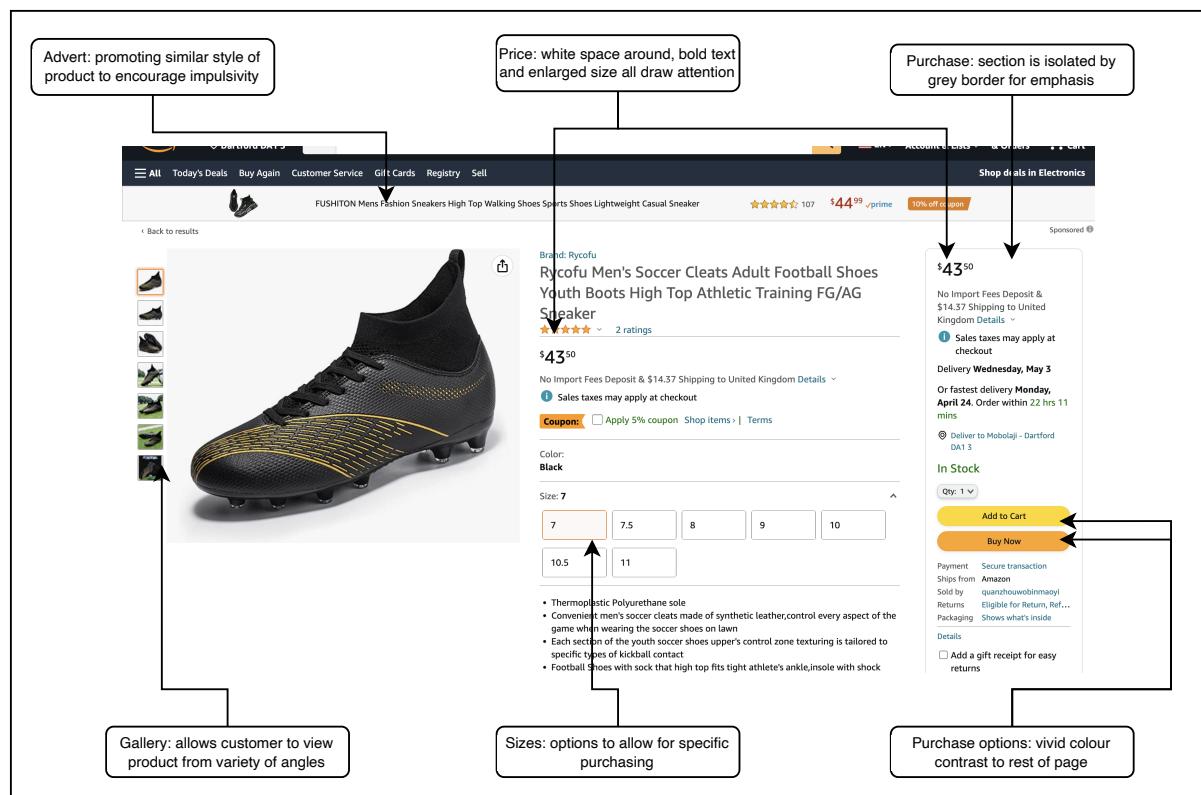


Figure 8: The product pre-purchase screen – as seen by Alex

Differing from this, emphasis via isolation is present with the purchasing menu, which is separated by a border from the rest of the screen, to entice purchase (Beaird, 2008). This is furthered by the use of yellow and orange which stand out distinctly from the white and darker blue hues of the page, both imploring the user to make a decision towards purchasing the product.

The subtle use of colour theory is prevalent on this screen, with the aforementioned yellow and orange hues contrasting the blues of the rest of the page (Beaird, 2008). While not specifically complementary, the orange hue's complements are more luminous **and** saturated shades of the blues used along the navigation section (the same cannot be said for the yellow) (Canva.com, no date; Color-calculator.com, 2021):

In concluding Alex's pre-purchase journey, all three pages minimally showcase system status via the search bar, adding a grey overlay to the rest of the screen, yet none showcase the status concerning active screen sections (on mouse hover) barring the product page's gallery (Harley, 2018). This could be improved, changing the hue of the white space in hovered areas subtly to accommodate the customer-centric model Amazon prides itself upon. In addition, a subtle-timed colour change effect on the purchase buttons would immediately attract attention from users, which would entice purchase (Prisacari & Holme, 2013).

	HEX	RGB			CMYK		
	HEX: #ffa41c	R: 255	G: 164	B: 28	C: 0	M: 36	Y: 89 K: 0
	HEX: #ffd712	R: 255	G: 215	B: 18	C: 0	M: 16	Y: 93 K: 0
	HEX: #1271ff	R: 18	G: 113	B: 255	C: 93	M: 56	Y: 0 K: 0
	HEX: #1c42ff	R: 28	G: 66	B: 255	C: 89	M: 74	Y: 0 K: 0

	HEX	RGB			CMYK		
	HEX: #222f3e	R: 34	G: 47	B: 62	C: 45	M: 24	Y: 0 K: 76
	HEX: #131921	R: 19	G: 25	B: 33	C: 42	M: 24	Y: 0 K: 87
	HEX: #3e3122	R: 62	G: 49	B: 34	C: 0	M: 21	Y: 45 K: 76
	HEX: #211b13	R: 33	G: 27	B: 19	C: 0	M: 18	Y: 42 K: 87

Figure 9: Colour hues **and** complements of: the purchase buttons and; the navigation bars

Improvements have been seen in the past, with the lack of a site-wizard stemming from the same reasoning behind the removal of the tab feature that Amazon held for the entire early 2000s: over-clustering of information via proximity made the site more difficult to navigate; especially while early adopters were its primary users (Beaird, 2008; Wroblewski, 2005; Nielsen, 2005; Rogers, 1983).

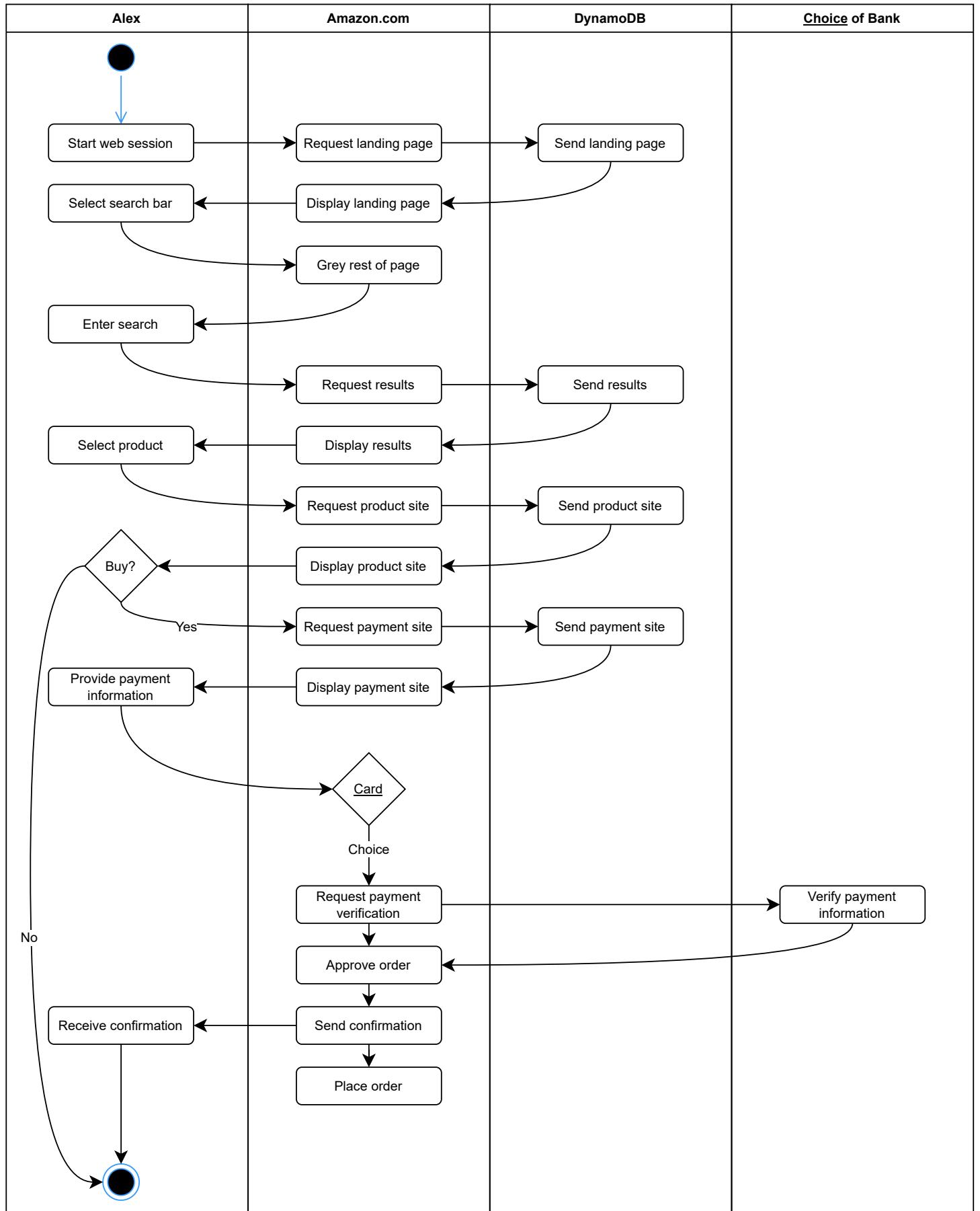


Figure 10: Alex's Activity Diagram (The purchasing section is not discussed)

HEURISTIC EVALUATION

Use Cases

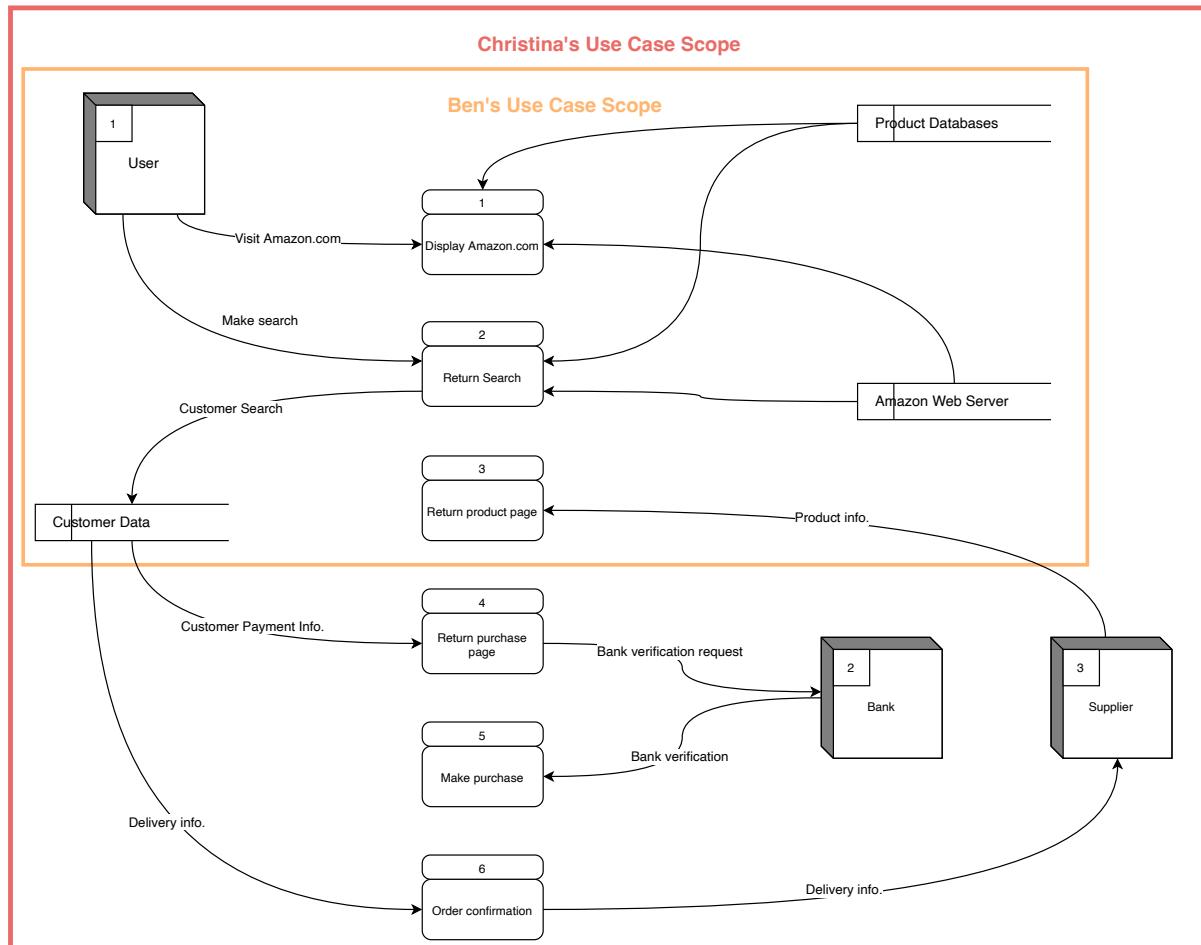
In order to effectively evaluate Amazon.com in more depth, simple heuristic evaluations can be deployed. For this, two new user scenarios will be introduced. **User B – Ben** and **User C – Christina**, holding differing goals:

Ben
Wants WWII non-fiction novel
Unconcerned with delivery time
40 Years Old
Large income to spend

Figure 8: Ben's User Story

Christina
Wants gardening kit as a gift
Wants delivery by certain date
Retiree
Decent income - product is a birthday gift for another person

Figure 9: Christina's User Story



Evaluations

Three different heuristics have been employed to ensure a variety of design areas are scrutinised.

The first inspects a set of achievable rules (Schneiderman et al., 2018):

Heuristic	Rating	
	Ben	Christina
Consistent	██████	██████
Universally usable	███	███
Informative in feedback	███	███
Displays dialogs for closure	███	███
Preventative of errors	██████	██████
Permitting of action reversal	███	███
Aimed at user control	██████	██████
Low in short-term memory load	███	███

Figure 12: Heuristic evaluation utilising Schneiderman's eight golden rules of user interface design

Amazon.com is excellent at reducing the need for information recall, with their simple UI allowing the user to simply browse products as-if they were *window-shopping* in real-life, while the speed of load of the page additionally contributes to a sense of easy-use, and reduces the likelihood of site abandonment (Tuch et al., 2012; Deloitte, no date; Lindgaard et al., 2006). As well as this, the storefront has a consistent layout and use of a simple colour palette (Color-Picker.com, 2022; Colordesigner.io, no date).

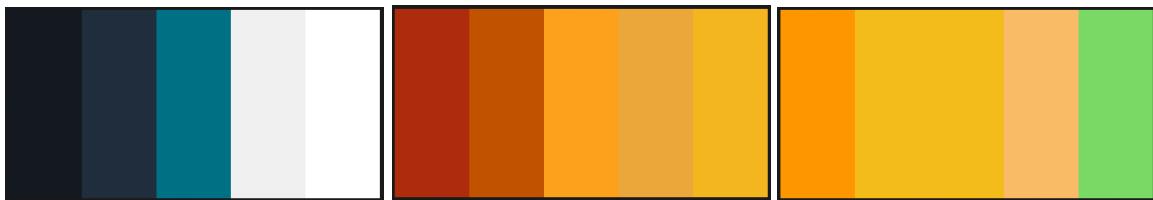


Figure 13: Amazon.com's colour palette

It is clear from this *subjective* evaluation that the main issues stemming from Amazon.com are its lack of user feedback and user action strictness. Amazon.com could take inspiration from Asos.com: which utilises three methods of feedback: Upon hovering over a product, a different angle is displayed, showcasing mouse position; within the navigation system, active sections produce sub-menus via an overlay on the screen and; when searching for a product, filters are highlighted blue when hovered over, to ensure the user is aware of their current location (ASOS.com, no date).

ASOS WOMEN MEN

Search for items and brands

Sale New in Clothing Shoes Accessories Sportswear Spring Jeans Brands Topman Marketplace Outlet

Men's New in

Looking for something new? Discover emerging trends, the latest clothing for men and ...

NEW IN: CLOTHING NEW IN SPORTSWEAR NEW IN: ACCESSORIES NEW IN: SHOES NEW IN: FACE + BODY

Sort New in date Category Product Type Style Brand

Colour Body Fit Size Price Range

1,152 styles found

ASOS DESIGN oversized t-shirt with crew neck in dusty rose ASOS DESIGN t-shirt with crew neck in pale blue ASOS Design muscle fit rib vest in rich caramel ASOS DESIGN polo with contrast trims in beige

Figure 14: Asos.com's men's section

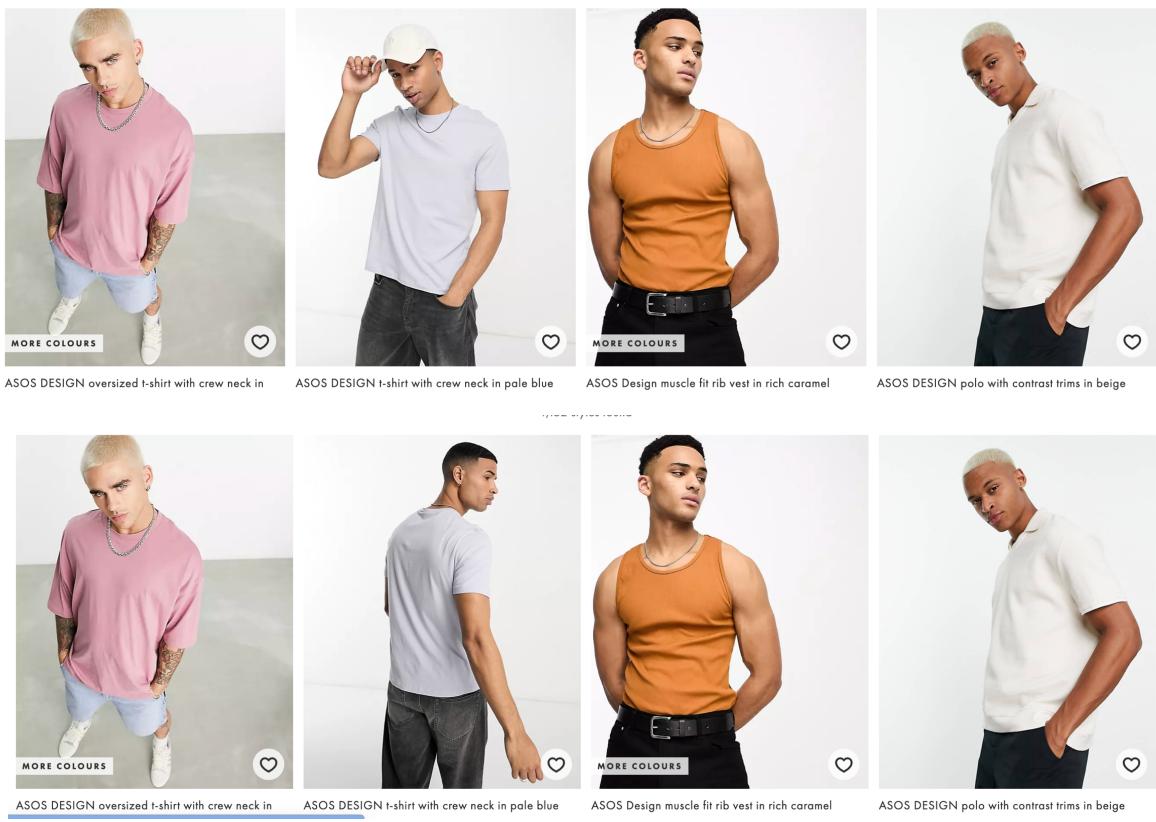


Figure 15: The hover-over change to a single product – The 2nd from the left

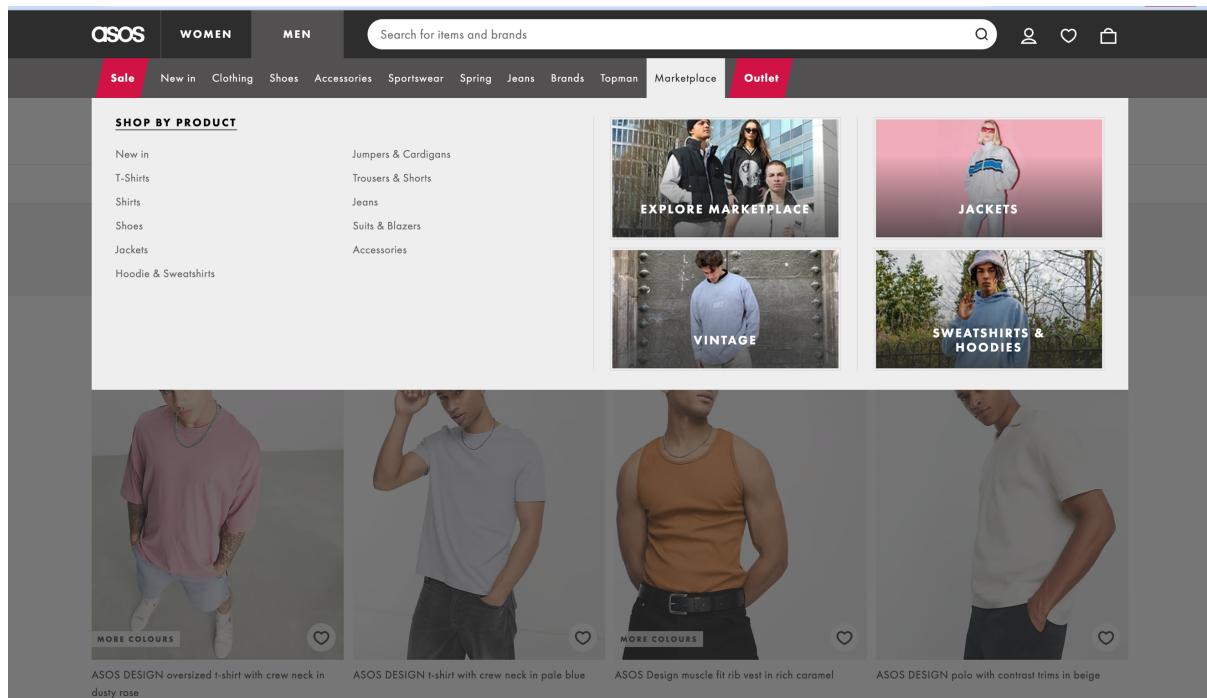


Figure 17: Sub-menu overlay – akin to but more detailed than Amazon's search function

This screenshot shows the 'Men's New in' section of the ASOS website. It features a search bar with the placeholder 'Looking for something new? Discover emerging trends, the latest clothing for men and ...'. Below the search bar is a horizontal menu with five tabs: 'NEW IN: CLOTHING', 'NEW IN: SPORTSWEAR', 'NEW IN: ACCESSORIES', 'NEW IN: SHOES', and 'NEW IN: FACE + BODY'. Underneath these tabs is a filtering section with dropdown menus for 'Sort', 'Category', 'Product Type', 'Style', 'Brand', 'Colour', 'Body Fit', 'Size', and 'Price Range'. The 'Size' dropdown is highlighted with a blue border.

Figure 16: The highlighting of a hovered-over filter - Size

The second heuristic (page below) interrogates Amazon.com based on its user experience (Tognazzini, 2014). Through this, an instance of achieved accessibility is discerned, as the site does seem to accommodate for the colour-blind population – comprising 1 in 12 men according to the NEI (Venngage.com, no date; National Eye Institute, 2019).

This figure compares two versions of an Amazon product page for the book 'World War II: The Definitive Visual History from Blitzkrieg to the Atom Bomb (DK Ultimate Guides)' by Richard Michael Holmes. The left side represents a view for someone with Deuteranopia, and the right side represents a view for someone with Tritanopia. Both pages show the book cover, title, author, and a brief description. The Deuteranopia version has a greenish tint, while the Tritanopia version has a bluish tint. The filtering and purchase options at the bottom of the page are also color-coded to match the overall theme of each view.

Figure 19: Amazon as seen by one with Deuteranopia

Figure 19: Amazon as seen by one with Tritanopia

Heuristic	Achieved?		Comments	Score	
	Ben	Christina		Ben	Christina
Does usability take precedent over appeal	✓	✓		38	35.5
Are user's needs anticipated	✓	✓			
Does the user have control of the session					
Is the user responsibly limited in action	⚠	⚠	For both use cases, the user is unable to maliciously utilise the website, and in Christina's case, unable to make a payment without bank authorisation - however, no explicit restrictions on action are present		
Are status updates given to the user	✗	✗			
Is the site viewable to the colour-blind	✓	✓			
Is colour present in sufficient quantity	✗	⚠	The pages are minimal in their use of colour, however Christina's payment page utilises a larger amount to draw attention to important sections		
Colour is not overwhelming	✓	✓			
Are the site pages consistent	✓	✓			
Are the icons and buttons consistent	✓	✓	Similar colour schemes are employed to signify buttons of interest		
Do shortcuts exist	✗	✗	No easily known shortcuts exist that are unique to Amazon.com		
Is there induced inconsistency to highlight differing purpose	✓	✓	Christina's payment page is vastly different to the rest of Amazon.com		
Do continuity changes highlight functional changes	✓	✓			
Does the layout match user expectation	✓	✓	Similar to many other e-commerce sites		
Field defaults are erased when the user begins their input	✓	✓			
Field defaults are phrased to inform of their purpose	✓	✓			
Default settings should not use the term <i>default</i>	✓	✓			
Complexity is not unnecessarily hidden	✓	✓			
All items valuable to the user are obvious	✗	✗	Currency selection for the site is displayed at the very bottom of the page, unlikely to be seen by most users		
Critical controls are always visible	✗	✗	The staple of the site, the search bar, does not scroll with the screen		
Controls are not near content	✓	✓			
Gestural actions are diagrammed	⚠	⚠	This is not applicable to the laptop version of the site		
The screen has a good balance between controls and content	✓	✓	The content takes precedent which is desired for an e-commerce website		
Efficiency is based on the user, not the machine itself	⚠	⚠	Only one metric - the number of product hits - measures how efficient the users search is, a measure of time taken could be useful		
The user is continuously occupied	✗	✗	There is no change in state for idleness, or effort to keep user attention		
Maximise efficiency	✓	✓	Given Amazon.com's throughput - the lack of latency is remarkable; aided by the use of Cloud93, CloudFront and AWS Shield		
Useful error messages	✗	✗	Amazon.com doesn't provide basic error feedback		
Landmarks are present but autonomy is encouraged	✓	✓			
Clear homepage route	✗	✗	The Amazon logo is not clearly the home page shortcut		
Actions are reversible	✓	✗	Search is reversible - payment is not: meeting Bezos' viewpoint on type 1 and 2 actions		
Undo exists	⚠	✗			
Pages are attractive enough to be stayed on	✗	✗	Defeats the aim for fast cashflow via enticement to purchase product		
Are important buttons larger than average on the screen	✓	✗	Buttons seem to have standard sizes that prefer colour use over size to attract attention		
Are related buttons close in proximity	✓	✓			
Are users informed of delays	✗	✗			
Are site functions faster than average	✓	✓			
Are pages designed according to their frequency of use	✓	✓	The more elaborate design is present on the landing and search pages, with the product and payment pages placing more emphasis on information		
Are metaphors present for learnability	✓	✓	The product page layout mirrors other e-commerce sites		
No overreliance on skeuomorphism	✓	✓	The site does not directly mirror a real-world shopping centre		
Abstraction in design	✓	✓			
User work is protected	✓	✓			
User work protection is communicated to the user	✗	✗	The user is not immediately informed that their information is saved, unless they add products to a list of saved items		
Colour contrasts make text readable	✓	✓			
Large font sizes are used for important information	✓	✓			
Important data is presented in large font	✓	✓	Prices		
Menus and buttons have their keywords at the front	✓	✓			
Illusion of simplicity is avoided	✓	✓			
Progressive revelation	✗	✗	The user is not aided in understanding the steps to select a product		
Necessary capabilities are present	✓	✓	Navigation, Search and Purchase		
Is the state stored and recorded	✓	✓			
Is the state encrypted in storage when the user is offline	✓	✓	Usernames and password are salted and hashed for protection		
Is the user aware of their data's protection	✗	✗			
Is navigation obvious	✓	✓			
Do overlays limit the number of screens needed	✓	⚠	For both, the search function is not given a redundant page of its own, however: Christina's payment page does not necessarily require the separate screens		

Figure 20: Heuristic evaluation utilising Tognazzini's First Principles of Interaction Design

The above heuristic is rigorous in exposing areas for improvement. Again: autonomy, colour and consistency are implemented successfully, alongside readability and learnability; however, Christina was limited in options if a payment mistake occurred, while critical functions were not always visible to both users.

The latter issue poses a larger problem - as international users and people that tend to scroll on webpages would both struggle with Amazon: the visible currency change option is located in the footer and; the navigation system does not follow the user down the page. These are simple to change: display the currency more obviously in navigation to ensure correct utilisation, and force the navigation bar scroll.

Apple.com utilises this sticky navigation bar to great effect (Anthony, 2022; Apple.com, no date):

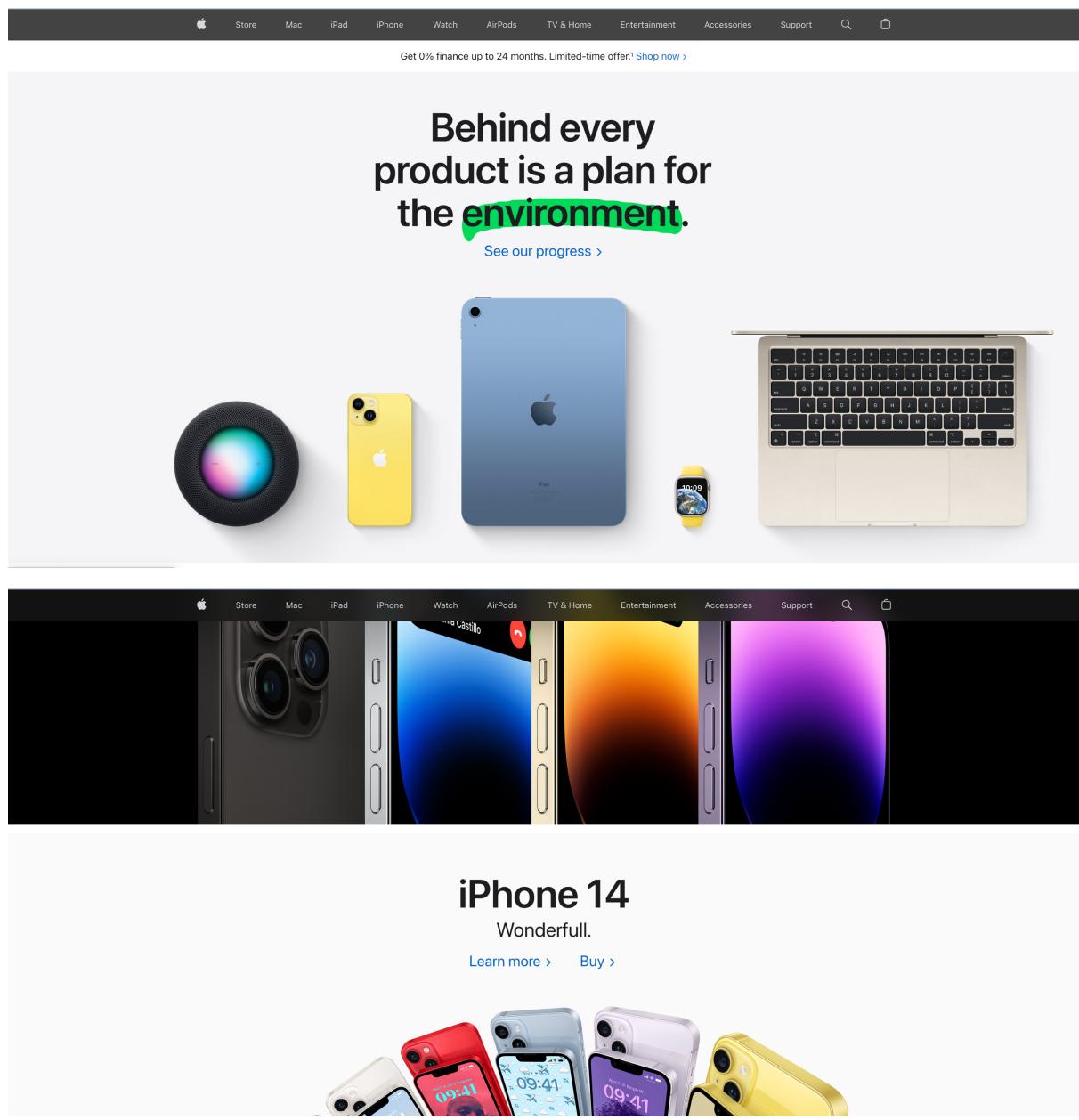


Figure 21: The navigation bar at the top is glued to the screen at load (top), even if one scrolls halfway down (bottom)

A subtle feature that Amazon utilises, is the application of Fitt's law (Budiu, 2022). The icons and selected objects on Amazon's site are easy to hover over and hard to misclick, which demonstrates a good application of the within UI/UX.

While the usability of Amazon.com is clearly the driving force behind its design, the lack of obvious ratios in page sectioning is apparent, and its inclusion could benefit user experience. The golden ratio evokes a positive response from users when utilised to distribute webpage sections and could be employed on the search results screen (Beaird, 2008). Additionally, the filter section (which in theory, would now occupy near to a third of the screen's width) could benefit from the addition of icons, to better partition the clustered text that may prove difficult for some to read (Nair, 2021).

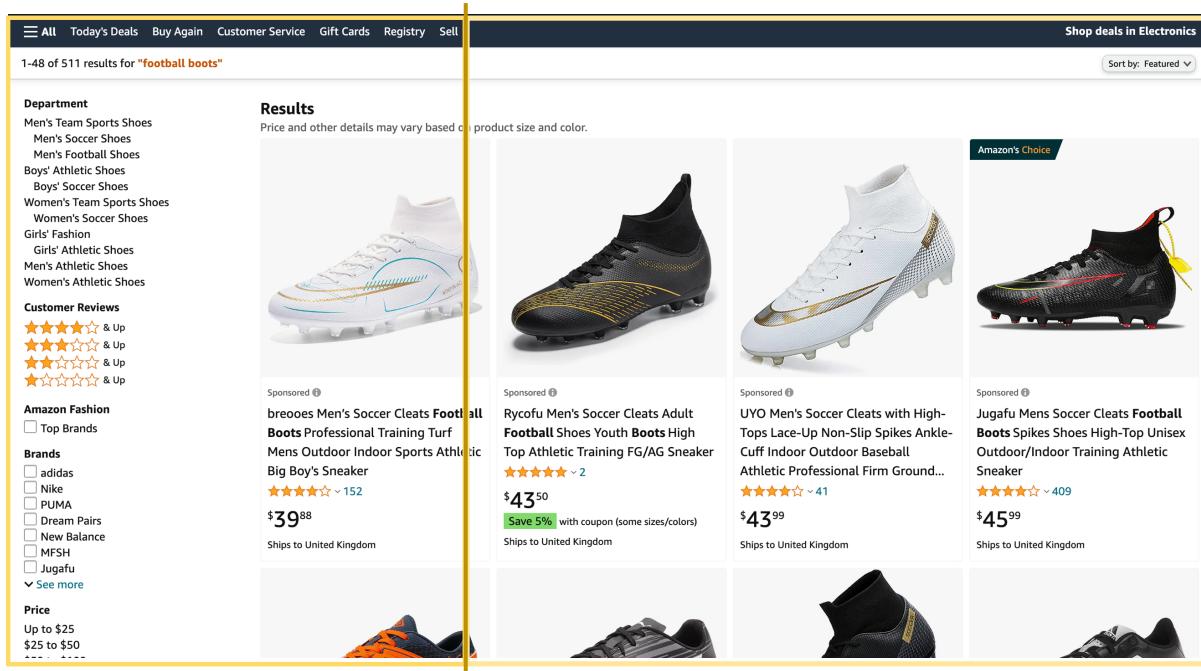


Figure 22 Division of page according to the Golden Ratio Rule

The difficulty imposed by the filter section shows a lack of accountance for accessibility within Amazon's design (CDC.com, 2018). Without signing in – one cannot access the accessibility menu, and this creates a paradox: accessibility cannot be accessed without logging in, which may be impossible for a particular user without changing said settings. Take, for instance, **User D – Demetri**, who has poor eyesight and utilises text-to-speech. In the absence of a text-to-speech function, Demetri is left unable to locate the login window and thus unable to progress through the website.

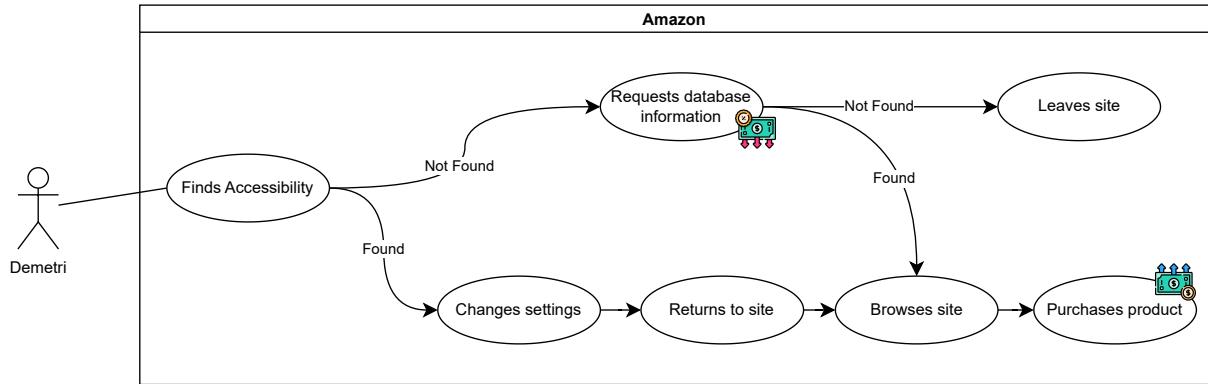


Figure 23 Demetri's journey dependent on if settings are easily accessed – note that without product purchase, the read/write operations on the database cost Amazon with no benefit

This predicament requires one of two possible solutions: enforcing a login upon entry, or ensuring that accessibility settings are clear, obvious and changeable from the landing page of the website (Pinedo, 2020).

The flaws in Amazon.com's site revealed by the previous heuristics are exacerbated by the third, which elucidates the same issues (Nielsen, 1994):

Heuristic	Ben	Christina		
	Rating	Comment	Rating	Comment
Consistent	●	Jakob's law is followed as the site offers a similar workflow as other e-commerce sites	●	The site follows the norm for the most part, however the payment pages differ from other sites, with no guest checkout option present
Natural mapping	●	Use of the words <i>search</i> , <i>results</i> , <i>add to cart</i> and <i>buy now</i> make decisions easy	●	The layout is self-explanatory and the payment section is broken down into labelled sections
Informative on system status	●	The search bar is the only feature that showcases a change to highlight its current use	●	(Same as Ben's)
Permitting of action reversal	●	There is no obvious back button to reverse mistakes, only the Amazon.com logo which reverts back to the Homepage - its purpose is not immediately obvious	●	(Same as Ben's) & Once checkout is reached there is no back option
Preventative of errors	●	No error prevention is needed for the search, as the user can simply search again, however: spelling mistakes are corrected when results are shown, for better or for worse	●	(Same as Ben's) & Incorrect input of payment information is corrected by 3rd party banks, not Amazon.com
Recognition over recall	●	The steps to selecting a product are clear and obvious	●	(Same as Ben's)
Flexibility	●	There are no Amazon.com specific shortcuts - only internet browser ones	●	(Same as Ben's)
Aesthetic	●	While the homepage is cluttered - the results and product page provide only the essential information required for the product wanted	●	(Same as Ben's) & The payment page can become congested if multiple card accounts are registered to a single user
Error diagnosis	●	Error messages are not displayed	●	(Same as Ben's)
Help and support	●	A number of options are present for assistance, however they all require immediate sign-in to an account, which some users may find difficult to achieve	●	(Same as Ben's)

Figure 24: Heuristic evaluation utilising Nielsen's 10 usability heuristics

Nielsen's usability heuristics showcases a lack of feedback to the user throughout the process of purchasing a product, which does not reflect the real-world.

PROPOSED REDESIGN

Utilising elements of the usability heuristics mentioned above, a new model could be proposed for Amazon.com:

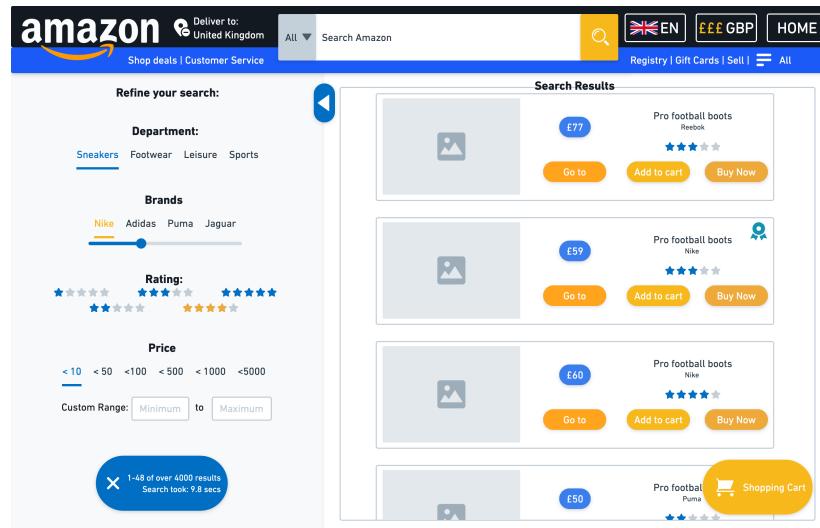


Figure 25: Proposed redesign of Amazon.com – Search results screen

Note the ease of use one has in accessing: location, language and currency if a search requires a change. Additionally, the colour scheme has been selected with brighter blue hues that are more harmonious with the vibrant yellows/oranges.

The Golden ratio has been applied to the split of the screens contents, to avoid an over-clustering of products, and this informs the list structure as well.

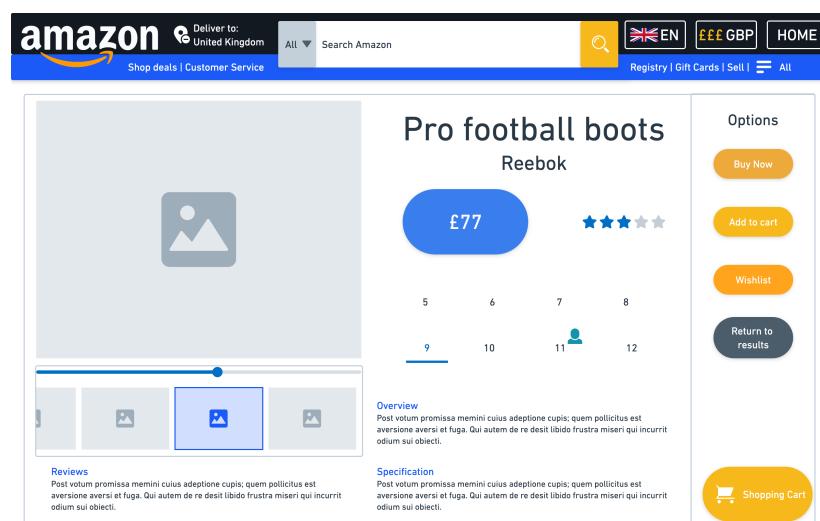


Figure 26: Proposed redesign of Amazon.com – Singular product page

On the product page, more emphasis is placed on the price, and purchase options than any other item of information. In addition, the *return to results* button is present – but given a dull hue to detract from its presence.

CONCLUSION

In summation, Amazon.com excels in the design of its website for its purpose – to entice the customer to conduct fast-paced purchase of products, and offer alternatives should they not find their desired product. However, Amazon.com has a number of limitations, namely: their lack of easy accessibility settings access; their lack of error diagnostics for the user's benefit and; an overall lack of state feedback to allow the user to understand their position on the page.

These drawbacks do not damage Amazon's reputation or business performance, but may hold a monetary cost as it increases the amount of time it takes for customers to make their transactions and could potentially deter impatient customers altogether (Brutlag, 2009).

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