Assignment M1

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***Abstract*—The objective of the project is to redesigning the task of **navigating the search results on the Amazon website**. The product search is one of the most widely performed activities on the Amazon website, however, the efficient navigation of search results is as important as the accuracy of search results for a user. Despite using advanced NLP and AI algorithms for search, Amazon returns hundreds or thousands of results for each search due to the sheer volume of the products. The desired product does not always come on top of search results and needs separate task of navigation through the returned results. This project would attempt to redesign the search result interface to improve the search result navigation efficiency. The project would limit its scope only to the search result navigation on the Amazon website and not in the Amazon Mobile Application.**

1 PROBLEM SPACE

The product search result is based on the completeness and relevancy of the keywords used, which requires some level of user expertise. Hence most of the time users use post search navigation to find out the needed product. The filtering and sorting functionalities which help in the navigation is currently cumbersome and the project assumes that there is a scope to improve the search result navigation interface to make the navigation experience friction less.

Generally the user might look for the exact product or look for the narrow list of products from which he can select the product. In both cases, the user might need to perform some actions post search, like filtering or sorting to navigate to the desired result. Filtering the results usually involves a combination of multiple filters such as price range, brand, category, Prime delivery, etc. Similarly the sorting also might be based on different parameters like price, relevance, customer reviews, etc.

In the current interface shown below the filters are available on the left vertical tile and the filters are grouped into different criteria. The tile is too long as there

are multiple criteria and multiple categories within each of the criteria. The sort is available in the top right corner and is almost invisible. In the below image the user has searched for the term "JBL Speaker" and the search has returned 1000 items with multiple pages. Hence it is obvious that the user needs to perform multiple operations post search to narrow down the results and find the desired product.

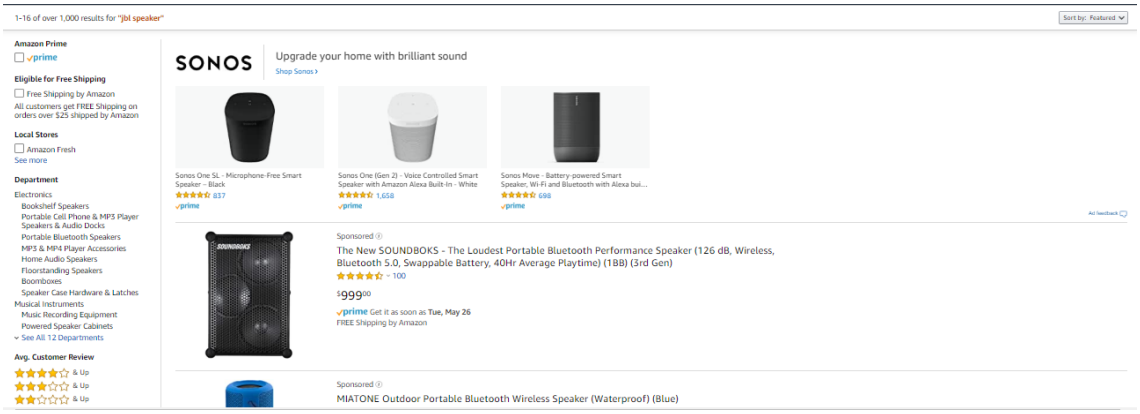

Figure 1—Results Navigation Interface - Existing

2 USER TYPES

The project considers the users with different levels of expertise ranging from novice users to expert users. The demographics of the user would also be quite wide as the scope would include almost all the users using the Amazon website. However since we consider only the desktop website and not mobile application the typical age of the user could be in the range of 25 to 70, although the assumption needs to be validated. Also, from geography perspective all the persons from United states of America who uses e-commerce sites could be the potential users. The motivation of all the users can be either to find the exact product they are looking for from the search results or to find the narrow and relevant list of products to browse and select the best available product.

Although the users would be from the wide range mentioned above, the project would ensure the need of each subset such as different gender, age group, and different expertise level are catered. Needfinding exercises would be designed in a such way to get the feedback and input from the diverse set of users to ensure different needs are catered.

3 NEEDFINDING PLAN 1 - EVALUATION OF EXISTING INTERFACE

The first need-finding plan considered for the project is evaluating the existing interface. The evaluation would be formative and qualitative to receive feedback from users on the current interface. The users would be using the current Amazon interface to find the product they are looking for by navigating from the search results. Based on the expertise of the user and the accuracy of the search term used by the user they might find the product at the top of the search result. However, the evaluation would focus on the navigation of the results when not so accurate search term is used.

The users could be anyone who uses the Amazon website for shopping and can be anywhere from the USA. The user would be asked to search for products of their choice and the feedback would be received on the post search navigation. The goal of their action is to find out the exact product they are looking for in the existing Amazon Interface. Their task is to navigate to the product whereas their subtasks would be searching, filtering, and sorting the search results.

Although most of the performance measures would be qualitative, there would be some quantitative measures like the number of clicks to find the product post search, time taken to navigate to the desired product, and the number of different activities performed. However most of the feedback collected would be in the form of free-text comments which need the effort to analyze and summarize the comments. The feedback would also capture the positive aspects of the existing interface.

The evaluation of the existing interface would be conducted in the field setting rather than the lab setting and the feedback would be collected in the form of written notes. Ease of use of the current interface, improvement suggestions, pain points, missing functionalities, overall satisfaction would be the core objective of evaluating the current interface. The feedback would cover a set of predefined questionnaires based on the above objectives as well as the open-ended questions on the actions they performed, the expectations on the performed action, actual outcome of the performed action.The gap between the expected outcome and actual outcome would be recorded as part of the feedback.

Before the evaluation experiment, a set of instructions on what to accomplish, how to experiment,expectations from the experiment would be given to the users. Apart from the feedback on the existing interface, feedback on the actual experiment would also be collected to validate the bias in the response as well as to improve the experiment in the next iteration.

The evaluation of existing interface by the users might result in Bias, especially confirmation bias and observer bias. The evaluation is conducted with the preconceived notion that the existing interface is not efficient. Hence the answers could be inferred from the same perspective resulting in confirmation bias. This could be overcome by just understanding the possibility of bias and self-validating our own beliefs. Due to the same preconceived notion, our instructions and questions might influence the user to come up with the things that we consider as the problem with the existing interface. This would be avoided by reviewing the questions and instructions with the second person.

4 NEEDFINDING PLAN 2 - SURVEYS

The second needfinding approach used would be Surveys. The objective of the survey questions would be to understand the typical users need on the product search rather than the shortcomings of the existing interface as in the previous needfinding approach of evaluation. The survey questions would mainly focus on their current approaches to product search or navigation. E.g. if the user searches for the product after selecting the department(within a department) or does a generic search and the applies filter on the department and so on.

Below are some of the probable questions that can be part of the survey.

- How often do they perform product search on an e-commerce website?
- What are the main challenges in navigating to the desired product from search results?
- What are the typical filter criteria they look for in the search result navigation?
- What is the sorting criteria they use often?
- What are the criteria in which they apply a multi-select filter?
- What are the typical filter criteria used to filter out the irrelevant products from search results?
- What is the most frequently used filter criteria?
- What are the typical products for which users prefer navigating through prod-

uct categories rather than actual search?
- How important is seller information in the e-commerce marketplace? Does the user prefer only the established sellers?
- What characteristics does the user include in the search term? like Brand, dimensions, color, etc. ?
- How intuitive are the filter criteria in the interfaces they typically use?
- What is their satisfaction level with the current interfaces in product search navigation?

The questions are not complete and final but a representative for the survey.

Most of the data collected from the survey would be qualitative data. Post-processing of the qualitative data collected would be carried out to convert the data into quantitative data wherever possible. However there would be some quantitative data collected based on their experience with the product search navigation.

The survey users would be from diverse backgrounds and with different user expertise levels. The response summary could be aggregated based on the user expertise level to understand each group's needs. Novice user's needs and pain points could be completely different from the expert user's needs. This would help us in balancing the requirements from the survey. Also the survey questions would be grouped into functionality based, usability based, and experience-based which in turn would be used to group the needs into these three categories.

The major risk with the needfinding by surveys is observer risk. The questions are designed based on our understanding and opinion about the interface which would directly impact the user's answers. Hence the questions need to thoroughly validated and finetuned by the other person. Also the questions could be with the narrow focus based on our opinion and hence limit getting the actual need from the user. Multiple open-ended questions need to be included in the survey to gather the actual need from the users. Also the survey tends to have high recall bias as the user might not recall the actual issues. This would be avoided by encouraging the user to perform the activity with the existing similar interfaces before answering the survey questions.

5 NEEDFINDING PLAN 3 - PARTICIPANT OBSERVATION

The third needfinding plan would be Participant Observation. Although the participant observation would over-represent my experience and opinions in the needs, the particular project of redesigning the Amazon search result navigation has a scope to simulate multiple searches and navigate to find the desired product which would reduce the influence of fixed opinion or experience. Repeating the exercise with different products in different categories would bring in the needed variation to the observation.

Participant observation, apart from providing its own feedback and inputs, it helps to relate and understand the output and needs from the previous two needfinding exercises. Also participant observation helps to validate the responses from other need-finding exercised and further refine some of the high-level needs from the other exercises.

The experiment would involve coming up with the list of products I want to search and define the typical search term I would use for those products. The experiment would be conducted for a wide range of products so that maximum feedback is collected. Once the product list and search term are finalized, I would perform the search and would try to navigate to the desired product from the search results. The goal is to navigate to the desired product by performing some actions post search operation.

The data collected would contain both qualitative feedback as well as the quantitative metrics. Each action performed to navigate to the product would be recorded and feedback for each of these actions or subtasks would be noted. The feedback would be mostly qualitative explaining what was the typical expectation from the action and what was the actual result of the action. Also the ease of performing that particular action would also be noted. The quantitative metrics would be the number of actions performed before navigating to the desired product, time is taken from actual search to navigation to the product, the number of clicks for each action, and the total number of clicks in the navigation process. These qualitative and quantitative data together would be used to come up with the needs for redesigning based on the participant observation.

The most important bias resulting from the participant observation is confirmation bias. My observations would mostly be based on my preconceived ideas of

how the new interface should look like. This could be avoided by focusing on the actual objective of the experiment which is just recording the experience and observation rather than redesigning the interface. Also, the selection of a completely new set of products would help in eliminating the opinions about the existing interface. Sometimes the selection of products and search terms would result in observer bias by influencing m own navigation process and feedback. Hence the selection of products should be done as random as possible. By avoiding these biases, participant observation can provide genuine feedback and the need for redesigning the interface.