Usability Metrics for Online Shopping

Andrew Kowalczyk & Edward Bramanti

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1 Introduction

For our tests, we chose the world of online shopping. For our shopping websites, we chose Amazon, eBay, and Shopzilla. For our three metrics, we chose learnability, efficiency, and satisfaction. Learnability is on a scale from 1-5: 1 being difficult to familiarize with, 5 being easy to accomplish the task. Efficiency is measured by seconds of completion. Satisfaction is based on a 1-10 scale: 1 being absolutely unhappy, 10 being extremely satisfied. For our three tests, we chose:

1. Buying a product: a USB stick (test subject was told to find a USB stick they would personally buy)
2. Profile change: adding and deleting a credit card number
3. Narrowing a product down simply by using the navigation provided: Nokia Lumia 920

2 Users

Here is a summary of each user and their overall proficiencies:

1. This user is a Modern Languages major with a decent amount of experience of shopping on line.
2. This user is an English major who doesn't really shop online, yet has a strong domain knowledge about computers.
3. This user is a Computer Science major who shops a decent amount online.
4. This user is a Computer Science major who shops pretty often online.
5. This user is a Computer Science major who shops less than normal.

3 Tests

All testers have signed in on Amazon and eBay before beginning tests.

3.1 Buy a USB stick

The efficiency for eBay and Shopzilla is faster than Amazon other shopping sites because efficiency was only measured up to checkout.

3.1.1 User #1

	Learnability	Efficiency	Satisfaction
Amazon	4	0:41s	7
eBay	3	0:24s	7
Shopzilla	2	0:39s	6

3.1.2 User #2

	Learnability	Efficiency	Satisfaction
Amazon	5	0:37.5s	8
eBay	5	0:17s	6
Shopzilla	4	0:20s	7

3.1.3 User #3

	Learnability	Efficiency	Satisfaction
Amazon	4	0:34s	10
eBay	5	0:25s	10
Shopzilla	5	0:34s	8

3.1.4 User #4

	Learnability	Efficiency	Satisfaction
Amazon	4	0:20s	7
eBay	3	0:33s	8
Shopzilla	5	0:53s	6

3.1.5 User #5

	Learnability	Efficiency	Satisfaction
Amazon	4	0:32s	8
eBay	5	0:22s	10
Shopzilla	5	1:01s	4

3.1.6 Average of all 5 test subjects

	Learnability	Efficiency	Satisfaction
Amazon	4.2	0:32.9s	8
eBay	4.2	0:24.2s	8.2
Shopzilla	4.2	0:41.4s	6.2

3.2 Analysis

The learnability is equal amongst all three shopping websites because finding a USB stick isn't too hard. Shopzilla had pop-ups showing direct checkout for certain products which made learnability higher for that shopping website. eBay made it very easy to arrive to checkout. The overall interface of the website did not clearly determine a "winner" in terms of learnability. The efficiency is also fairly equal amongst all websites (due to the fact that the times for Shopzilla and eBay are up to checkout). Satisfaction was also fairly in the same level. Satisfaction is partially related to website appeal, so this metric is somewhat subjective. There was mention that the pop-up of the two day shipping hindered results for Amazon, but this simply seems like a personal preference.

3.3 Profile change: Add credit card number

This test is omitted for Shopzilla because they are an aggregate website for other shopping websites. For eBay, the test needed to be done through Paypal because eBay uses PayPal as a payment method.

3.3.1 User #1

	Learnability	Efficiency	Satisfaction
Amazon	5	1:01s	7
eBay	1	1:00s	5
Shopzilla	-	-	-

3.3.2 User #2

	Learnability	Efficiency	Satisfaction
Amazon	1	1:24s	7
eBay	3	0:49s	7.5
Shopzilla	-	-	-

3.3.3 User #3

	Learnability	Efficiency	Satisfaction
Amazon	5	1:08s	10
eBay	1	1:50s	2
Shopzilla	-	-	-

3.3.4 User #4

	Learnability	Efficiency	Satisfaction
Amazon	4	1:21s	9
eBay	3	0:50s	7
Shopzilla	-	-	-

3.3.5 User #5

	Learnability	Efficiency	Satisfaction
Amazon	5	0:47s	10
eBay	5	0:37s	10
Shopzilla	-	-	-

3.3.6 Average of all 5 test subjects

	Learnability	Efficiency	Satisfaction
Amazon	4	1:08.2s	8.6
eBay	2.6	1:01.2s	6.3
Shopzilla	-	-	-

3.4 Analysis

This test was fairly interesting. Since Shopzilla was out of the running, it came down to Amazon and eBay. The learnability for Amazon was interesting because there are so many options for the user too look though. The link "Manage Payment Options" is not the most revealing of titles. In one of the test cases, the user had to use the search bar to find out how to remove a credit card for Amazon (not a test, yet interesting). For eBay, a user had to search google to figure out how to pay as a guest using PayPal. Efficiency for Amazon was "slower" due to having more options for the user to look through.

3.5 List filtering for Nokia Lumia 920

3.5.1 User #1

	Learnability	Efficiency	Satisfaction
Amazon	3	1:12s	5.5
eBay	3	0:45s	6
Shopzilla	3	0:25s	5

3.5.2 User #2

	Learnability	Efficiency	Satisfaction
Amazon	1	2:21.28s	6.5
eBay	3	0:53s	8
Shopzilla	3	0:28s	8

3.5.3 User #3

	Learnability	Efficiency	Satisfaction
Amazon	1	1:22s	8
eBay	1	2:25s	3
Shopzilla	5	0:41s	9

3.5.4 User #4

	Learnability	Efficiency	Satisfaction
Amazon	5	0:50s	6
eBay	5	0:41s	8
Shopzilla	1	0:28s	4

3.5.5 User #5

	Learnability	Efficiency	Satisfaction
Amazon	2	0:33s	9
eBay	5	1:01s	4
Shopzilla	1	0:38s	3

3.5.6 Average of all 5 test subjects

	Learnability	Efficiency	Satisfaction
Amazon	2.4	1:15.656s	7
eBay	3.4	1:09s	5.8
Shopzilla	2.6	0:32s	5.8

3.6 Analysis

The learnability for the list filtering did not come to a real clear winner. Every site had some issues using their list navigation for finding the particular phone that we were looking for. In terms of efficiency, Shopzilla blows the other two out of the water. Satisfaction was led by Amazon just slightly.

4 Overall Analysis

	Learnability	Efficiency	Satisfaction
Amazon	3.53	58.918s	7.86
eBay	3.4	51.46s	6.76
Shopzilla	3.4	36.7s	6

According to the reslults, the shopping site with the highest learnabiilty is Amazon. The shopping site with the highest efficiency is Shopzilla. The shopping site with the highest satisfaction rate is Amazon.

Now looking at the table with all of the measurements averaged, we have a compelling reason for why one shopping site comes out on top. Overall the trend seems to be that as a certain shopping site are easier to use, the less happy the user tends to be. This is because the sites that take longer to learn have better functionality. Users are rewarded by learning the methods of the website. Amazon's experience is the best overall; it focuses more on satisfaction through a personalized experience.

Subjective satisfaction is a priority for each and every one of these sites. Since each of them are a service for customers, their main goal is for their customers to have a good experience. Of course, an efficient website can make tasks easier and a learnable site will allow the customer to access products faster. Nevertheless, if a customer lacks satisfaction during a shopping experience, they become less likely to buy any items, regardless of how efficient or learnable the interface is.

According to the metrics, Amazon yields the highest satisfaction of the three websites for different tasks, even though it is lacking in efficiency and learnability. Since users are satisfied using the website, they are more likely to learn the interface and overlook the more slightly complex interface. If satisfaction is of key importance when considering how to design a shopping website, then Amazon represents a **strong** model to base a design off of.

5 Usability study improvements

Looking back at the way we recorded learnability and efficiency, we realized that we recorded the metrics wrong. Learnability is a *temporal* metric and should not be scored on

a number scale. Efficiency is the time it takes for a user to do something that they already know. Even though we recorded efficiency as time, we recorded it as the first time that the user attempted a given task. This should have been the second, third, etc. time that the user completed that given task.

If we were allowed to re-do our study we would have recorded learnability based how long the specific task took for their first time. We would then record efficiency a second time, third time, etc. We could average those times for a given user if needed. The learnability and the efficiency would then be recorded correctly. The user would be timed for how long it took them to figure out the website, which is the correct way of recording learnability. The user would also be recorded for how long it takes for them to do what they already know how to do.

In more concrete terms, the way that way we would change our study is as follows:

1. Record learnability as the first time the user completes the task
2. Record efficiency as the second and third time the user completes the task (store the average as well)