

Assignment M2: CS6750

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Abstract—Throughout my M Assignments, I will investigate the task of searching for health and wellness businesses and classes. The primary app of my focus is the Mindbody app, which states they are “connecting the world to wellness” and do so through serving “gyms, spas and salons worldwide, and [helping] people find and book with them” (Mindbody, 2021). I will investigate how users can better achieve this goal through the task of searching for businesses and class availability.

1 NEEDFINDING EXECUTION 1: SURVEY

The first Needfinding plan I performed was sending out a survey regarding the experience of users searching for Health & Wellness services, activities, businesses, etc. I collected minimal demographic information, limited to the age grouping of the survey participant. I asked about why users search for health & wellness businesses or services and how they go about doing so. I have included in Figure 1, a chart of the responses regarding how well users are able to achieve their health & wellness goals through searching for businesses and classes. Figure 1 demonstrates a need for improvement so that users can more successfully achieve their goals. 75% of participants fell in or below a rating of 3 (a moderate amount).

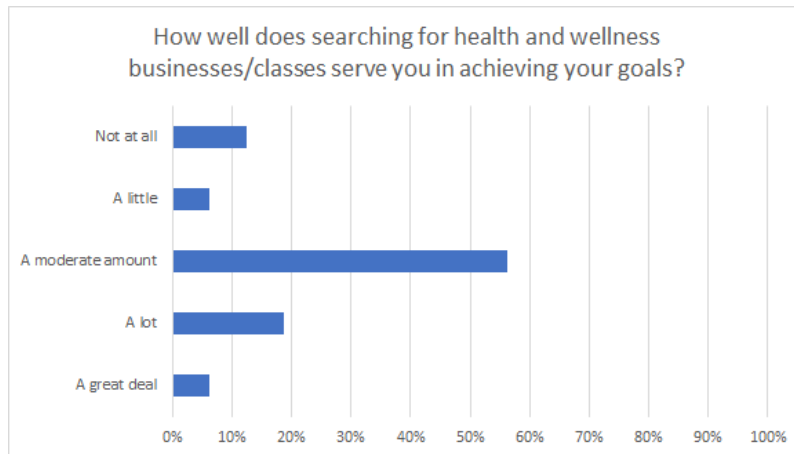


Figure 1—Survey responses to the questions “How well does searching for health and wellness businesses/classes serve you in achieving your goals?”.

This survey additionally revealed to me that the ways in which participants search for and find health and wellness businesses and services is quite varied, including word of mouth, local gym, Google, and Mindbody. Based on the survey results, there is not one dedicated app that most participants knew about to find and utilize health and wellness resources in their area. 38% of participants said that they do not feel as though they are able to find all the resources offered in the area they live. Figure 2 shows satisfaction each participant experienced with curated search results when they had either a specific business or specific workout type/service type in mind. These results demonstrate a need for more successfully curated search results.

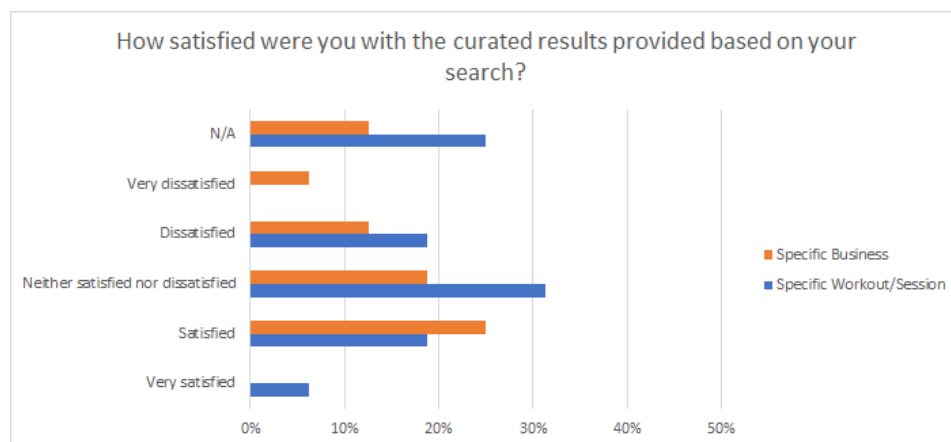


Figure 2—Survey responses to the questions “How satisfied were you with the curated results provided based on your search?” for either a search for specific business or search for a specific workout/service.

The raw data for this survey can be viewed in *Appendix 7.1: Survey responses.*”

The primary bias that I was concerned about while performing the needfinding exercise of surveying participants was satisficing, which occurs when a respondent puts forward minimal cognitive effort to answer survey questions (H. Muller et al.). In order to avoid this bias impacting my survey results, I attempted to keep the questions simple and the length of the survey short. However, I will note that I do believe that this was still a bias introduced in my survey and is a very difficult one to avoid especially when participation points are offered in exchange for taking as many surveys as one would like. I do think that the simplicity of the questions and requirement of some questions helped alleviate this bias.

2 NEEDFINDING EXECUTION 2: INTERVIEWS

Interviewing brought about a deeper understanding of the users and their needs than the starting point of the survey. Through the interviews, I was able to uncover why people care about health & wellness in general and what it is that drives people to search for health and wellness services and businesses and what ultimately helps them choose one among many. Although I saw through the survey results that word of mouth was a common way that users found new businesses or services, it was through these interviews that I realized the weight that users place on reviews and knowledge about a business or class before attending. Several interview participants mentioned they like to read reviews when searching for a new health and wellness business or service and other participants indicated they would like to see some kind of a trailer as a part of their search result so they can make more informed decisions based on the results provided.

One participant stepped through their Mindbody app searching for a hypothetical class during our interview, providing me with an experience similar to what think aloud or participant observation might have provided. This participant was turned around by the lack of intuitiveness of the results of the search. The participant began a search for meditation and was originally looking at 5 miles, which produced 4 results. The participant then expanded the location

and saw many more results, several of which were within 2 miles of the participant's location which called her attention to the fact that her filter on meditation had cleared when she increased the mileage. The participant indicated that this experience was not intuitive and was quite surprised by the process of searching for meditation within 15 miles of her.

The raw data for these interviews can be viewed in "*Appendix 7.2: Interview responses.*"

When I set out to perform interviews, I was wary of the risk of introducing Observation Bias as well as Confirmation Bias. In order to avoid these, I created a script of questions and phrased my questions in a way that ensured I was not suggesting a preferred answer. I naturally steered away from my script as the interviews became quite conversational but I tried to stay alert and aware that getting excited when a participant provided me with an answer that could lead to uncovering more of the information that I was hoping to find could bring about additional bias.

3 NEEDFINDING EXECUTION 3: ANALYSIS OF PRODUCT REVIEWS

I utilized Python to scrape the first 2,000 Mindbody reviews from the US in the Apple App Store. From there, I utilized the NLTK package to remove stopwords and from there parse the reviews and create a sentiment analysis of them. 40% of the reviews are categorized as negative. I have included in "*Appendix 7.3: Analysis of Product Reviews*" the most impactful words included in the reviews. I will include here a sample of those words: track, easy, convenient, buggy, freezing, crashing, ease, frustrating. This indicates to me that users are highly impacted by the ease, or lack thereof, of use of the application which they are using to search for health and wellness business and services.

I do not feel as though I gleaned as much data from this as I would like and hope to continue processing the reviews in other ways in order to benefit more from the content of the reviews.

The bias I anticipated as I decided to utilize analysis of product reviews was Voluntary Response Bias. I attempted to mitigate this by scraping many reviews and also including all review ratings from 1-5. I hoped that this may eliminate the bias of oversampling extreme reviews. Additionally, when analyzing my data, I tried to classify some reviews as "Not having to do with the app" when

they were about a specific business rather than about their experience on the Mindbody app itself.

4 DATA INVENTORY

4.1 Who are the users?

The users who participated in my needfinding exercises are both male and female and range from ages 18-64. I collected ages in my survey and interviewed both male and females. My interviews suggested to me that the users varied in levels of expertise in searching for and finding new and relevant health and wellness businesses and classes. I only included perspectives from the US in my interviews and in my analysis of product reviews. A question about the region of the participant could have been something I included in my survey questions as well to get a better understanding of the regions those users are in.

4.2 Where are the users?

I asked users both in the survey and in interviews when they find themselves searching for health and wellness business/services/activities. Majority of the participants answered that they are not searching for these things in other cities, rather are usually looking for them in their home cities.

4.3 What is the context of the task?

In the interviews, I asked users under what context they are looking for services. Majority of the participants responded that they are planning ahead when booking a service. However, there was a participant who said that he is typically looking for classes spontaneously. Thus, he is under pressure when looking for a class and is hoping to find something quickly. Users responded they are typically booking these services from a mobile device, so are often on the go, and likely have other forces competing for their attention.

4.4 What is the context of the task?

Each participant in my interview stated that they care about their health and wellness. One participant summarized the reason for this as “wanting to live longer and feel younger.” This knowledge of the importance of health and wellness activities on how one feels was resounded throughout each interview. There were other intentions brought up as well for searching for health and

wellness businesses such as meeting other people, building community, and working out with friends or family.

4.5 What do they need?

Users mention in product reviews a need for a more user-friendly interface and one that allows them to see more details about the results they are seeing. One product review suggests that they would benefit greatly from seeing pictures of the facility. This same review suggested that their results should be narrowed to provide only what they filtered on even when they convert to viewing the map. An interview participant said that there are so many options that they need help narrowing down their search. Another interview participant said they would benefit greatly from knowing why they should be joining a particular business or activity (i.e. knowing what benefit it would have in their life).

Positive product reviews talk a lot about how they enjoy that they are able to see all of their favorite businesses in one place and organize their schedule there. They also enjoy being able to add services they book to their calendar.

4.6 What are their tasks?

The users of interest in these needfinding exercises are performing the task of searching for health and wellness businesses and services. Some are looking for new business to attend, others are looking for the schedule of a business/class that they already attend. There were also survey responses that mentioned using Mindbody to book services to attend with family and friends. Thus, another task of the user when booking certain health & wellness services is engaging with the community.

4.7 What are their subtasks?

One subtask of users searching for health and wellness businesses and services is filtering out the noise of an abundance of options and knowing how to choose the best fit for them. Additionally, another subtask of the users is gaining knowledge about what they will enjoy and what will benefit their health and wellness most.

4.8 Defining Requirements

When defining the requirements that our final interface must meet, it is important to consider things such as functionality, usability, learnability, accessibility, compatibility, and cost.

Users who are looking to find a new health and wellness business or service require an interface that is nearly invisible, in order to limit the amount of friction that exists between them and achieving their health and wellness goals. Pursuing our improved health and wellness, even for those who see it as a priority, can still be a difficult task to be motivated to do often because of the lack of immediate feedback. Therefore, if our interface is “clunky” or “slow” or “not intuitive” (to use some words seen in my interviews and analysis of product reviews) we will not be providing an interface that makes it easiest for users to achieve their goals. This means that it is something that should be invisible by design; the interface should not be difficult to learn.

In terms of functionality, the interface should provide curated results to the user and utilize information about the user to help personalize those results as well. Results should include reviews and quick quotes about why other users liked or disliked a business or service. Each business’s search result should also be accompanied by a short trailer that a user can watch in order to get an inside look at the culture and goals of the business as well as the facilities. This is important as users indicated a preference for choosing businesses and services when they found out about them through word of mouth. Additionally, there should be an option within the interface for a user to consult a coach who can discuss what benefits the business or service might provide them and if that is in line with the current goals of the users. Finally, users should be able to indicate if they are looking for a specific kind of community. Businesses should be able to tag themselves with keywords that might make them a match for that user and the interface should be able to suggest based on others who have looked at and/or booked services there.

I asked my interview participants whether they would prefer to search for and book a service on a mobile device or a laptop/computer and the answer was largely in favor of doing this task on a mobile device. Therefore, I think it is critical that this interface is accessible and functional on all mobile devices first,

but did receive feedback that there is still some value in being able to perform this task on a laptop/computer.

In order to evaluate the successfulness of a prototype, I would measure the amount of times users are able to favorite a business or service and how long that favoriting takes from the time of searching. Additionally, to take this evaluation a step further, I would measure the booking rate. That is, I would measure the number of times that a search yielded a booked class. These evaluations could be done with A/B tests. For example, some users could see trailers and others not and I would measure what impact this had on the number of items favorited as well as the number of services and classes booked. Finally, I would also want to measure user's feelings of success in achieving their long-term health & wellness goals. This could be done through surveys in the interface.

5 CONTINUED NEEDFINDING

I think that there is valuable information to find in the product reviews, so I do hope to continue finding ways to utilize that. In terms of a new needfinding exercise that I think my final proposed interface would benefit from, I would like to explore participant observation going forward. I realized the benefits this would provide me during an interview when a participant began using the Mindbody app and voicing what she was doing as well as the difficulties she was having. This experience was very different from other interviews where participants were solely recollecting their experiences searching for health and wellness services and businesses. It raised the questions of what types of filters would someone use if they were in an app dedicated to searching for health and wellness services. I did not ask questions about preferred filters and this is knowledge from which my interface could benefit.

6 REFERENCES

1. Connecting the World to Wellness. Mindbody. (n.d.). <https://www.mindbodyonline.com/>.
2. Müller, H., Sedley, A., & Ferrall-Nunge, E. (2014). Survey Research in HCI. *Ways of Knowing in HCI*, 229–266. https://doi.org/10.1007/978-1-4939-0378-8_10

7 APPENDICES

7.1 Appendix: Survey Responses

[{"id": "1622728975021", "text": "Which category below includes your age?", "answers": ["18-24", "25-34", "45-54", "55-64", "25-34", "25-34", "25-34", "25-34", "25-34", "25-34", "18-24"]}, {"id": "1622779558074", "text": "How do you currently find exercise classes or groups?", "answers": ["", "", "", "La fitness app", "Mindbody search", "Through friends or online", "Search for options online", "Online", "google search", "I dont", "Mindbody"]}, {"id": "1622729122379", "text": "How often do you use Mindbody?", "answers": ["Less than once a month", "A few times a month", "Less than once a month", "Less than once a month", "Less than once a month", "Less than once a month", "Less than once a month", "A few times a week", "Less than once a month", "A few times a week"]}, {"id": "1622729226895", "text": "Why do you search for health and wellness classes or groups??", "answers": ["Track my wellness", "I am trying to be healthy", "I do not use it", "Wellness", "Relaxation", "To feel better in my body", "I'm at the age where considering my overall health is of the ut most importance", "To exercise in a guided fashion", "usually looking for a specific type of exercise, want to try it at a new location", "I dont", "To better my lifestyle and achieve personal fitness and mental goals"]}, {"id": "1622729244990", "text": "How often do you go search classes with a specific business/studio in mind?", "answers": ["Never", "Usually", "Never", "Never", "Rarely", "Never", "Rarely", "Usually", "Sometimes", "Never", "Usually"]}, {"id": "1622729325658", "text": "How satisfied were you with the curated results provided based on your search? (If you answered \"Never\" in the previous question, choose \"N/A\")", "answers": ["N/A", "Neither satisfied nor dissatisfied", "N/A", "N/A", "Neither satisfied nor dissatisfied", "N/A", "Satisfied", "Satisfied", "Neither satisfied nor dissatisfied", "N/A", "Dissatisfied"]}, {"id": "1622729381962", "text": "How often do you search classes with a specific type of workout/session in mind?", "answers": ["Never", "Usually", "Never", "Never", "Rarely", "Usually", "Usually", "Usually", "Usually", "Never", "Usually"]}, {"id": "1622729443308", "text": "How satisfied were you with the curated results provided based on your search? (If you answered \"Never\" in the previous question, choose \"N/A\")", "answers": ["N/A", "Satisfied", "N/A", "N/A", "Neither satisfied nor dissatisfied", "Neither satisfied nor dissatisfied", "Neither satisfied nor dissatisfied", "Satisfied", "Neither satisfied nor dissatisfied"]}]

- Pursue goals in terms of health and wellness; research about what want and what should be goal; annual physical and physician tells things and based on those set up goals; going to gym/better way of eating
- Search for new ways to find health & wellness services? doesn't search for new ways, but at work has monthly health & wellness challenges where can learn; doesn't know that there are other ways
- Ever searched for classes at gym? yes, likes to bike and will go to cycling classes at gym
- Able to utilize resources in area? not familiar with resources, needs to get involved with other classes
- Things that would help search for resources? sometimes not aware of resources, would be beneficial to have an email or advertisement; like monthly health and wellness at work get an email about it so to know what challenge and benefits are and based on those can get involved
- When searching for classes at gym? mobile device; mobile app is better than desktop
- Usually planning far ahead because classes fill up very quickly

Participant 2:

- Yes health and wellness is important: "because it makes me feel my best, physically and mentally"
- Pursuing goals of health and wellness? rely on apple watch to maintain goals set for self
- Activities engaged in? 4-7 times a week 15 min cardio and 35 min weightlifting
- How does participant find activities to do during those times? what is available at the gym or going to a class
- How to choose a class to attend? find a class that has similar attributes to what participant enjoys and see if he likes it; test it out and gauge level of enjoyment
- Things that would make decision process easier? reviews
- Personalized search result? would be very helpful; open up fitness class scheduler, utilize previous classes and show new ones at different locations or various type of classes that would help diversify classes
- Where does the search for class take place? spontaneous/in the moment; feel like attending a new class

- What is most important when attending gym or class? one that challenges me to push myself to meet my goals while still being within range of motion
- Searched outside of participant's home city? No, have not
- How well able to utilize services/businesses in an area? difficult to find ones that are good fits because don't have resources; don't have way of seeing related classes and supplementing what he has currently been doing
- Pics/videos? 30 second clip would be really helpful; have a trailer
- Does use Mindbody, how well able to search ? if looking for specific business, able to favorite and these are readily available; very difficult to search for new class or business, never shows up with what looking for
- Search mobile for sure; on the go
- What could a dedicated app do to help achieve goals? refine searches based on history

Participant 3:

- Yes, because I care about how I feel and about performing both physically and mentally
- Ways of pursuing these goals? running or a specific class; not that good with eating, but good about working out
- Way of searching for classes? sign up for classes on Mindbody
- Sign up with specific business
- Found business through word of mouth
- Look for other activities? looks around sometimes but usually has an idea or specific place in mind when going on Mindbody
- Look for health & wellness activities in other apps? Podcasts; meetup; knows other apps exists but doesn't really use them
- Ever searched for a service in a city other than where the participant lives? one time did; had it in mind where would go; googles and then books through whatever service they have
- How well utilizing health & wellness business in the area? very well compared to average, could do better but comes down to time
- Know about other businesses in area? doesn't, a lot of information that doesn't seem to be able to take it all in

- Primary reasons for choosing to attend? exercise is critical; price, time, availability
- More inclined with videos/pictures/etc? right now have to judge a book by its cover, would be cool to get a trailer
- When searching? planning ahead of time
- Mobile or desktop? mobile, never desktop
- Things that might benefit personally in search? getting to know place without trying it; judge by its name/etc; experience without being there
- Would it benefit if results were curated to you? yes, but needs to go beyond just recommending a yoga spot if I went to one yoga spot

Participant 4:

- Yes health & wellness is very important; stress reliever, trigger of migraine is stress; working full time and has family full time, health & wellness is super important when juggling many priorities in life; live longer and feel younger
- How participant pursues these goals? Through diet - macro counting; HIIT exercises; Martial arts
- Likes to feel sense of community
- How do you go about finding new health & wellness activities? lives in small town; no app; uses Facebook
 - a. martial arts – found through google; facebook groups
 - b. HIIT exercises is found through word of mouth, neighborhood gym
- Ever looking for different activities? Was at one point looking for cross fit; looks through Facebook and google; found gym and attended and stopped after injury
- Usually looking for specific type of workout
- How well able to utilize health & wellness businesses in the area? no, has to go out and find it; doesn't help when community itself is not the healthiest
- How well were search results curated? 100% match; limited number of options because of small area
 - a. How did participant make decision? Through reviews; google review and look at facebook page and check out reviews

- If there were pictures/videos would it help decide? optional, not necessarily that helpful
- Under what conditions; looking ahead of time
- Any thing else to add? whenever searching for certain activity, would look into is it a stress reliever/what is the benefit of the activity
- Looked for meditation; sometimes works and sometimes doesn't; has to do with the class itself
- Does use Mindbody for massage
 - a. Experience? Knows just one service that does best massages and found through Mindbody; knew about Mindbody because of google search; yoga studio that asked to download Mindbody app to pay; does see fitness, wellness, and beauty in the app
 - b. Does not use because it does not give her what she wants
 - c. Neighborhood gym example would not have been able to find through mindbody
- Participant begins to use the app during interview: Uses search bar to look for meditation; it shows her 4 studios and one is the one she already goes to
 - a. Results helpful? Yes, but doesn't know how to expand location originally (not intuitive) so she goes to location search bar and expands mileage to see more results
 - b. Originally looking at 5 miles within location and it yielded 4 results
 - c. Expands location and now sees a lot of results that are within 2 miles
 - d. Still searching meditation, and not all results are meditation
 - e. She then realizes she was in meditation and went to expand location from 5 miles to 15 miles and then it cleared original search and went to any wellness to 15 miles
- Not intuitive

Participant 5:

- Health and wellness is one of the most important things – more important than money, health is part of you
- In what ways do you meet your needs for health & wellness? stay active; eat a healthy diet; records things about self to monitor (pay more

attention to it); youtube recommendations relating to health; goes based off knowledge of what is healthy

- In what ways do you pursue activity? morning routine (pull-up machine) and does pull-ups, crunches, leg raises, etc.; tries to take walks (1 mile) and go for runs; has a pomotroid which has an alarm on laptop to remind user to get up and move
- How do you find information about activities you do? morning routine was influenced by family
- How often do you participate in group classes? (or go to business for health & wellness) - used to do martial arts but stopped because of injury; did soccer with group; Zumba classes
- How did participant find business where he practiced martial arts? has been to a few; most recent one heard about through a mutual friend
 - a. Tried out different businesses for martial arts
- How did participant find Zumba class? signed up because a friend told to sign up through a gym membership
 - a. Signed up for Zumba specifically
- Likes soccer so specifically signed up for that
- Would participant be interested in personalized suggestions for health & wellness classes/business/services? Would be cool
- Meetup App - has used; looked for classes through this but it wasn't always what he was looking for or showed up for the class and there weren't very many people
- Doesn't know where people gather for specific activities
- How could a dedicated app benefit?
 - a. Hiking à interested in finding groups in area
 - b. Meetup does have hiking meetups but they are far from where lives
- If searched for something would primarily be interest based; such as learn a foreign language; wouldn't necessarily look for activities to benefit health & wellness
- Ever looked for a business/service in a new city? Visited a friend in Germany and was interested in their martial arts and joined a class there; knew someone else going so joined
- Mobile/desktop/both? if hears good reviews about particular app, will download and try it out but if hears bad reviews about it, would prefer to go to the website

- Anything else to add? would be nice to have a platform that offers suggestions; usually googles and sees what suggestions come up; would prefer a dedicated app because google has paid ads so not always in best interest
- “Other people like you also interested in”
- Friends use classes to meet people
- Emphasizing wellness would help; if saw recommendations and then it told a brief description about the health benefits

7.3 Appendix: Analysis of Product Reviews

CSV of product reviews can be found [here](#).

Results of training data for sentiment analysis based on keywords (using Python):

Most Informative Features		
easy = True	pos : neg	= 25.7 : 1.0
track = True	pos : neg	= 23.0 : 1.0
constantly = True	neg : pos	= 21.9 : 1.0
delete = True	neg : pos	= 17.4 : 1.0
crashing = True	neg : pos	= 16.8 : 1.0
convenient = True	pos : neg	= 14.9 : 1.0
instructors = True	pos : neg	= 13.6 : 1.0
love = True	pos : neg	= 13.6 : 1.0
highly = True	pos : neg	= 12.9 : 1.0
says = True	neg : pos	= 11.7 : 1.0
workouts = True	pos : neg	= 11.5 : 1.0
freezing = True	neg : pos	= 11.1 : 1.0
helpful = True	pos : neg	= 11.0 : 1.0
helps = True	pos : neg	= 11.0 : 1.0
won't = True	neg : pos	= 10.9 : 1.0
frustrating = True	neg : pos	= 10.6 : 1.0
deleted = True	neg : pos	= 10.5 : 1.0
teachers = True	pos : neg	= 10.5 : 1.0
wonderful = True	pos : neg	= 10.5 : 1.0
allows = True	pos : neg	= 10.1 : 1.0
worked = True	neg : pos	= 9.4 : 1.0
instructor = True	pos : neg	= 9.0 : 1.0

money = True	neg : pos	=	8.8 : 1.0
place = True	pos : neg	=	8.2 : 1.0
buggy = True	neg : pos	=	7.7 : 1.0
later = True	neg : pos	=	7.7 : 1.0
log = True	neg : pos	=	7.4 : 1.0
nothing = True	neg : pos	=	7.4 : 1.0
ease = True	pos : neg	=	7.4 : 1.0
spot = True	pos : neg	=	7.4 : 1.0

Word Cloud



Figure 3—Word Cloud created from the analysis of product reviews.