

Music App Usability Report

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September 2014

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1 Intro

The purpose of this study was to analyze two of the top music applications in existence to determine which has been more optimized for user interaction. 15 different instances of tests were performed on iTunes and Spotify desktop applications.

The first task the test subjects performed was started on the main music library of the application. Users were asked to create a new playlist with the title "Hello World". During the second task, users again started on the music library of the application. They were then asked to make use of the automated radio, a feature that is present in both platforms. Users were asked to start the radio and create a station adapted to the artist "Tiesto". The final task was to navigate to a pre-created playlist on the application, and set the playlist to loop indefinitely. For each of the tasks, the amount of time it took each user to complete the task was noted, as well as the number

and nature of errors. Users were also asked questions to determine their level of satisfaction with each of the systems.

In order to establish a scale for determining which UI was more adapted for interaction, we organized our three metrics into a hierarchy in order of importance. Efficiency was rated the most important metric, followed by errors, and finally, satisfaction. We figured that efficiency and errors were more concrete ways of assessing usability, while satisfaction is more subjective and therefore, should be assessed more-so as a compliment to the other two metrics. Through the course of testing, a clear winner emerged. All three metrics for the Spotify platform exceeded those of iTunes, and it was therefore decided that Spotify is more optimized for user interaction.

2 Metrics

2.1 Efficiency

Spotify users proved to be more efficient in the first task of creating a playlist. The average time to create a playlist in Spotify was 11.17 seconds, while the average time to perform the same task in iTunes took an average of 16.34 seconds. 4 out of 7 users testing Spotify actually completed the task faster than the quickest iTunes time recorded. 3 out of these 4 Spotify testers rated their own familiarity of Spotify as being less than 5 out of 10. Even when removing these users from the efficiency evaluation, the averages for Spotify were lower than those of iTunes. Though we did not officially evaluate learnability of a metric, this speaks to the learnability of Spotify, as users with little domain knowledge of Spotify were able to complete the tasks more quickly than those with domain knowledge of iTunes. The highest time overall was produced by an iTunes user who rated their domain knowledge of iTunes as a 9 out of 10. It took this user 26 seconds to create a playlist, a full 7 seconds longer than the slowest time recorded by a Spotify tester. The slowest iTunes tester noted that iTunes frequently updates the user interface, therefore making it difficult to stay familiar with how to use certain features of the software.

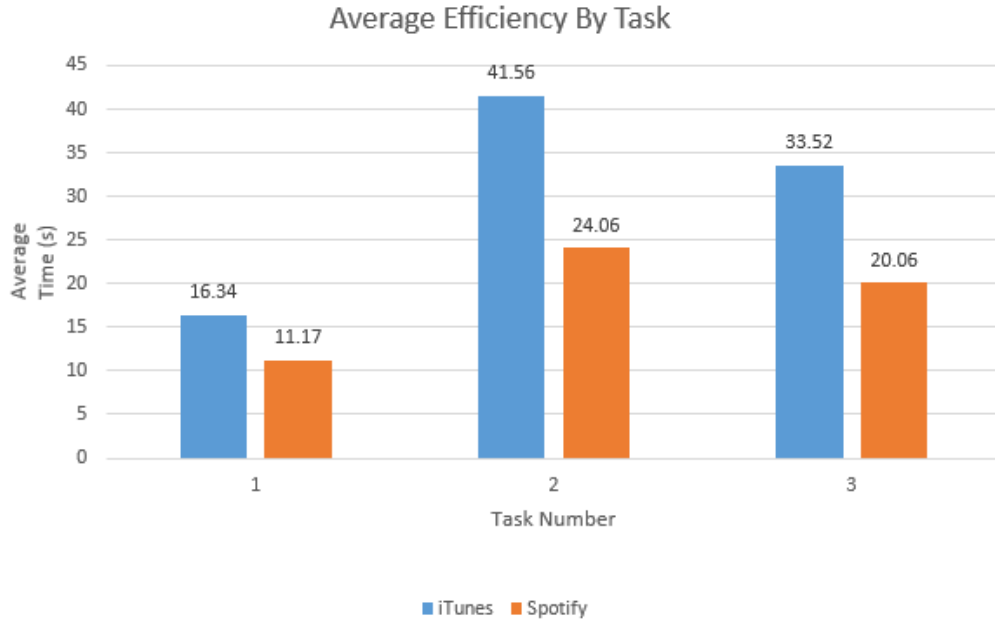


Figure 1: Average times of completion for each task (lower is better)

Test subjects again proved to be much more efficient in performing the second task in Spotify than in iTunes. The average time to complete the task in Spotify was 24.06 seconds. In iTunes, it generally took test subjects more than 17 seconds longer to complete the task, with the average time being 41.56 seconds. One user additionally commented at this stage that starting a radio station based on a certain artist in Spotify was "easier than iTunes".

The third and final task, starting a playlist and looping it indefinitely, designated Spotify as the more efficient platform. iTunes testers took an average of 33.52 seconds to navigate to and start a playlist looping indefinitely. Spotify users on average took a little more than half of the time to perform the same task, taking an average of 20.06 seconds.

2.2 Errors

In performing the first task, there were relatively few errors. iTunes actually did slightly better, with users making only 3 errors during the first task. Spotify testers collectively made 4 errors in the course of the first test. In the second test, iTunes errors made a total of 6 errors, while Spotify users

only made 4. On the final task, iTunes testers made 8 errors, while the Spotify users only made 2. This puts the total number of errors for the iTunes testers at 17 errors, while the number of errors by Spotify testers was only 10.

In the second task, one of the errors included attempting to find the iTunes radio function through the iTunes store. Another user attempted to go through the file menu, and then gave up doing it that way, subsequently going through the playlist tab on the navigation bar. Another user clicked on the "wishlist" button, thinking it would lead them to the radio.

In the third task, errors generally were related to users not being able to determine the functionality of buttons. Users in both platforms had a difficult time discerning between the shuffle and repeat buttons. Once users figured out which button was the repeat button, some of them only clicked it once. This sets not the entire playlist to repeat indefinitely, but instead just repeats the current song playing indefinitely.

	iTunes	Spotify
First Task	3	4
Second Task	6	4
Third Task	8	2
Total	17	10

Table 1: Number of errors made during each task

2.3 Satisfaction

In order to gauge user satisfaction with each of the systems, test subjects were asked after each task how satisfied they were with the ease of completing the task. Additionally, at the end of all three tests, each subject was asked to rate the overall experience in using the platform. It is important to notice the difference between the user-generated overall, and the average between the three tests. The results of the three tests were very close, however, the user-reported overall level of satisfaction proved to be the tiebreaker, with Spotify again coming out as the winner.

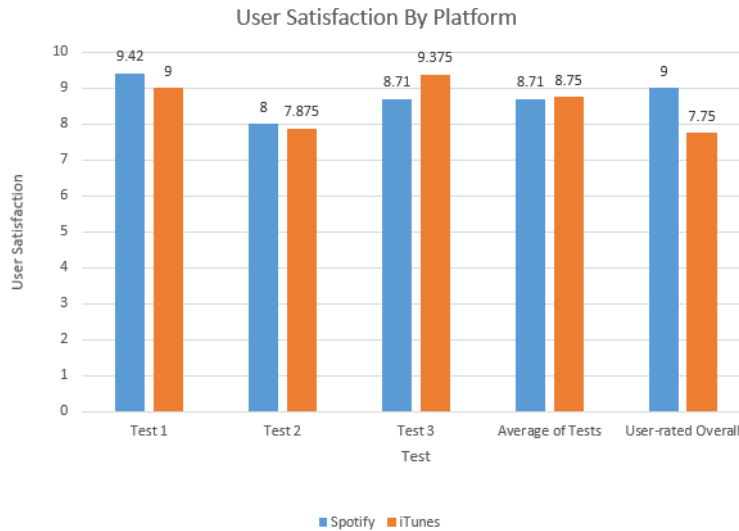


Figure 2: Tester-rated satisfaction with each test, as well as an overall level of satisfaction

Figure 2 shows the level of satisfaction users experienced for each task. Users were only slightly more satisfied with Spotify for the first two tests, with an average satisfaction level no more than .4 points higher than the iTunes users. In the third test, iTunes actually scored significantly higher, with a margin of about .6 points separating the two. Regardless of this small victory, users still rated the overall experience of Spotify as more pleasant than that of iTunes, with a margin of 1.25 points. Upon looking at the results, it seems odd that Spotify scored so much higher than iTunes overall. Even though the average satisfaction for the 3 tests was virtually identical. Possible reasons for this difference in rating will be examined in the Heuristics section.

3 Heuristics

A very strong possible explanation why Spotify testers had higher levels of satisfaction with Spotify as a whole lies in the average efficiency for each system. As shown in Figure 3, iTunes testers took nearly twice as long on average to perform any one task. While Spotify users took an average of 18.4 seconds per task, iTunes users took a average of 30.47 seconds per

task. There is an apparent correlation between the amount of time spent performing tasks, and the overall satisfaction with the system; the longer a user spent performing the same tasks on a system, the lower they rated their satisfaction with the system. There are several UI style differences that can account for Spotify being a more efficient system to use.

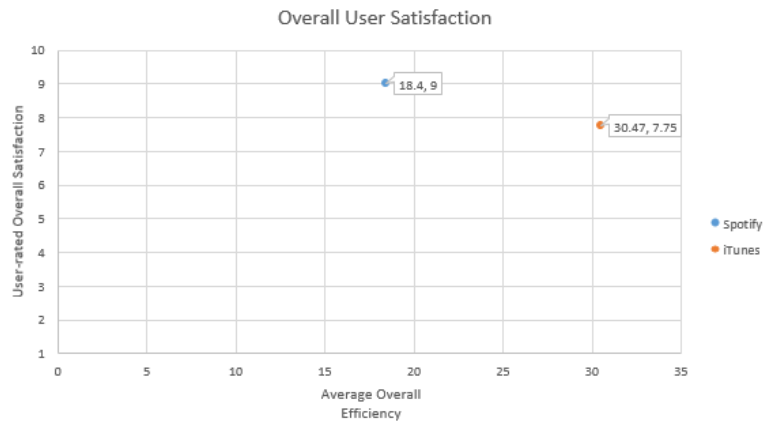


Figure 3: Examining the relationship between average efficiency for all 3 tests, and self-rated overall user satisfaction with system

In examining the style of interaction employed by both Spotify and iTunes, some of the reasons that Spotify perform better become apparent. One of the more critical components of the Spotify UI to note is the use of a vertical, scrollable, navigation column on the left-hand side of the screen (shown in figure 4).

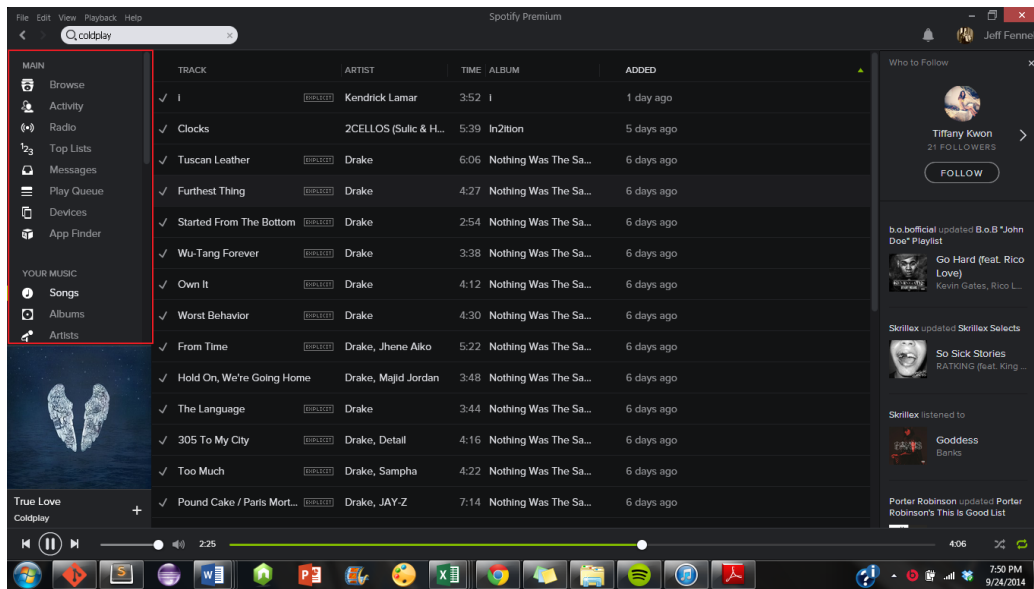


Figure 4: Spotify employs a navigation column on the left hand side of the screen

Here, Spotify holds navigation buttons and commonly used function buttons all in one column. This navigation bar is a permanent fixture in the app, as it remains in place while the user navigates through the system. It reduces the number of clicks necessary to navigate through the app. Additionally, the fact that the left-hand side of the navigation bar touches the corner of the window allows the user to navigate to it more quickly. They do not have to worry about overshooting the left hand side of the navigation bar, as the edge of the screen will stop them. This is a direct application of the hotspot concept in Fitts' law.

All three of the tasks we asked users to carry out actually had shortcut buttons in Spotify navigation column. In our first test, many of the users utilized the "New Playlist" shortcut in the navigation column to create and name a playlist extremely quickly. This method creates a playlist in one click, immediately allowing the user to type in the name of the new playlist. Even if the user uses the `file>create playlist` path, it takes only 2 clicks to create a playlist. Ease of navigation through this menu bar was also possible in our second task. There is a link in the navigation bar to go straight to the radio function. From there, the user must simply type in the name of the artist to start the radio station. The first half of the third task was to

navigate to a playlist, which the user could do from the navigation column.

iTunes, meanwhile, employs a very thin navigation bar that is not at the top or the side of the window, but rather, dropped slightly towards the center of the screen. This placement and very thin size of the navigation bar can allow the user to very easily overshoot the navbar when they attempt to click a button. It does not have the same hotspot advantage of the navigation column in Spotify.

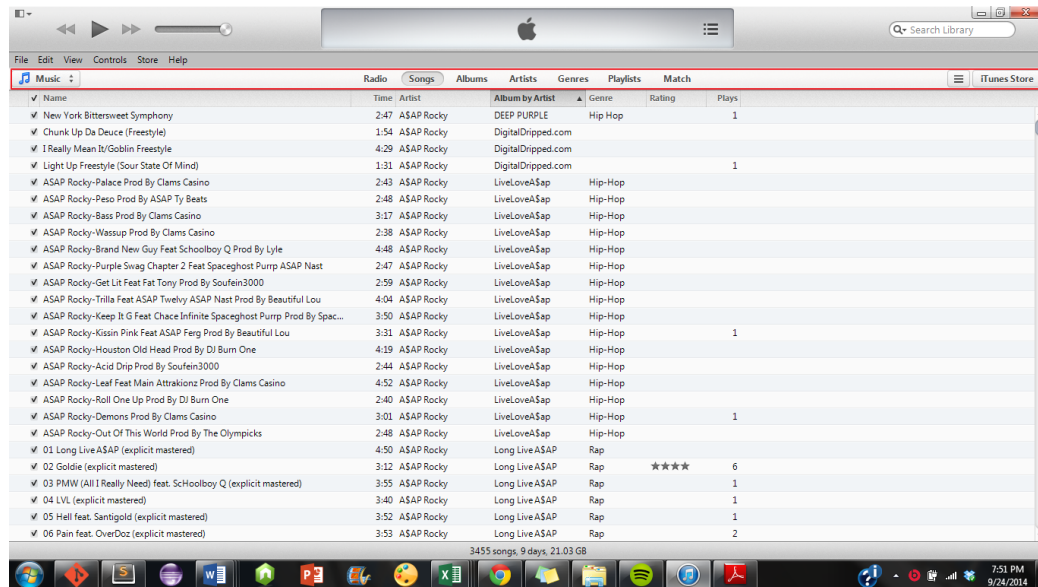


Figure 5: iTunes employs a horizontal navigation bar with two different drop-down menus, as well as navigation tabs

While Spotify has navigation shortcuts for common tasks in its navigation bar, iTunes does not present the user with as many shortcuts. For all three of the tasks, the user in iTunes was required to either navigate through the file menu at the top, through a series of drop-down menus and button clicks, or navigate through separate tabs on the navigation bar, and then click on one or more buttons. This inherently is less efficient than the Spotify UI, where all of the common shortcuts could be found by simply scrolling down the navigation bar.

By Fitts' law, Spotify is more optimized for user interaction because of the way its buttons and navigation items are organized. The buttons in Spotify are larger than those of iTunes. Many of iTunes' buttons do not have words

on them, but rather are glyphs representing the tasks, some of which can be confused as one of several functions. In addition to just containing symbols, many of the Spotify buttons also contain words. This serves two purposes. Not only does it give the user a precise description of what function the button serves, but also, increases the width of the buttons, making them easier to navigate to. Figures 6,7, and 8 illustrate these points.

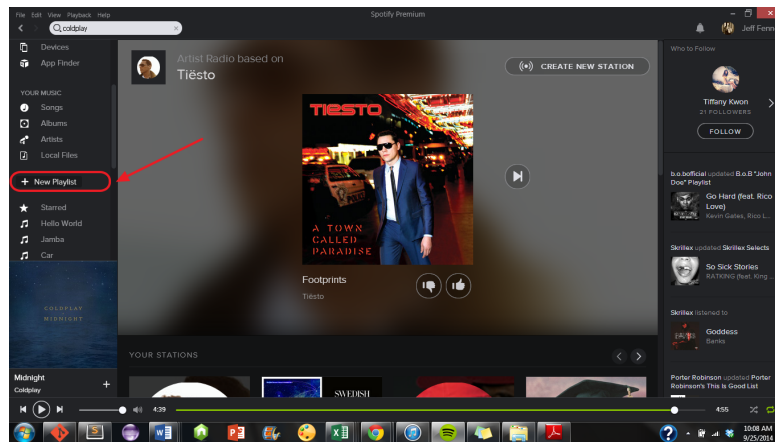


Figure 6: Placement of the "New Playlist" button in the navigation column makes it more accessible and easier to click than in iTunes (see figure 7) Additionally, it takes only 1 click to perform the same task that takes 2 clicks in iTunes (see figure 8)

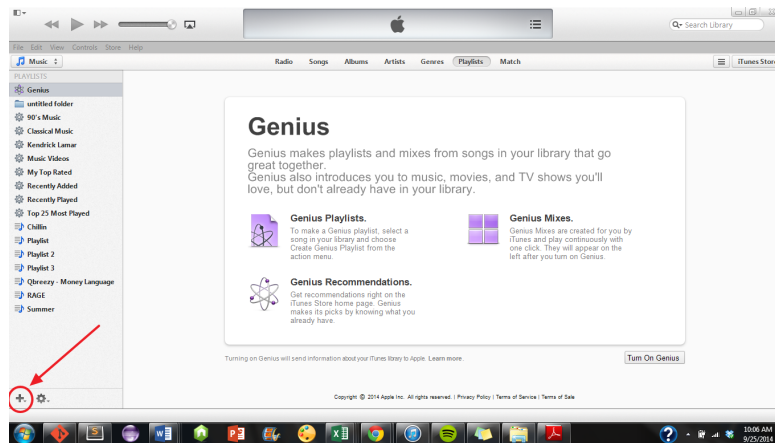


Figure 7: iTunes buttons are generally smaller, contain only glyph representations, and as in this instance, are tucked into the corner of screen.

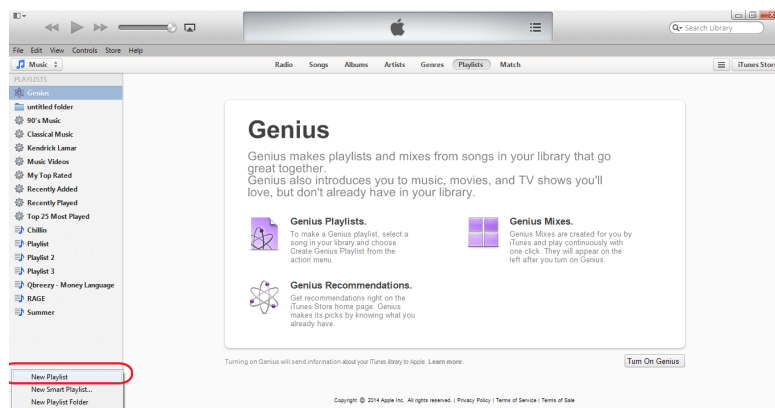


Figure 8: The additional click involved in creating a playlist

In essence, the buttons in Spotify are more "in your face". This is an explanation for why there were fewer errors overall in Spotify than in iTunes. There's another feature of Spotify that several testers accidentally exploited to increase efficiency. When hovering over the shuffle and repeat buttons, a pop-up appears with the description of the button. Several testers hovered over the buttons hesitantly, only to find that the subsequent pop-up allowed them to discover the purpose of the button.

Another subtle component of Spotify that possibly contributes to the level of user satisfaction is the presence of spinners. When switching be-

tween different modules of Spotify, a spinner pops up indicating to the user that the module is loading. This does not happen in iTunes. When you attempt to navigate from the main music library to the radio, for instance, the app appears to be stagnant until the radio module has loaded. This is actually in defiance of apple's design guidelines for desktop applications. In the design guidelines, apple tells the developer to "be responsive" to user inputs, encouraging the app to give feedback about its state as soon as possible. This also defies Tognazzini's first principles for interaction design, which is to provide the user feedback with some kind of spinner if the wait time is less than or equal to 2 seconds.

Another explanation of why iTunes is a more usable system involve one of Tognazzini's first principles, the concept of Visible Navigation. Tognazzini's principle is to create a UI that requires as simple of a mental map as possible. The goal is to make the user effectively feel that they are staying in one place, with the UI doing the work of bringing the content to the user. Spotify does a much better job at this than iTunes does. Spotify's UI revolves around the navigation bar on the left, the social updates column on the right, and a content section in the middle. All three of these components are stationary, so the content on them does not change upon switching modules. These components of the UI leave only a small portion of the screen that changes each time a different module is navigated to: the content section. iTunes, meanwhile, only has one stagnant component in its UI: the menu and navigation bars at the top of the screen, which collectively take up much less room on the screen than the stationary Spotify components. Upon navigating modules in iTunes, much more of the screen changes composition, therefore requiring the user to remember much more complex mental maps of the UI layout. All of these differences in design approach point out Spotify as the more user-friendly system.