Problem researching: Exploratory features

Name: Jordan

Link: <https://www.researchgate.net/publication/376395724_Using_Amazon_as_a_case_a_mixed-method_study_to_explore_the_impact_of_Personalised_Recommendation_systems_on_User_Experience_and_Decision-making>

<https://aws.amazon.com/blogs/industries/revive-lost-revenue-from-bad-ecommerce-search-using-natural-language-processing/>

“Common challenges to keyword-base searches are: typos, synonyms and regional dialects, feature-based searches, filter-based searches, context-based searches, and thematic searches.”

“not the intent of the user.”

**Refer to BNT PDF on slack**

* Extended Search Behavior: Consumers tend to search extensively, with an average of 36 searches per purchase spanning over 3.5 distinct days. This suggests that exploratory search behaviors are critical in the decision-making process. Users refine their search terms progressively as they gain more information, which aligns with how filters help users navigate the product space.
* Impact of Search Refinement: As users engage in more exploratory search, they tend to refine their queries by adding more terms, reducing reliance on default sorting algorithms like "best match," and focusing more on factors like price. The increased specificity over time implies that filters, especially those related to pricing, product features, and conditions, can significantly affect how users search and make buying decisions.
* Price Sensitivity and Search Returns: Users who search more tend to find lower prices. The data shows that each additional search page returns approximately a 25-cent saving. This indicates that exploratory search can be valuable for users in finding better deals, and that filters related to price and product comparisons are particularly impactful.
* Protracted Search Behavior: For some users, the search process can span weeks, with 5% of users still searching for the same product 30 days after their initial search. This suggests that users who rely on exploratory search are patient and willing to invest more time in refining their options, and it highlights the importance of robust filtering options to facilitate this ongoing search process.
* User Experience with Filters: The document suggests that the ability to refine search results is a key part of successful purchasing decisions. Filtering systems that support detailed and dynamic adjustments, such as sorting by price or narrowing by product category, can enhance user engagement and lead to better consumer outcomes.
* In summary, exploratory search and filter features play a significant role in influencing user buying behavior. The ability to refine search results helps consumers make more informed decisions, often resulting in cost savings and increased satisfaction with their purchases​(BNT\_search).

**Thematic search**

Research:

<https://www.sciencedirect.com/science/article/abs/pii/S0305054803001941>

Problem researching: DS - Gather evidence to support decision of returning users vs new users

Result: Mobile, 68% of their gross merchandise sales from transactions on their mobile in Q3 2023

Support: <https://www.marketplacepulse.com/stats/etsy-mobile-sales-percentage#:~:text=Percent%20of%20sales%20originating%20from,over%2Dyear%20from%2067.0%25>.

<https://www.marketplacepulse.com/about>

<https://backlinko.com/etsy-users#etsy-mobile-sales>

Incorporating NLP into user recommendations:  
[Understanding Thematic Search in Site Search: Enhancing User Experience and Content Discovery](https://www.lupasearch.com/blog/thematic-search-in-site-search/)

## **Etsy Statistics: Top Picks (2024)**

* Etsy generated a revenue of $2.748 billion in 2023.
* Around 500 million people visit Etsy every month.
* Nearly 3 in 10 Etsy users are from the age group of 25 to 34 years.
* Etsy had 97.3 million active buyers worldwide in 2023.
* Repeat buyers make 81% of purchases on Etsy.
* Etsy had 7.47 million sellers in 2022.

<https://www.yaguara.co/etsy-statistics/>

**three-level model**

**Level 1: User Segmentation**

**At this level, you divide users into different segments (e.g., new users, non-active users, and active users). Each segment gets its own model based on the unique behavior of that group.**

**Level 2: Feature-Based Models**

**In the second level, you have individual models trained on different features, such as:**

* **Search History Model: Predicts what the user is interested in based on recent searches and keywords.**
* **Shopping Basket Model: A market basket analysis model that suggests products based on items already in the user’s cart or previous purchases.**
* **Time Spent Model: Captures how long users spend on specific product pages and uses that to infer interest in similar products.**
* **Seasonal/Holiday Model: Recommends products based on upcoming holidays or events, and the user's past behavior during these times.**

### **Level 3: Meta-Model (Stacking the Models)**

**At this level, the meta-model combines predictions from the segment-specific models and feature-based models from the first two levels. The purpose of this level is to learn how much weight to give to each model for a given user.**

* **The meta-model could be a neural network, gradient boosting machine, or even a simple linear model that learns how to combine the outputs of the previous models.**
* **It updates dynamically as more data is gathered on user behavior, adjusting the importance of each model (e.g., placing more weight on shopping basket data during the holiday season or on search history for frequent shoppers).**

**Benefits:**

**Granularity in Segmentation**

**Incorporating Diverse Features**

**Personalized, Adaptive Recommendations**

**Further consideration:**

**-Feedback Loop:**

* **Implement a feedback mechanism where user interactions (clicks, time spent, purchases) are fed back into the models to improve them over time.**

**-Personalization:**

* **As you gather more data on a user, the system can shift from generalized models to personalized models for that user.**

**-Hybrid Models:**

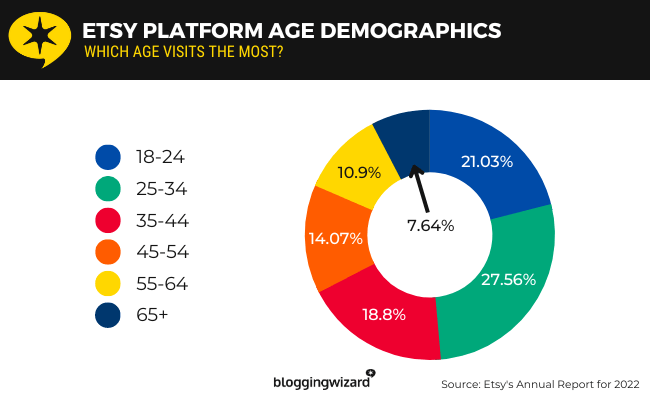
* **Consider combining content-based filtering and collaborative filtering for better recommendations.**

**-Scalability:**

* **Ensure that your system can handle the increasing amount of data and users.**

## New Features Research

For age:



**18-24: Trend Seekers** This group is all about **discovering unique items**, often trending jewelry, fashion accessories, or DIY supplies. They are in their late teens to early twenties, navigating college life, dorm room decorations, and social events.

**25-34: Home Makers & Gift Buyers** These buyers tend to be more settled, potentially in the early stages of home ownership or family life. They're focused on buying **personalized gifts**, **wedding items**, or **home décor** like wall art and furniture. This group often looks for products that add personality to their living spaces.

**35-44: Family-Oriented Shoppers** This age bin reflects parents or more established adults purchasing for their families. They often buy **toys, home organization products**, and **clothing for children**. Craft supplies and DIY materials are also popular, as these customers might engage in creative projects at home.

**45-54: Established Adults** At this stage, Etsy shoppers are interested in **higher-end home furnishings**, **vintage finds**, or **custom gifts** for special occasions. They may also be seeking items for hobbies or leisure pursuits, such as crafts or knitting materials.

**55-64: Empty Nesters** This group is looking for products that cater to personal interests and hobbies. **Handmade crafts**, **antiques**, and **one-of-a-kind home décor** are popular here. They're also inclined to buy for children or grandchildren, especially around holidays.

**65+: Retired & Leisure Buyers** The oldest age bin often looks for **nostalgic vintage items** or **craft supplies** for hobbies. Personalized gifts and custom-made products also appeal to this group, especially when shopping for family members.

1. If the intended recipient is a baby (0-2), then we can use the text from the product description
2. 3-12 children,
3. 13-17 teens
4. The rest follow above graphic

To recommend gifts for the age groups 3-12 (children) and 13-17 (teens) on Etsy, we can focus on popular categories and themes specific to each demographic, based on their interests and trends commonly found on the platform.

### **For Children (Ages 3-12)**

At this stage, kids are drawn to colorful, playful, and interactive items that fuel their imagination and creativity. Etsy provides a variety of products that appeal to both kids and their parents, who often buy gifts for their children.

#### **Key Gift Ideas:**

1. **Personalized Toys**: Custom wooden toys, plush animals, or personalized name puzzles are common favorites for younger children. These items are engaging and can be used to develop cognitive skills.
2. **Craft Kits and DIY Projects**: Creative children might enjoy craft kits like bead-making, slime kits, or painting sets. These are great for engaging in hands-on activities.
3. **Dress-Up Clothes**: Fantasy-themed costumes (e.g., princess dresses, superhero outfits) are highly popular for kids who enjoy role-playing.
4. **Educational Tools**: Montessori-inspired toys, flashcards, and learning aids appeal to parents looking for educational gifts for younger children.
5. **Room Décor**: Personalized wall art, night lights, or colorful bedding that reflects children’s favorite animals or themes.

#### **Popular Etsy Categories for Children:**

* Toys & Games
* Educational Crafts & Kits
* Personalized Gifts for Kids
* Kids’ Room Décor

### **For Teens (Ages 13-17)**

Teens tend to gravitate toward gifts that reflect their individual style, hobbies, and social connections. They’re drawn to unique, trendy, and personal items, making Etsy’s handmade and customized products particularly appealing.

#### **Key Gift Ideas:**

1. **Custom Jewelry**: Personalized necklaces, bracelets, or rings with initials, birthstones, or meaningful symbols resonate well with teens who are beginning to develop their own sense of style.
2. **Tech Accessories**: Customized phone cases, laptop decals, or pop sockets are practical yet fashionable gifts for tech-savvy teens.
3. **Room Décor**: Teens enjoy decorating their personal spaces with aesthetic and trendy items like tapestries, wall art, fairy lights, and posters that reflect their personality or favorite bands/movies.
4. **Self-Care Products**: Skincare gift sets, bath bombs, and beauty products are popular with teens, especially as they become more interested in self-care routines.
5. **Hobby Kits**: For creative teens, art supplies, DIY jewelry kits, or embroidery sets make excellent gifts.
6. **Clothing & Accessories**: Trendy clothing items like oversized hoodies, graphic tees, or unique hats and accessories can be personalized or handmade, aligning with their style preferences.

#### **Popular Etsy Categories for Teens:**

* Personalized Jewelry
* Tech & Gadgets
* Room Décor
* Beauty & Self-Care
* Clothing & Accessories