

Redesigning Best Buy Project Report

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[Lewis Petty]

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1 Introduction

1.1 Purpose

The purpose of this study is to improve the Best Buy website (www.bestbuy.com). After my evaluation of the site, I chose three tasks that needed significant improvement. The main issue I found was that, for the tasks, there are unnecessary steps such as random popups or an additional page before checkout. I also found that some sections of the site lacks feedback to the user. Other minor issues I found was the webpages were generally too big and cluttered, some of the information repeats itself.

To address these issues, I designed a prototype of the site based on how I see would address these issues. To evaluate the change, I had three participants test the original site and 3 test the prototype. Since my main issues are unnecessary steps to a task, I thought by removing them the time on task and number of clicks would decrease for the participants. I will also see if the difficulty of the tasks are decreased and the satisfaction of the process of the task are increased.

1.2 Tasks Identified

- 1. Purchasing an item from the 'Shopping History' menu.
- 2. Adding a preferred store to the account.
- 3. Purchasing an item from a product's product page.

1.3 Assumptions

The only assumption I have for this study is that my participants are familiar with surfing the web and are familiar with some of the standards and features of websites that involve shopping. I also assume that my participants aren't too familiar with Best Buy's website but, may be familiar with the brand itself.

2 Analysis

2.1 Personas

Persona 1:

- Name : Lila Petty
- Job Title/Major Responsibilities: Freshman in college
- Demographics:
 - 0 18
 - About to start a major in Literature.
 - Oldest daughter in a family of 7.
- Goals:
 - Wants to find a good deal on a laptop that will be the perfect fit for her
- Environment:
 - Very social and has experience with the internet as long as sites follow the standards
- "Wonder what laptop will give me the best for its price."



Persona 2:

- Name: Chris Kelley
- Job Title/Major Responsibilities: Businessman who wants to start a new business
- Demographics:
 - 0 30
 - About to start a new business.
 - Single father of 3.
- Goals
 - Looking for what printer would be best for his business
- Environment
 - Very well with technology but has never brought a printer before.
 - Extremely social and talented in business
- "What printer will give me the best performance while being cost effective."



Persona 3:

- Name: David James
- Job title/Major responsibilities: Politician
- Demographics:
 - o 50
 - Terrible with technology
 - Single with no children
- Goals
 - Looking for a new cell phone, doesn't know what will be the right fit and does not know where to start.
- Environment:
 - Terrible with technology
 - Works almost nonstop
- "What cell phone works well and is very user friendly"



2.2 Task Analysis Tools

I used a heuristic evaluation [6.1] to browse around the site to see what it was like in general. my findings found that the Best Buy site is great, but the flaws it has are flaws that shouldn't be in sites today. Best Buy's site seems to be behind in standards. This is shown in my cognitive walkthrough[6.3], some important buttons are towards the bottom of the page and some important links are barely noticeable. This got me a general understanding of what I want to improve with Best Buy's website.

2.3 Task #1

2.3.1 Task Detail #1

For purchasing an item from the 'Shopping History', the user's first choice has two options. One, they can scroll down in the homepage and find a menu for the 'Shopping History', or they can click on a link labeled 'Shopping History' by the account name. The menu for both are very similar. When the user picks an item and adds it to cart, they have to go through a page to review their order before checking out. This isn't bad, but the button for checkout is buried under promotions making it hard for users to find. Also the user can't select their shipping option on that page even though it gives them the option to. After they click the checkout button, it's very standard and they just have to enter information and checkout the item.

2.3.2 Task #1 Analysis

This task isn't bad, but it can use improvements. For one, there should be a one click buy option that allows the user to skip the pre-checkout page. The pre-checkout page is an unnecessary step and the important functions of it can be performed in the checkout page. The other aspect that can be improved is removing the 'Shopping History' menu in the homepage to make the homepage less cluttered since there's already a menu on the top right of the screen. Also the 'Shopping History' menu has information on it that can easily be replaced with a one click purchase option.

2.3.3 Task #1 Discussion

Overall, to improve this task I will add a '1-click' button to the site so the user can skip the pre checkout page. I will also remove the 'Shopping History' menu that none of my participants who tested the original site used and just keep the one that on the top right of the web page.

2.4 Task #2

2.4.1 Task Detail #2

For adding a preferred store location, you locate 'store locator', which is on the top right of the page, then you enter in a zip code and find the #1 link and click on a link titled 'add to preferred stores'.

2.4.2 Task #2 Analysis

From the task details above it sounds easy and short. Well not quite, when you click on the 'add to preferred stores' link it gives the user no feedback. So the user doesn't know if they completed the task or not. The user has to refresh the page before they see feedback if they did it, which is troubling.

2.4.3 Task #2 Discussion

Overall, to improve this task I will add instant feedback to the user so they know they've completed the task. Right when they click on 'add to preferred stores', the link will instantly change to 'remove from preferred stores' so that the user knows they completed the task without having to refresh the page.

2.5 Task #3

2.5.1 Task Detail #3

For purchasing an item from it's product page, the user first has to click on 'add to cart', then sometimes they have to deal with a pop-up menu with information that is already on the product page itself. When that happens the user needs to scroll down to continue with the checkout process, then they have to go through a pre-checkout page where the button for checkout isn't as high as it should be and the page displays a very limited amount of information. After that, the user continues to the checkout page, which is well designed, and checkout the item.

2.5.2 Task #3 Analysis

The pop-up menu should be removed completely. The checkout criticisms of task 1 apply here also. I want to use this task to validate if the 1-click checkout will be efficient, while also improve another process of the checkout process.

2.5.3 Task #3 Discussion

Overall, I discussed how I'll improve this in the analysis. With those I think I should be able to reduce the amount of time, click and errors. I also think the results of this might be similar to task 1 since they have the same goals.

3 Prototype and Design

3.1 Overview of Prototype and Design Features

My prototype aimed to make web pages shorter but still give the necessary information the user would need. I also added some feedback and a 1-click shopping button to make shopping go faster. I also trimmed the menus on the homepage and the product page to make it easier to navigate. This should allow the user to finish certain tasks faster and with less errors. [screenshots at 6.3]

3.2 Task #1

3.2.1 Task #1 Design

The main update with task 1 is to add a 1-click purchase option, which should allow the user to see the final price of their purchase faster and to buy an item faster.

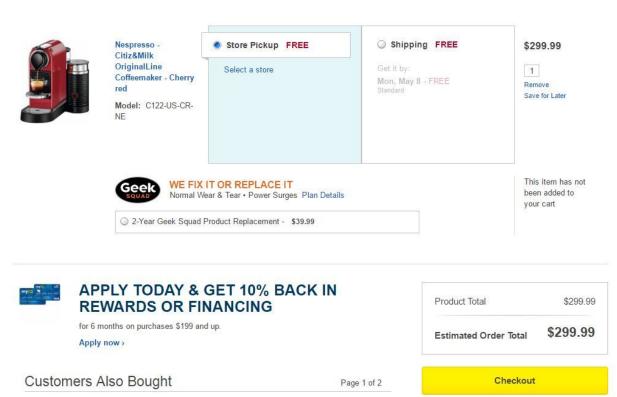
3.2.2 Task #1 Design Justifications

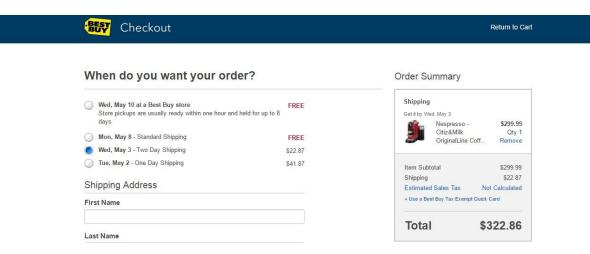
I did this because in my cognitive walkthrough and analysis of the task, I noted that some of the tasks are very unnecessary, especially the pre-checkout page. The 1-click purchase button should allow the user to get the information about their order quickly. I made the button a different color than the 'add to cart' button, so the user can easily see the control and the title of the button should also allow the user to also know the action.

3.2.3 Task #1 Prototype

Old site:

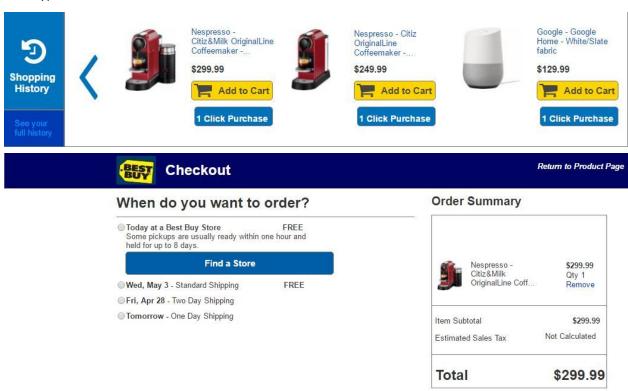






Here you see the 'Shopping History' only has an 'Add to Cart' button. which then leads to the second image of the pre checkout page, which is so cluttered that you have to scroll down to see the checkout button, which then finally leads you to the checkout page. The pre-checkout page seems useless since you can do the important functions of it on the checkout page as shown.

Prototype:



As you see the main difference of the prototype is the '1-Click Purchase Button', which allows you to go straight to the checkout page (after you sign in). This makes the process very simple and reduces the amount of steps and clicks.

3.2.4 Task #1 Prototype Rational

This is to make information of the final price of a product with shipping included easier to access with a minimum number of steps for the user.

3.3 Task #2

The purpose to task 2 is the simplest here on the list, this is meant to give users feedback instantly when they add a preferred store.

3.3.1 Task # 2 Design

The change is very minor but important. The change is that when the user clicks the link 'add to preferred store', the link will instantly change to 'remove from preferred store'.

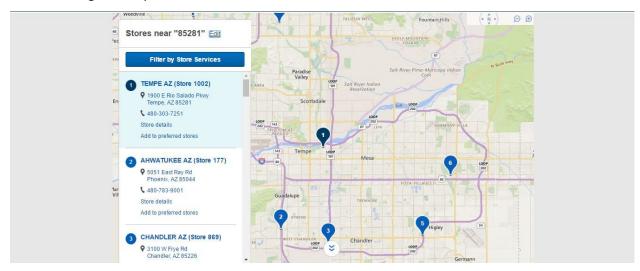
3.3.2 Task # 2 Design Justifications

I did this to improve user feedback for this task so the user isn't confused if they completed the task or not. It's not common to have to refresh the webpage just to see feedback for a simple task. So now my design gives feedback instantly.

3.3.3 Task # 2 Prototype

Old Site:

Before clicking 'add to preferred store':



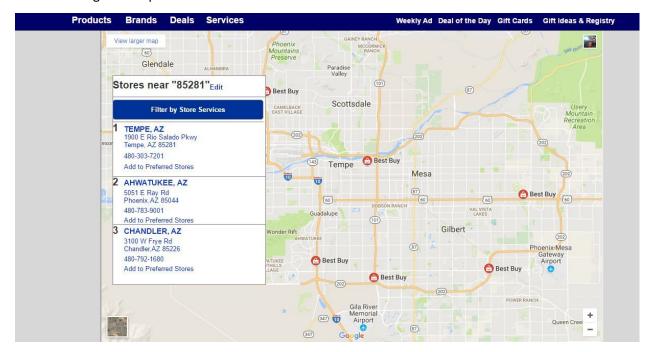
After clicking 'add to preferred store':



There's no feedback on the original site unless if you refresh the webpage.

Prototype:

Before clicking 'add to preferred store':



After clicking 'add to preferred store':

1 TEMPE, AZ 1900 E Rio Salado Pkwy Tempe, AZ 85281 480-303-7201 Remove from Preferred Stores

This now gives users feedback instantly after clicking the link.

3.3.4 Task # 2 Rational

The purpose of this task was to give users feedback instantly after they add a preferred store.

3.4 Task #3

3.4.1 Task # 3 Design

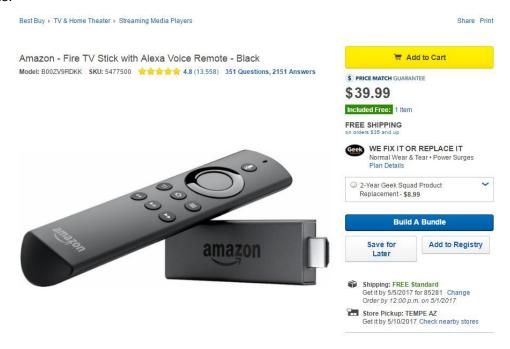
Now when purchasing an item from an item's product page, I've added a '1 Click Purchase' button like task 1. In the original site you have to go through unnecessary steps to get to the checkout such as a pop-up menu.

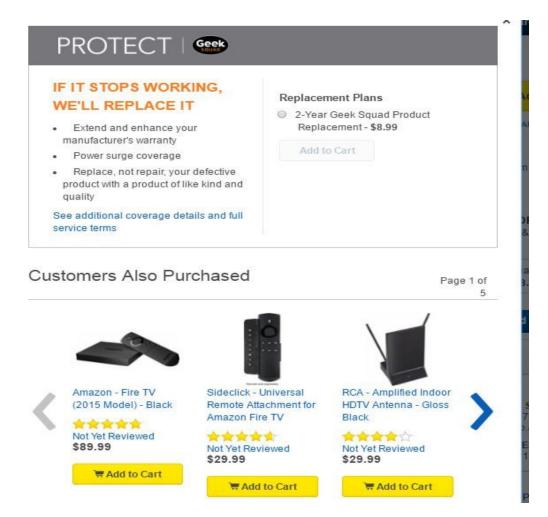
3.4.2 Task # 3 Design Justifications

This is to allow the users to see the control easier since the pre checkout page is poorly designed and the steps after adding to cart is sometimes unclear. But know there's a way to avoid all that with the '1-Click Purchase' button.

3.4.3 Task # 3 Prototype

Old Site:





After adding to cart a pop-up menu comes up and you have to scroll down and click a tiny link to continue to the checkout. The steps are largely the same as task 1.

Prototype:



Here I added the '1-Click Purchase' button, after the user clicks that, the steps are just like task 1.

3.4.4 Task # 3 Rational

The purpose of this task is to validate if the '1-Click Purchase' button is effective. I also wanted to see how quickly a user would notice it when they get to the product page.

4 A/B Testing

4.1 Participants

I selected 6 participants who are college students, I chose at least one classmate from this course to get a second opinion on the original site. After that I selected friends and family who were open.

4.2 Scenarios

4.2.1 Task 1:

The user wants to quickly purchase a product that they recently viewed, but is short on time. So they select the '1-Click Purchase' button instead of the add to cart button since they know they'll known the pricing and will be able to purchase the item quicker.

4.2.2 Task 2:

The user wants to add a preferred store so every time they order for an in store pickup it goes to that store automatically.

4.2.3 Task 3:

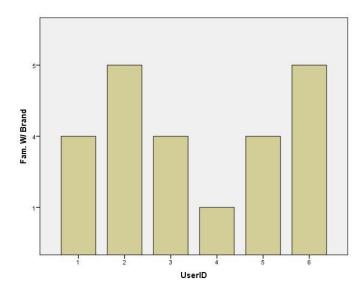
A user wants to see the final price of a product with shipping without having to go through additional steps, so they select '1-Click Purchase', so they get the information they want faster.

4.3 Equipment

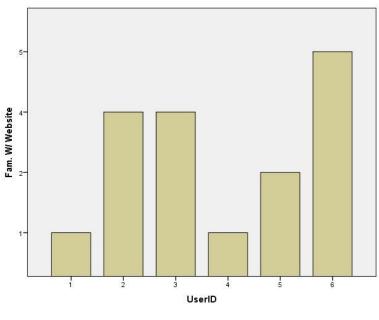
- Windows 8.1 Laptop
 - o 1366x768 screen
 - Trackpad
 - Chrome browser
- OBS for recording videos
- EZvid for recording the first video
 - Dropped since the UI was confusing

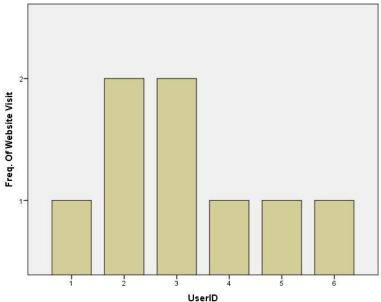
4.4 Subjective Metrics

For the background questionnaire[6.6] I was curious if the participants were familiar with the Best Buy brand and the site and also if they visit the site regularly. This will show the participants experience with Best Buy and its site. For the Post-Session questionnaire[6.7], I asked (for each task) about the satisfaction and the difficulty of the process. All these questions were on a likert scale of 5. There were additional open ended questions about how to improve the Best Buy site to make the process for each task easier and how to improve the overall site.



As we see here, it looks like on average, that the participants that tested the original site were more familiar with the Best Buy Brand.





As we see here, The same pattern follows that the participants that tested the original Best Buy site were more familiar with it and visited it more frequently on average.

Overall, it looks like for my prototype I have less experienced users testing it. Strangely enough they performed almost the same results as the participants that tested the original Best Buy site (will get more into this later).

4.5 Quantitative Metrics

For quantitative metrics I used time on task, errors, and number of clicks. I used time on task to see if my prototype would allow participants to finish the process of the tasks quicker than the original site. I used errors to see how often the participants clicked or went to other web pages that were outside of the task itself. I used number of clicks to see if eliminating the number of steps would lower

the number of clicks the participant has to perform to complete the task.

4.6 Test results

For this section I will detail the results for each task and then go over the overall results. This is important since the goals and improvements of task 1& 3 are very different than task 2.

4.6.1 Task # 1 results

4.6.1.1 Task # 1 Time on Task

Tests of Between-Subjects Effects

Dependent Variable: Task 1 Time

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	24320.667 ^a	1	24320.667	3.288	.144
Intercept	166666.667	1	166666.667	22.533	.009
Condition	24320.667	1	24320.667	3.288	.144
Error	29586.667	4	7396.667		
Total	220574.000	6			
Corrected Total	53907.333	5			

a. R Squared = .451 (Adjusted R Squared = .314)

This is an ANOVA test on the time on task of task 1 to see if condition has an affect on time. As we see here the F value is equal to 3.288 and the p-value is equal to .144. These values show that condition doesn't have an affect on time on task for task 1 since the p-value is higher than .05, which suggests that we can't reject the null hypothesis.

4.6.1.2 Task # 1 Errors

Tests of Between-Subjects Effects

Dependent Variable: Task 1 Errors

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.667ª	1	.667	.080	.791
Intercept	96.000	1	96.000	11.520	.027
Condition	.667	1	.667	.080	.791
Error	33.333	4	8.333		
Total	130.000	6			
Corrected Total	34.000	5			

a. R Squared = .020 (Adjusted R Squared = -.225)

This is an ANOVA test on errors that occurred during task 1 to see if condition has an affect on the amount of errors. As we see here the F - value = .080 and the p-value = .791. These values show that condition does not have an affect on the number of errors that occurred on task 1 since the p-value is

higher than .05, which suggests we can not reject the null hypothesis.

4.6.1.3 Task # 1 number of clicks

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	73.500ª	1	73.500	2.901	.164
Intercept	988.167	1	988.167	39.007	.003
Condition	73.500	1	73.500	2.901	.164
Error	101.333	4	25.333		
Total	1163.000	6			
Corrected Total	174.833	5			

a. R Squared = .420 (Adjusted R Squared = .276)

This is an ANOVA test to see if condition has an effect on number of clicks in task 1. As we see here the F-value = 2.901 and the p-value = .164. Because, the p-value is higher than .05, we can not reject the null hypothesis. So condition does not have an affect on the number of clicks in task 1.

4.6.1.4 Task # 1 difficulty

Independent Samples Test

Levene's Test for Equality of Variances			t-test for Equality of Means							
			Sig.		df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Differe	
		F: (2000)	2000	1	ui	15000.500	VOM DOO V	408,000.0	200,000,000	71000000
Task 1 Difficulty	Equal variances assumed	16.000	.016	-1.000	4	.374	333	.333	-1.259	.592
	Equal variances not assumed			-1.000	2.000	.423	333	.333	-1.768	1.101

Here is an independent T-test to see if the difficulty of task 1 is different between conditions. On a 95% confidence interval, the two-tailed t-test says that the difficulty of task 1 isn't significantly different between conditions since the p-value is .374, which is higher than .05.

4.6.1.5 Task # 1 satisfaction

Group Statistics										
	Condition	N	Mean	Std. Deviation	Std. Error Mean					
Task 1 statisfactin	A	3	3.00	1.000	.577					
	В	3	4.67	.577	.333					

Independent Samples Test

			Levene's Test for Equality of Variances t-test fo					of Means				
		-							Mean	Std. Error	95% Confidence Interval of th Difference	
			Sig.	τ	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper		
Task 1 statisfactin	Equal variances assumed	.400	.561	-2.500	4	.067	-1.667	.667	-3.518	.184		
	Equal variances not assumed			-2.500	3.200	.082	-1.667	.667	-3.715	.382		

Here is a two-tailed t-test to see if the satisfaction of task 1 is different between conditions. On a 95% confidence interval, the two tailed t-test says that the satisfaction of task 1 isn't significantly different between conditions since the p-value is .067. With a bigger sample size, we may've seen a difference between conditions.

4.6.2 Task #2 results

4.6.2.1 Task # 2 Time on Task

Tests of Between-Subjects Effects

Dependent Variable: Task 2 Time

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33750.000ª	1	33750.000	6.600	.062
Intercept	90774.000	1	90774.000	17.750	.014
Condition	33750.000	1	33750.000	6.600	.062
Error	20456.000	4	5114.000		
Total	144980.000	6			
Corrected Total	54206.000	5			

a. R Squared = .623 (Adjusted R Squared = .528)

This is an ANOVA test to see if time on task is different between condition. As we see here, the F-value is 6.6 and the p-value is .062. Since the p-value is higher than .05, there is no significant difference on time on task between conditions for task 2.

4.6.2.2 Task # 2 Errors

Dependent Variabl	e: Task 2 Errors				
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	37.500ª	1	37.500	3.750	.125
Intercept	121.500	1	121.500	12.150	.025
Condition	37.500	1	37.500	3.750	.125
Error	40.000	4	10.000		
Total	199.000	6			
Corrected Total	77.500	5			

This is an ANOVAS test to see if there is a difference on the amount of errors between conditions. As we can see here, the F-value = 3.750 and the p-value = .125. Since the p-value is greater than .05, there is not a significant difference in the amount of errors between conditions for task 2.

4.6.2.3 Task # 2 number of clicks

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	121.500 ^a	1	121.500	4.796	.094
Intercept	400.167	1	400.167	15.796	.016
Condition	121.500	1	121.500	4.796	.094
Error	101.333	4	25.333		
Total	623.000	6			
Corrected Total	222.833	5			

a. R Squared = .545 (Adjusted R Squared = .432)

This is an ANOVA test to see if there's a significant difference in the amount of clicks between conditions. Since the F-value is 4.796 and the p-value is .094, There is no significant difference in the amount of clicks between conditions since the p-value is greater than .05.

4.6.2.4 Task # 2 difficulty

Group Statistics

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Task 2 Difficulty	A	3	3.67	1.155	.667
	В	3	4.67	.577	.333

Independent Samples Test

		Levene's Test fo Varian								
		F	Sig.	t	df .	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Differe Lower	
Task 2 Difficulty	Equal variances assumed	3.200	.148	-1.342	4	.251	-1.000	.745	-3.069	1.069
	Equal variances not assumed			-1.342	2,941	.274	-1.000	.745	-3.399	1.399

This is a two-tailed t-test to see if there's a significant difference in the difficulty between conditions. As we see here, the value = .251, which is greater than .05. So there is no significant difference in the difficulty between conditions in task 2.

4.6.2.5 Task # 2 satisfaction

Group Statistics									
	Condition	N	Mean	Std. Deviation	Std. Error Mean				
Task 2 Statisfaction	A	3	4.00	1.000	.577				
	В	3	4.67	.577	.333				

Independent Samples Test

		Levene's Test fo Variand	t-test for Equality of Means							
		-	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of Difference	
		F							Lower	Upper
Task 2 Statisfaction	Equal variances assumed	.400	.561	-1.000	4	.374	667	.667	-2.518	1.184
	Equal variances not assumed			-1.000	3.200	.387	667	.667	-2.715	1.382

This is a two-tailed t-test to see if there is a significant difference in the satisfaction of the process of task 2 between conditions. The p-value = .374, which is greater than .05, so there is no significant difference in the satisfaction of the process of task 2 between conditions.

4.6.3 Task #3 results

4.6.3.1 Task # 3 Time on Task

Tests of Between-Subjects Effects

Dependent Variable: Task 3 Time

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2400.000 ^a	1	2400.000	4.225	.109
Intercept	36504.000	1	36504.000	64.268	.001
Condition	2400.000	1	2400.000	4.225	.109
Error	2272.000	4	568.000		
Total	41176.000	6			
Corrected Total	4672.000	5			

a. R Squared = .514 (Adjusted R Squared = .392)

This is an ANOVA to see if there is a significant difference on time on task between conditions for task 3. The F-value = 4.225 and the p-value = .108, which suggests that there isn't a significant difference since the p-value is greater than .05.

4.6.3.2 Task # 3 Errors

Tests of Between-Subjects Effects

Dependent Variable: Task 3 Errors

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.667ª	1	2.667	2.000	.230
Intercept	6.000	1	6.000	4.500	.101
Condition	2.667	1	2.667	2.000	.230
Error	5.333	4	1.333		
Total	14.000	6			
Corrected Total	8.000	5			

a. R Squared = .333 (Adjusted R Squared = .167)

This is an ANOVA test to see if there is a significant difference in the amount of errors between conditions for task 3. The F-value = 2 and the p-value = .230, which shows that there isn't a significant difference since the p-value is greater than .05.

4.6.3.3 Task # 3 number of clicks

Tests of Between-Subjects Effects

Dependent Variable: Task 3 Clicks

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	32.667 ^a	1	32.667	8.909	.041
Intercept	192.667	1	192.667	52.545	.002
Condition	32.667	1	32.667	8.909	.041
Error	14.667	4	3.667		
Total	240.000	6			
Corrected Total	47.333	5			

a. R Squared = .690 (Adjusted R Squared = .613)

This is an ANOVA test to see if there is a significant difference in the number of clicks between conditions of task 3. The F-value = 8.909 and the p-value = .041, this shows there is a significant difference since the p-value is less than .05.

4.6.3.4 Task # 3 difficulty

Group Statistics

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Task 3 Difficulity	A	3	4.67	.577	.333
	В	3	5.00	.000	.000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		-	Sig.		df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Differe	
	-		2500,000	L)	ui		X1010700000000	XVD-C240-C00000-9	TOTAL CONT.	/0.7903/97/9CSLU
Task 3 Difficulity	Equal variances assumed	16.000	.016	-1.000	4	.374	333	.333	-1.259	.592
	Equal variances not assumed			-1.000	2.000	.423	333	.333	-1.768	1.101

This is a two-tailed t-test to see if there is a significant difference of the difficulty of the process of task 3 between conditions. on a 95% confidence interval, the p-value = .374 which is greater than .05. So, there is not a significant difference.

4.6.3.5 Task # 3 satisfaction

Group Statistics

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Task 3 Statisfaction	A	3	4.33	1.155	.667
	В	3	4.67	.577	.333

Independent Samples Test

		Levene's Test fo Variand					t-test for Equality	of Means		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Differe Lower	
Task 3 Statisfaction	Equal variances assumed	3.200	.148	447	4	.678	333	.745	-2.403	1.736
	Equal variances not assumed			447	2.941	.686	-,333	.745	-2.732	2.066

This is a two-tailed test to see if there is a significant difference of the satisfaction of the process of task 3 between conditions. On a 95% confidence interval, the p-value = .678, which shows that there isn't a significant difference since the p-value is greater than .05.

4.6.4 Overall results

4.6.4.1 Overall Time on Task

Group Statistics

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Overall Time	Α	3	526.3333	178.48903	103.05069
	В	3	209.0000	13.11488	7.57188

Independent Samples Test

		Levene's Test fo Variand					t-test for Equality	of Means		
						Mean	Std. Error	95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper
Overall Time	Equal variances assumed	4.910	.091	3.071	4	.037	317.33333	103.32849	30.44744	604.21923
	Equal variances not assumed			3.071	2.022	.090	317.33333	103.32849	-122.73310	757.39977

This is a two tailed t-test to see if there is a significant difference on time on task between conditions for the overall study. On a 95% confidence interval, the p-value is .037, which is less than .05, so there is a significant difference.

4.6.4.2 Overall Errors

Group Statistics

	Condition	Ν	Mean	Std. Deviation	Std. Error Mean
Overall Errors	A	3	12.3333	5.85947	3.38296
	В	3	6.6667	4.50925	2.60342

Independent Samples Test

		Levene's Test fo Variand	ces				t-test for Equality	of Means		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Differe Lower	
Overall Errors	Equal variances assumed	.507	.516	1.327	4	.255	5.66667	4.26875	-6.18528	17.51862
	Equal variances not assumed			1.327	3.754	.259	5.66667	4.26875	-6.49823	17,83156

This is a two tailed t-test to see if there is a significant difference of the amount of errors between conditions for the overall study. On a 95% confidence interval, the p-value is .255 which is greater than .05, so there is no significant difference.

4.6.4.3 Overall number of clicks

		Group	Statistics	i i	
	Condition	N	Mean	Std. Deviation	Std. Error Mean
Overall Clicks	A	3	36.6667	7.37111	4.25572
	В	3	16.3333	4.04145	2.33333

Independent Samples Test

		Levene's Test fo Variand					t-test for Equality	of Means		
					df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t					Lower	Upper
Overall Clicks	Equal variances assumed	1.800	.251	4.189	4	.014	20.33333	4.85341	6.85812	33.80855
	Equal variances not assumed			4.189	3.103	.023	20.33333	4.85341	5.17312	35.49355

This is a two tailed t-test to see if there is a significant difference of the amount of clicks between conditions for the overall study. On a 95% confidence interval, the p-value is .014, which is less than .05, so there is a significant difference.

5 Conclusions

5.1 Discussion of Results

For the most part, there wasn't significant improvements between the original site and the prototype. Some of the p-values were close and we may have seen a significant difference if we had a bigger sample. The 1-click shopping button for task 1&3 did not give the results that I thought it would. The number of clicks were almost significantly different, but the time on task and amount of errors stayed basically the same. The difference I would make to task 1 and 3 is to probably make the button more noticeable, like putting a logo or something. For task 2, the time on task and number of clicks almost had a significant difference, if we had a bigger sample size we might've seen it. I would make the 'add to preferred stores' link into a very noticeable button, I think that would greatly improve the results.

5.2 Lessons Learned

I learned that the way I wrote the instructions was kind of confusing to some of the participants. After running through the 6 participants I saw the ways I could've written them better and maybe would've gotten better results. Another thing I learned as that I should make my buttons and important links much more noticeable. I noticed that some of the participants were confused where they were since they were the same color of other links they were next to. I didn't really think about that, but now I definitely will.

5.3 Conclusion

In conclusion, I'm actually very proud of the work I did for this. I developed a well and functional prototype and ran a study which I thought went well. I was glad that while I was working on my prototype and running studies for the original site, that the participants who tested the original site gave basically the same criticisms I have with it. I was pretty impressed that the less experienced participants who tested my prototype, got results that were around or better than the participants that were more familiar to the site. After running the study of the participants who ran through my prototype, I saw things that I could've done to improve it that I will now keep in mind.

6 Appendixes

6.1 Heuristic Evaluation

	Features and functionality meet common user goals and objectives.		The functionality and features can use some improvements. There's no
	reacties and functionality meet common user goals and objectives.	Moderate	point in the features if some of them are buried behind submenus. The functionality is better than the features, but it can handle longer
	Features and functionality support users desired workflows.	Good	Most desired workflows should be supoported through the features and functionality, the problem lies in how some desired workflows can be removed by removing some steps to complete them
	Frequently-used tasks are readily available (e.g. easily accessible from the homepage) and well supported (e.g. short cuts are available).	Good	For the most part yes. But for adding an item on your wish list, its easily accessible and takes more steps than it needs. Also some sub menus on the homepage don't offer an 'add to cart' button but some submenus
	Users are adequately supported according to their level of expertise (e.g. short cuts for expert users, help and instructions for novice users).	Moderate	Expert users should be able to use this site fine but novice users are going to have a difficult time doing tasks that are more than just completing a purchase.
	Call to actions (e.g. register, add to basket, submit) are clear, well labelled and appear clickable.	Excellent	The call to action for the most part is great, for the more important ones its good. But the more specific call to actions should provide feedback because some don't provide feedback at all but they aren't REALLY
Но	mepage / starting page		
5	The Homepage / starting page provides a clear snapshot and overview of the content, features and functionality available.	Good	The homepage does provide a clear overview of the content but it seems a little bloated as some content are repeated multiple times making the homepage bigger than it should be, it does clearly show the
,	The home page / starting page is effective in orienting and directing users to their desired information and tasks.	Excellent	The homepage offers a good amount of links to where users may want to get their desired infromation. It also has a viewing history oof the user so it makes it easy for the user to come back to cheack out an item they
3	The homepage / starting page layout is clear and uncluttered with sufficient 'white space'.	Good	The homepage does well with the 'white space' and being clear. But, the homepage is cluttered, not too cluttered but it is enough to notice that there are submenus and sections that can be removed to make the
Na	vigation		
)	Users can easily access the site or application (e.g. the URL is predictable and is returned by search engines).	Excellent	The urls are predictiable and it's extremely easy to find them through search engine results
10	The navigational scheme (e.g. menu) is easy to find, intuitive and consistent.	Good	The navigational scheme is good for the most part. The problems arise when it comes to sub menus or long webpages where it really starts to fall apart
11	The navigation has sufficient flexibility to allow users to navigate by their desired means (e.g. searching, browse by type, browse by name, most recent etc).	Excellent	Users can navigate by their desired means easily, the sort by menus offer multiple ways to sort results and there a menus to filter results that give plenty of options to find what you are looking for
12	The site or application structure is clear, easily understood and addresses common user goals.	Good	For the most part the site's structure is basically standard which makes to easier for multiple types of uses to understand. The, when it comes to some common user goals it can be less clear and header to
13	Links are clear, descriptive and and well labelled.	Good	The links are well labeled and descriptive but some of the links lack to give users feedback when they click on them such as the link for adding a preferred store
14	Browser standard functions (e.g. 'back', 'forward', 'bookmark') are supported.	Excellent	The site supports all browser standard functions when it comes to the Chrome broswer
15	The current location is clearly indicated (e.g. breadcrumb, highlighted menu item).	Good	The current location isn't clearly indicated on some locations of the site, but for the most part its simple to tell where you are within the site

16	Users can easily get back to the homepage or a relevant start point.	Excellent	The logo for the site as link to the homepage on every page. Also the main submenus carry through most pages making easy to get back to this starting points as well.
17	A clear and well structure site map or index is provided (where necessary).	Very poor	I couldn't find the site map, so I Googled it and turns out they do have a link for a site map but it doesn't show anything.
Sea	arch		
8	A consitent, easy to find and easy to use search function is available throughout (where desirable).	Excellent	There is a seach function on nearly every page of the site that is easy to access and use
9	The search interface is appropriate to meet user goals (e.g. multi- parameter, prioritised results, filtering search results).	Good	While the site offers options to filter results, the results that return get very messy, especially when it comes to searching accessories
0	The search facility deals well with common searchs (e.g. showing most popular results), misspellings and abbreviations.	Moderate	The search function's results are mixed, even with common searches. When it comes to abbreviations, it handles it well especially when it comees to game consoles. When it comes to misspellings, its very bad
1	Search results are relevant, comprehensive, precise, and well displayed.	Moderate	Search results are mixed. Even for common searches, it gets very messy and isn't well displayed. The filter function does help somewhat but all in all it could be better.
Сс	ntrol & feedback		
22	Prompt and appropriate feedback is given (e.g. following a successful or unsuccessful action).	Good	For most of the time there is appropriate feedback given. Tho on certain links such as the link for adding a preferred store, there is no feedback at all.
23	Users can easily undo, go back and change or cancel actions; or are at least given the chance to confirm an action before committing (e.g. before placing an order).	Excellent	The site allows users to easily undo actions and make changes to their actions such as a user making actions to their cart
24	Users can easily give feedback (e.g. via email or an online feedback / contact us form).	Good	For the most part yes, the site offers a customer service page but it only allows two froms of feedback, phone and a community forum. But the community forum seems not really active
Fo	rms		
25	Complex forms and processes are broken up into readily understood steps and sections. Where a process is used a progress indicator is present with clear numbers or named stages.	Excellent	They walk you through making an account well and the steps too and even suggestions of setting it up after you make it. When completing a transaction it also offers clear steps
26	A minimal amount of information is requested and where required justification is given for asking for information (e.g. date of birth, telephone number).	Excellent	The amount of infromation you have to give for making an account and shipping is very minimal and only requires infromation that only they should know
27	Required and optional form fields are clearly indicated.	Excellent	Very clerly indicated, basically the standard
28	Appropriate input fields (e.g. calendar for date selection, drop down for selection) are used and required formats are indicated.	Excellent	All the input field are apporiate and standard
29	Help and instructions (e.g. examples, information required) are provided where necessary.	Excellent	There is help and instrcutions in forms which help the users input the correct format in the input fields

Eri	ors		
0	Errors are clear, easily identifiable and appear in appropriate location (e.g. adjacent to data entry field, adjacent to form, etc.).	Excellent	The site is very good at displaying errors appropriately and also very clearly stated on what the errors are
1	Error messages are concise, written in easy to understand language and describe what's occurred and what action is necessary.	Excellent	The error messages are ver clear and will tell the users how to solve it such as if they formatted their input incorrectly it'll show the correct format for that input field
2	Common user errors (e.g. missing fields, invalid formats, invalid selections) have been taken into consideration and where possible prevented.	Excellent	The site displays in their instructions how to do a task to prevent common users erros. So they've been taken into consideration
3	Users are able to easily recover (i.e. not have to start again) from errors.	Excellent	The user can easily correct their mistakes after the error message has been displayed
0	ntent & text		
4	Content available (e.g. text, images, video) is appropriate and sufficiently relevant, and detailed to meet user goals.	Good	The conent avaliable for the most part are displayed correctly. But wher it comes to submenus, there are too many images and logos then is necessary. But for the most part it does this well
5	Links to other useful and relevant content (e.g. related pages or external websites) are available and shown in context.	Good	In the product pages it clearly shows links of services that users can get with the product and also common bundles that customers buy the product with. It also shows recommendations related to the product.
ò	Language, terminology and tone used is appropriate and readily understood by the target audience.	Excellent	The terminology isn't complex so that multiple users can understand each product they're buying. The tone of the website is appropiate for a shopping website and so is the language
7	Terms, language and tone used are consitent (e.g. the same term is used throughout).	Excellent	The terms, language, and tone are consitent throughout making it more acessible.
8	Text and content is legible and scanable, with good typography and visual contrast.	Good	The typography is good, fonts and the way texts are displayed is consistent. The visual constract is consitent but just isn't that good. One of its main colors is white but just makes it looks like it blends in
·Ιε	Ip		
9	Online help is provided and is suitable for the user base (e.g. is written in easy to understand langugage and only uses recognised terms). Where appropriate contextual help is provided.	Good	There is online help in the customer service page but someof those links should be links in other places where they're relevant
0	Online help is concise, easy to read and written in easy to understand language.	Excellent	The online help is easy to read and is written in a way that is very easy to understand
1	Accessing online help does not impede users (i.e. they can can resume work where they left off after accessing help).	Poor	To get online help you have to open a new tab and find the customer service page, sadly some of the links in that page isn't in other places where they should be
2	Users can easily get further help (e.g. telephone or email address).	Good	Users can get further help but the only ways are by phone and community forums. There should be a quicker way to get online help

Pe	rformance			
43	Site or application performance doesn't inhibit the user experience (e.g. slow page downloads, long delays).	Moderate		Long delays to loading a page will inhibit the user experience, especially if they're in a middle of a text.
44	Errors and reliabilty issues don't inhibit the user experience.	Good		The errors don't inhibit the user experience but reliability does, and it happens sometimes on the site in places where it lacks feedback
45	Possible user configurations (e.g. browsers, resolutions, computer specs) are supported.	Excellent		It supports multiple user configurations well.
O۱	verall usability score (out of 100) *	85	-	Good
* Ve	ery poor (less than 29) - Users are likely to experience very significant difficulties using this site	e or system and migh	nt not l	be able to complete a significant number of important tasks.
Po	or (between 29 and 49) - Users are likely to experience some difficulties using this site or syst	tem and might not be	able t	complete some important tasks.
* Mo	derate (between 49 and 69) - Users should be able to use this site or system and complete mo	ost important tasks, h	nowev	ver the user experience could be significantly improved.
* Go	ood (between 69 and 89) - Users should be able to use this site or system with relative ease a	nd should be able to	compl	le¦e the vast majority of important tasks.
Ex	cellent (more than 89) - This site or system provides an excellent user experience for users. U	sers should be able	to con	mplete all important tasks on the site or system.

6.2 Cognitive Walk-through

Task 1: Purchasing an Item from Shopping History

Steps:

- 1. Click on Shopping History
- 2. Add to cart
- 3. Log into Account
- 4. Go through the pre checkout page
- 5. Look to find the final price of item

	1	2	3	4	5
Know the action?	yes	yes	yes	yes	yes
See the control?	yes	yes	yes	no	yes
Understand the control?	yes	yes	yes	yes	yes
See the feedback?	yes	yes	yes	yes	yes

Notes:

Step 4 is pointless.

Task 2: Adding a preferred store

Steps:

1. Click on Store Locator

- 2. Find the closest store
- 3. Click on 'add to preferred stores'

	1	2	3
Know the action?	yes	yes	yes
See the control?	yes	yes	yes
Understand the control?	yes	yes	yes
See the feedback?	yes	yes	no

Notes:

No feedback when clicking 'add to preferred stores'.

Task 3: Purchasing an item from its product page

Steps:

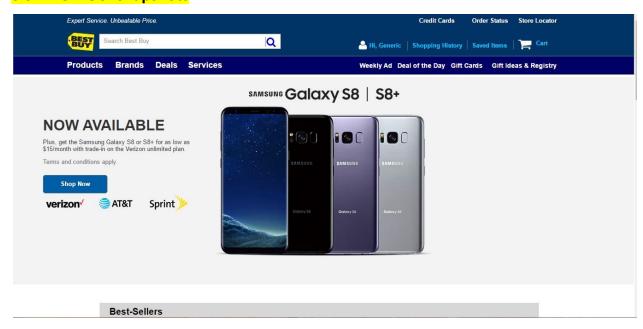
- 1. Click on the item
- 2. Click add to cart
- 3. Click continue
- 4. Go through pre checkout page
- 5. See final price on checkout

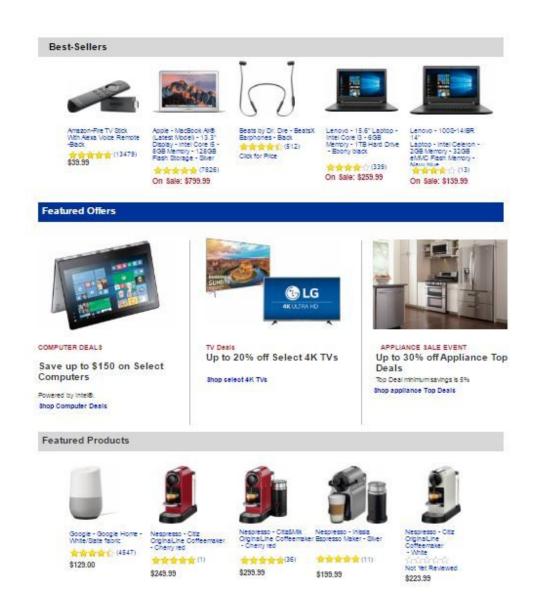
	1	2	3	4	5
Know the action?	yes	yes	yes	yes	yes
See the control?	yes	yes	no	no	yes
Understand the control?	yes	yes	yes	yes	yes
See the feedback?	yes	yes	yes	yes	yes

Notes:

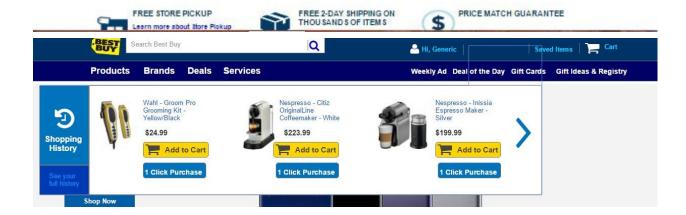
Steps 3 and 4 are pointless and should be removed

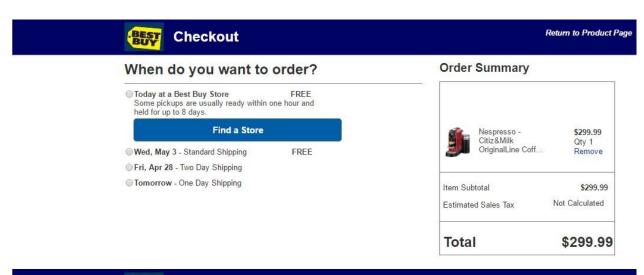
6.3 New GUI snapshots





EXPERT SERVICE. UNBEATABLE PRICES





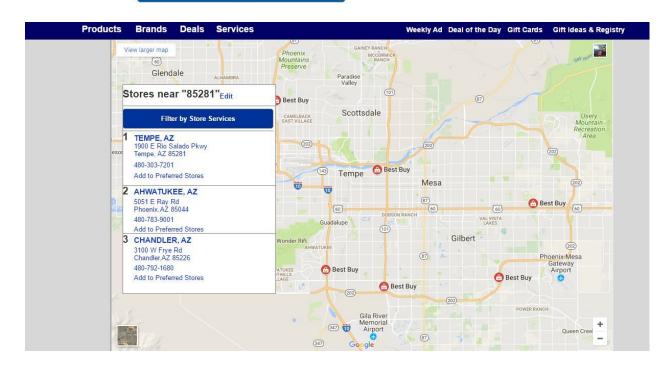
Return to Product Page

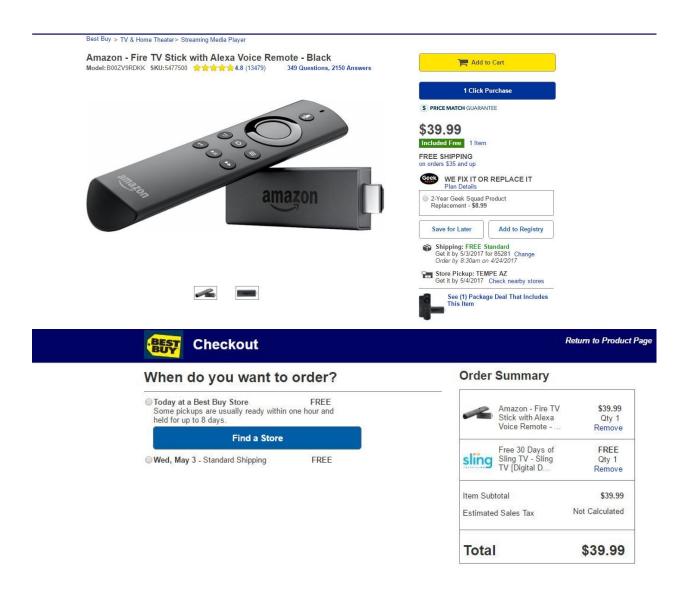
Email Address

genericuser12@hotmail.com

Password

Sign in





6.4 Instructions for participants

6.4.1 For Condition A

Task 1: Purchasing an Item from Shopping History

- 1. On Best Buy's homepage find 'Shopping History'.
- 2. Add 'Nespresso Citiz & Milk Original Line Coffeemaker Cherry red' to cart.
- 3. Enter in the password 'Generic1234!'
- 4. This task is complete when you can tell me the final price of the product with Two Day Shipping included.

Task 2: Adding a Preferred Store

- 1. On Best Buy's homepage find 'Store Locator'.
- 2. Select the closest store to the zip code entered.
- 3. This task is complete when you see the feedback that you've added the store to your preferred stores.

Task 3: Purchasing an Item from the product page

- 1. Go back to the homepage.
- 2. Find 'Amazon Fire TV Stick with Alexa Voice Remote' (Without using the search bar).
- 3. This task is complete when you can tell me the final price of the product with Standard Shipping included.

6.4.2: Instructions for Condition B

Task 1: Purchasing an Item from Shopping History

- 1. On Best Buy's homepage find 'Shopping History'.
- 2. Find 'Nespresso Citiz & Milk Original Line Coffeemaker Cherry red' within the search history
- 3. Make a 1-click purchase.
- 4. Enter in the password 'Generic1234!'
- 5. This task is complete when you can tell me the final price of the product with Two Day Shipping included.

Task 2: Adding a Preferred Store

- 1. On Best Buy's homepage find 'Store Locator'.
- 2. Select the closest store to the zip code entered.

3. This task is complete when you see the feedback that you've added the store to your preferred stores.

Task 3: Purchasing an Item from the product page

- 1. Go back to the homepage.
- 2. Find 'Amazon Fire TV Stick with Alexa Voice Remote' (Without using the search bar) and make a 1-click purchase
- 3. This task is complete when you can tell me the final price of the product with Standard Shipping included.

6.5 Researcher guidelines

Before the study:

Hello, my name is Lewis Petty. I'm testing the usability of Best Buy's website for a CSE course at ASU. I will be screen capturing while you're running through the tasks. There will be three tasks and this should take around 10 minutes. The data won't be tied to your name and will remain anonymous. After the data is used it will be destroyed. I can't answer or help you through the tasks unless if it's about that you're unclear about something on the instructions. You can leave the study at anytime. Do you want to participate in this study? Any questions?

Background questionnaire:

Thanks for participating in the study, I'm going to ask you just a few questions.

After the study:

Okay, I will ask you a few questions (the post session questionnaire). Thank you for participating in this study. Do you have any other questions about the study?

6.6 Background questionnaire

Pre Study Questions:

- 1. How old are you?
- 2. What gender do you identify as?
- 3. How familiar are you with the Best Buy Brand? (5 = Very Familiar, 1 = Not so Familiar)
- 4. How frequently do you use Best Buy's website? (5 = Very Frequently, 1 = Not so Frequently)
- 5. How familiar are you with the Best Buy's website? (5 = Very Familiar, 1 = Not so Familiar)

6.7 Post-session questionnaire

Questions regarding task 1:

1. It was easy purchasing an item from the 'Shopping History' on Best Buy's site. (5 = Strongly Agree, 1 = Strongly Disagree)

- 2. I'm satisfied with the process of purchasing an item from the 'Shopping History' of Best Buy's site. (5 = Strongly Agree, 1 = Strongly Disagree)
- 3. Are there any improvements Best Buy could make to improve the process of this task?

Questions regarding task 2:

- 1. It was easy to add a preferred store location on Best Buy's site. (5 = Strongly Agree, 1 = Strongly Disagree)
- 2. I'm satisfied with the process of adding a preferred store location on Best Buy's site. (5 = Strongly Agree, 1 = Strongly Disagree)
- 3. Are there any improvements Best Buy could do to improve the process of this task?

Questions regarding task 3:

- 1. It was easy purchasing an item from the product's product page on Best Buy's website. (5 = Strongly Agree, 1 = Strongly Disagree)
- 2. I'm satisfied with the process of purchasing an item from the product's product page on Best Buy's website. (5 = Strongly Agree, 1 = Strongly Disagree)
- 3. Are there any improvements Best Buy can make to improve the process of this task?

6.8 Data used for statistical tests

		& Fam.WBrand	Freq.OfWebsite Visit	- Fam. WWebsite		🖧 Task1Errors	🖧 Task1Clicks	🖧 Task1Difficulty	Task1statisfacti n
1 A	20 M	4	1	1	124	2	16	4	2
2 A	20 M	5	2	4	206	2	10	5	3
3 A	19 M	4	2	4	361	7	23	5	4
4 B	19 M	1	1	1	102	6	11	5	4
5 B	21 F	4	1	2	86	1	6	5	5
6 B	21 M	5	1	5	121	6	11	5	5

	♣ Task2Errors	♣ Task2Clicks	♣ Task2Difficulty	Task2Statisfacti on		♣ Task3Errors	♣ Task3Clicks	Rask3Difficulity	Task3Statisfacti on
83	3	5	5	3	131	3	11	4	3
266	8	18	3	5	76	0	6	5	5
245	10	15	3	4	87	2	7	5	5
61	5	6	4	4	58	0	3	5	4
50	0	2	5	5	75	1	4	5	5
33	1	3	5	5	41	0	3	5	5

🗞 OverallClicks	& OverallErrors	OverallTime
31.00	8.00	338.00
34.00	10.00	548.00
45.00	19.00	693.00
20.00	11.00	221.00
12.00	2.00	211.00
17.00	7.00	195.00

6.9 Links to videos

User 1: https://www.youtube.com/watch?v=WkoGpampU30

User 2: https://www.youtube.com/watch?v=0h3Yk03WNas

User 3: https://www.youtube.com/watch?v=Joy8OcMsyLo

User 4: https://www.youtube.com/watch?v=Euvp84QyoyY

User 5: https://www.youtube.com/watch?v=RiMaA81DBL4

User 6: https://www.youtube.com/watch?v=y3HrFoKcwE4

6.10 Links to prototype

http://pyzmok.axshare.com