

Sustainability and the Fast Fashion Industry: The Role of Personalization Algorithms in Shaping Brands' Global Reputation

By

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Introduction and Purpose of Research

The production of fast fashion clothing has doubled between 2000 and 2014 with reduced costs, more efficient operations, and increased consumer spending fueling demand. Additionally, the number of garments bought per person has increased by approximately 60% during the same period. In five large developing countries including Brazil, China, India, Mexico and Russia, apparel sales grew eight times faster than it did in Canada and the United States between 2000 and 2014. However, nearly three-fifths of all clothing ends up in incinerators or landfills within a year of being produced (Long & Nasiry, 2019). According to Chavero (2017), 20% of the toxins discharged into the world's waters are from the textile industry, which uses billions of liters of water to make all kinds of garments. Meanwhile, there are limited recycling options for fast fashion items, as many second-hand stores often reject recycling those items by claiming poor quality and low resale value. Amidst growing concerns over such unsustainable practices, there has been a notable shift towards recognizing the importance of sustainability and ethical conduct within the fast fashion industry (Bhardwaj & Fairhurst, 2009).

In related manner, personalization (e.g., recommendation system, artificial intelligence, and personalized recommendation)), which focuses on individual preferences and experiences associated with a brand, has become a pervasive aspect to enrich consumers' experience journey in the past ten years (Kent et al., 2023). The fast fashion industry has quickly adapted itself by adding various personalization options and significantly benefited from such action.

Personalization strategies certainly provide great benefits not only for manufacturers but also customers. However, recent advancements in data-driven marketing, such as real-time personalization strategies, have heightened consumer vulnerability to various forms of data breaches. The growing collection of sensitive data amplifies these risks and highlights consumers' lack of knowledge and control over their personal information (Cloarec, 2022). In this context, Colang's criticism, as cited by Marino (2022), that technological progress does not necessarily equate to moral progress, becomes particularly relevant. More importantly, many consumers remain caught in the informational privacy paradox, where, despite strongly acknowledging the importance of privacy, these consumers continue to share personal information across various digital platforms (Kokolakis, 2017).

Research Design

This research project used Brandwatch to conduct a comprehensive media monitoring and analysis to assess the global reputation of fast fashion brands concerning sustainability. Specifically, from Jan. 1, 2023 to June 30, 2024, X and Reddit messages related to sustainable

topics of fast fashion and fast fashion brands (e.g., Shein, Zara, H&M, Forever 21) were collected. Furthermore, two categories were created on Brandwatch to delve deeper into the mentioned messages: one focusing on personalization algorithms, and the other on brand reputation and consumer trust. The specific topics (e.g., sustainable practices, personalization algorithms, and brand reputation and consumer trust) of these messages and the differences between topics were analyzed. Additionally, demographic metrics, including generational and professional differences were analyzed across X and Reddit.

Key Finding 1:

Among fast fashion sustainability conversations on X and Reddit, those related to personalization algorithm technologies exhibit a less negative sentiment compared to those focused on general brand reputation and consumer trust.

Table 1.1: Mention breakdown by channel

	X	Reddit	Total
Sustainable practices	47,350 (72%)	18,649 (28%)	65,999
Sustainable practices and brand reputation and consumer trust	2,400 (35%)	4,415 (65%)	6,815
Sustainable practices and personalization algorithms	310 (41%)	442 (59%)	752
Sustainable practices and brand reputation and consumer trust and personalization algorithms	11 (5%)	224 (95%)	235

Table 1.2: Sentiment breakdown by topic

	Negative	Neutral	Positive
Sustainable practices	17,562 (27%)	43,890 (66%)	4,547 (7%)
Sustainable practices and brand reputation and consumer trust	1,991 (29%)	4,096 (60%)	728 (11%)
Sustainable practices and personalization algorithms	79 (11%)	643 (85%)	30 (4%)
Sustainable practices and brand reputation and consumer trust and personalization algorithms	30 (13%)	186 (79%)	19 (8%)

The data in Table 1.1 shows a significant disparity in the volume of conversations across different platforms (X and Reddit) and topics. The majority of discussions (72%) on sustainable practices occur on X, indicating that this platform is more active in promoting or discussing sustainability in the context of fast fashion. Specifically, the top 20 influencers on this platform comprise nine business news accounts (e.g., @business), seven sustainability advocates and organizations (e.g., @yourecostylist), three manufacturers of beauty products (e.g., @nutrallift2), and one fashion designer (e.g., @Maryemame).

On the other hand, Reddit sees a higher percentage of conversations that combine sustainable practices with brand reputation and consumer trust, suggesting that Reddit users may engage in more in-depth discussions on these interconnected topics. Among the top 20 subreddits, eight focus on fashion (e.g., r/femalefashionadvice), six are related to sustainability and environmental issues (e.g., r/anticonsumption), two are location-specific (e.g., r/europe), and four are classified as peripheral subreddits. Overall, while X serves as a platform for broader sustainability discussions dominated by influential figures and organizations, Reddit fosters deeper, more intricate dialogues that explore the complexities of sustainability in relation to brand reputation and consumer attitudes.

Furthermore, personalization algorithms, when combined with sustainable practices, are the least discussed topic on both platforms, accounting for only 752 total mentions. This could indicate that while personalization algorithms are a critical tool for fast fashion brands, their connection to sustainability is not yet fully recognized or discussed by consumers. Additionally, the small number of conversations that combine all three topics—sustainable practices, brand reputation, and personalization algorithms—suggests a niche but potentially influential area of discussion that could be further explored.

Table 1.2 provides a detailed sentiment breakdown, revealing that discussions about sustainable practices generally maintain a neutral tone (66%), with a moderate amount of negative sentiment (27%). When examining engagement scores and reach of these posts, it is observed that female shopping experiences, complaints, and anecdotal posts generally achieve relatively higher engagement and reach on both platforms, followed by posts from politicians and content related to sustainable news. Conversely, when sustainable practices are linked with brand reputation and consumer trust, the negative sentiment increases to 29%, possibly reflecting consumer skepticism about the sincerity of brands' sustainability claims.

In contrast, topics related to personalization algorithms show the least negative sentiment (11%) and the highest percentage of neutral sentiment (85%). This suggests that while personalization algorithms are not yet a major driver of positive sentiment, they are not associated with the same level of negativity as other topics, such as brand reputation. This neutral stance could imply that consumers are either indifferent or cautiously optimistic about the role of personalization

algorithms in fast fashion, highlighting an opportunity for brands to improve their reputation through better communication and implementation of these technologies. Moreover, conversations on X and Reddit about personalization algorithm-related technologies exhibit significantly less negative sentiment (13%) compared to discussions on general brand reputation and consumer trust (29%). This suggests that personalization algorithms may contribute to a more favorable perception among consumers.

Key Finding 2:

Reddit appears to be a more conducive environment for discussing and potentially accepting the integration of personalization algorithms with sustainable practices and brand reputation efforts.

Figure 2.1: Sentiment breakdown of the conversations about **sustainable practices and brand reputation and consumer trust** by platform

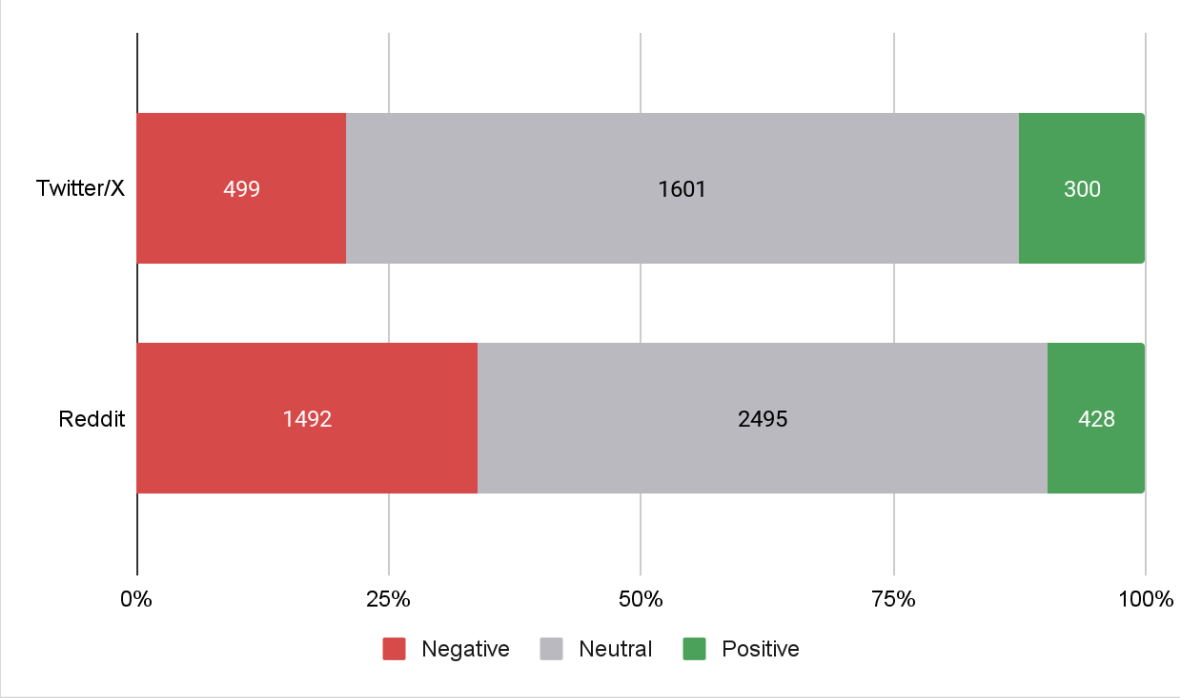
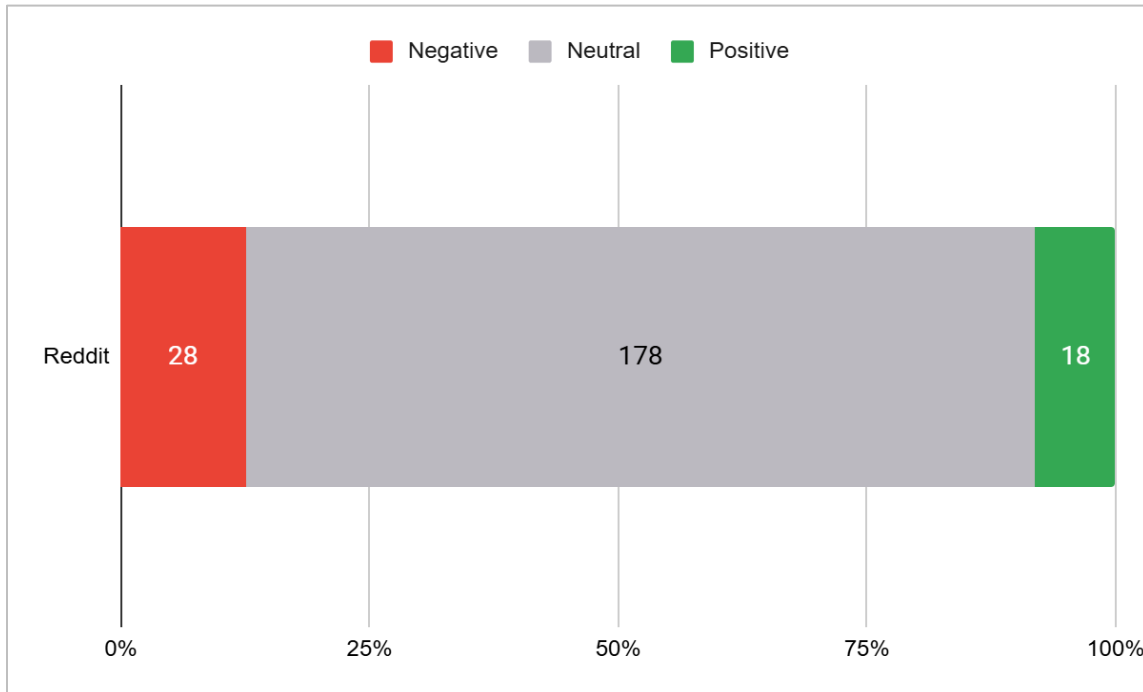


Figure 2.2: Sentiment breakdown of the conversations about **sustainable practices**, and **brand reputation and consumer trust**, and **personalization algorithms** by platform



* The total volume of data for X is insufficient to support significant conclusions.

Figure 2.1 shows that on Reddit, conversations about sustainable practices combined with brand reputation and consumer trust tend to have a higher percentage of negative sentiments. This is particularly evident when compared to X, where the same conversations show a slightly more balanced distribution of positive and negative sentiments. This suggests that X might be a platform where users are more critical or skeptical about brands' sustainability efforts, especially when these efforts are linked to broader brand reputation concerns. Reddit, on the other hand, appears to foster more in-depth discussions that may include both positive and negative views, leading to a more diverse sentiment profile.

On the top of it, Figure 2.2, which examines conversations that combine sustainable practices, brand reputation, and personalization algorithms, shows a similar platform-specific trend. On X, these discussions are predominantly neutral, with a noticeable amount of negative sentiment. However, on Reddit, while the majority of the sentiment remains neutral, there is a slight increase in positive sentiment compared to X. This pattern suggests that Reddit users may be more open to the idea that personalization algorithms, when integrated with sustainability and brand reputation strategies, could have a positive impact. X users, however, seem to approach these topics with a degree of caution or skepticism, possibly due to the platform's fast-paced and often polarized nature of discussions.

Key Finding 3:

In discussions on fast fashion and sustainability, Millennials generate the largest number of conversations and dominates across all three sentiment categories when compared to Baby Boomers, Generation X, and Generation Z.

Figure 3.1: Sentiment breakdown by generation on X

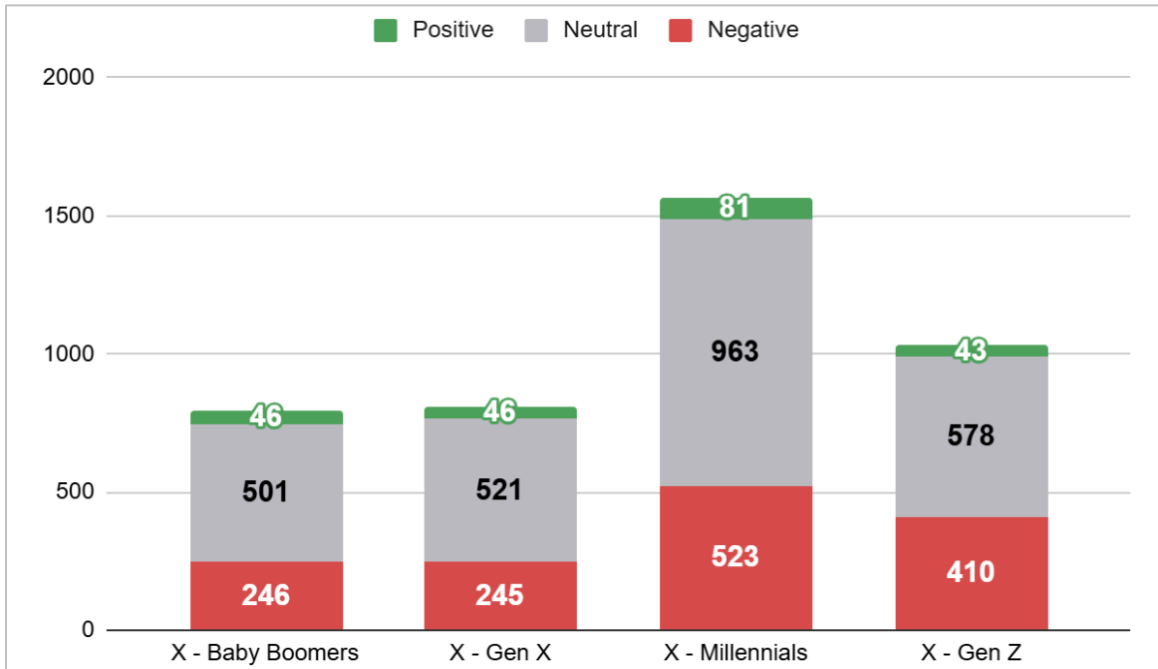
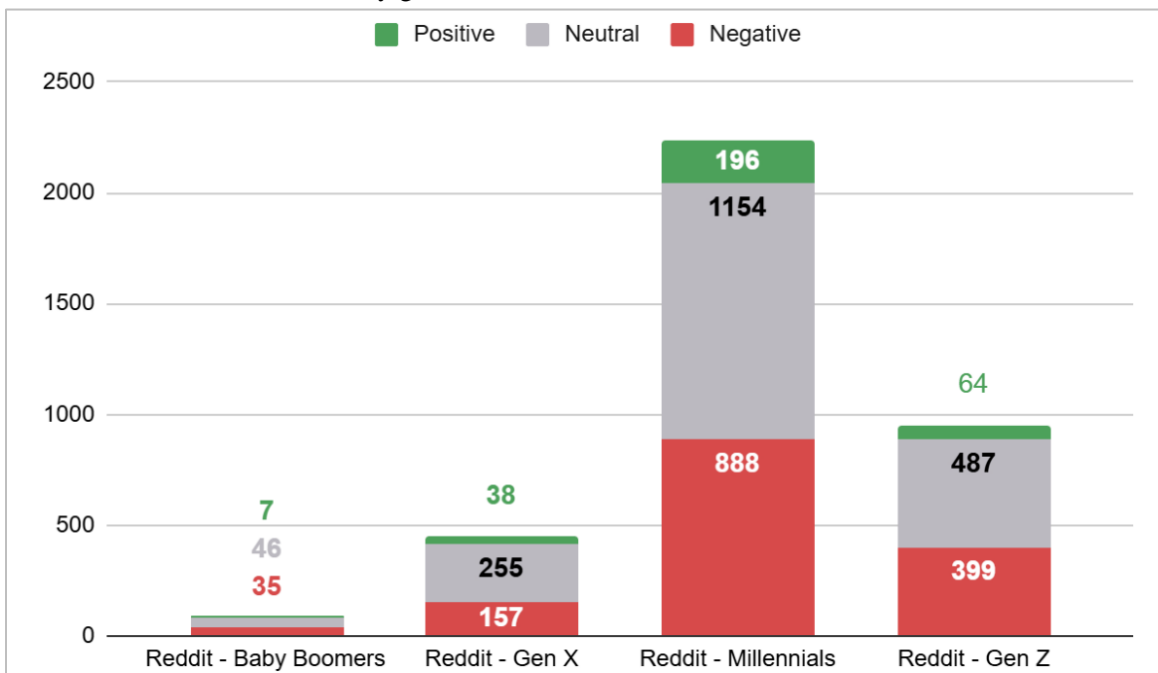


Figure 3.2: Sentiment breakdown by generation on **Reddit**



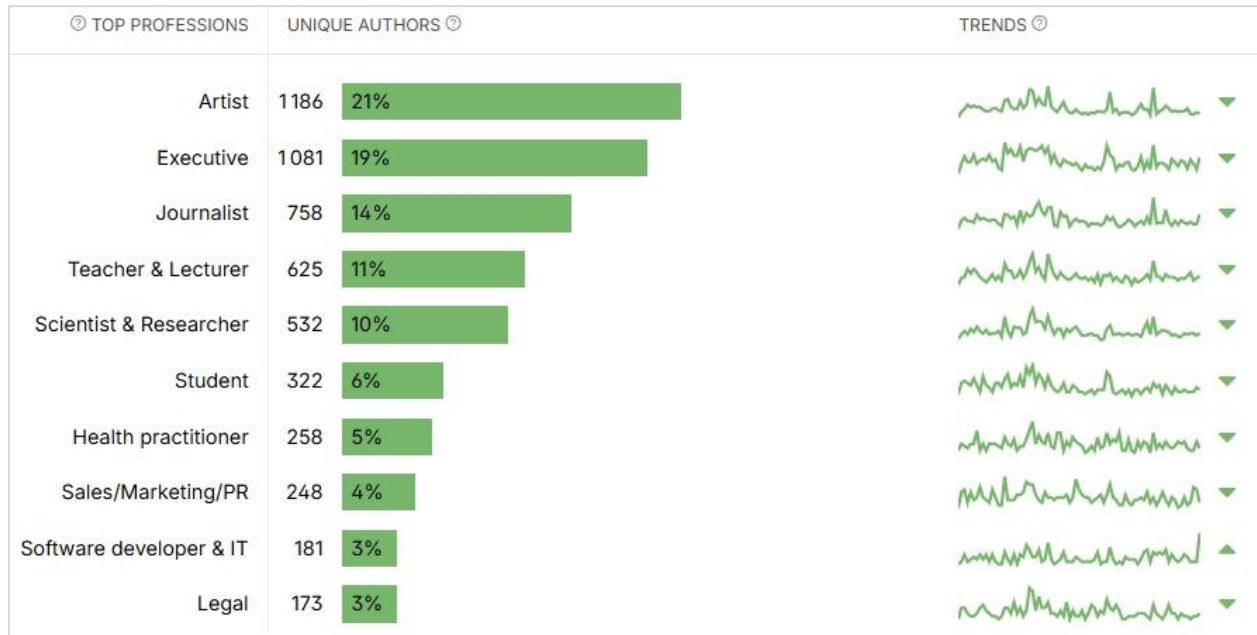
The data from Figure 3 and Figure 4 underscore the role of generational dynamics in shaping sentiment around fast fashion and sustainability efforts. Figure 3, which presents the sentiment breakdown by generation on X, shows that **Millennials** is more inclined to express positive views when discussing the sustainable issues in fast fashion industry. This aligns with the broader generational trend of increased environmental awareness and tech-savviness among younger cohorts, who are generally more open to technological innovations that aim to address sustainability challenges. Specifically, fashion magazine editors (e.g., @dieworkwear), technology critics (e.g., @parismarx), fashion product manufacturers (e.g., @officialhambly), and freelancers (e.g., @iconawrites) contribute most of the mentions. The F-statistic value of $F(3, 11) = 3.84$, $p = 0.07$ indicates that while the differences across generations on X are approaching significance, there is a discernible trend of younger generations viewing these innovations more favorably.

Similarly, Figure 4 demonstrates a more pronounced difference in sentiment by generation on Reddit, with an F-statistic of $F(3, 11) = 6.87$, $p = 0.02$, indicating a significant variation in how these groups perceive sustainability-related discussions. Millennials once again exhibit the most positive sentiment, while Baby Boomers and Generation X are more neutral or skeptical in their engagement with these topics. The relatively high positive sentiment among younger users on Reddit could be attributed to the platform's structure, which fosters in-depth discussions and allows users to engage more thoughtfully with complex issues such as sustainability and technology.

Key Finding 4:

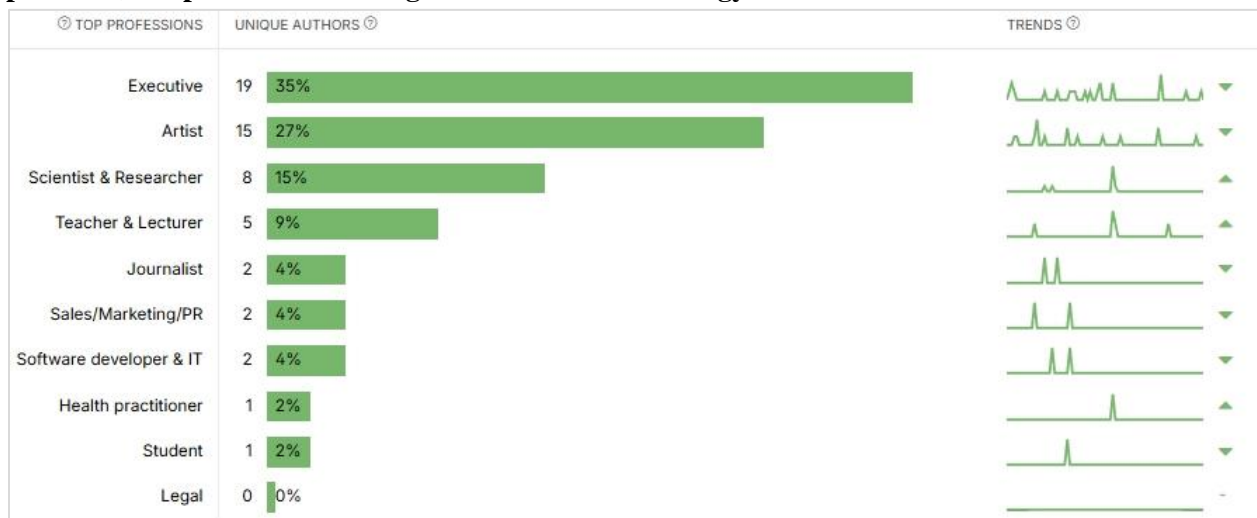
The discussions of fast fashion and sustainable practices on X is predominantly driven by female users, while discussions that include personalization algorithm-related technology exhibit a higher male engagement.

Figure 4.1: Distribution of X user professions engaging in discussions on fast fashion and **sustainable practices**



* Gender split: 7,908 (56%) female authors and 6,210 (44%) male authors.

Figure 4.2: Distribution of X user professions engaging in discussions on fast fashion, **sustainable practices**, and **personalization algorithm-related technology**



* Gender split: 42 (43%) female authors and 55 (57%) male authors.

The gender distribution depicted in Figures 4.1 and 4.2 shows a shift in engagement between male and female authors based on the focus of the discussions. In general conversations about fast fashion and sustainability (Figure 4.1), female authors constitute the majority (56%), which aligns with traditional views of fashion as a field of heightened interest among women. This gender predominance may reflect women's direct involvement in fashion consumption and their greater concern for the environmental and ethical implications of fast fashion practices (Long & Nasiry, 2019).

However, when the topic expands to include personalization algorithm-related technology (Figure 4.2), the engagement shifts, with male authors slightly outnumbering female authors (57% vs. 43%). This shift suggests that discussions incorporating technology in the fashion industry attract a more balanced gender audience, possibly because the technological aspects resonate with a broader set of interests, including data analytics, innovation, and the technical applications of algorithms in enhancing user experience. This shift also indicates a possible intersection between technology and fashion that goes beyond traditional gender interests, engaging a more diverse audience.

Figures 4.1 and 4.2 also provide insights into the professional backgrounds of individuals engaging in these discussions. The most active professions include artists (21%), executives (19%), and journalists (14%). The strong presence of **artists** (e.g., @virtualjew, @manisaemi, and @meronsmm) may indicate the intrinsic connection between fashion, creativity, and sustainability, as artists often influence trends and advocate for eco-friendly practices through their work. Their engagement suggests a concern for how fashion impacts not only the environment but also the realm of creative expression.

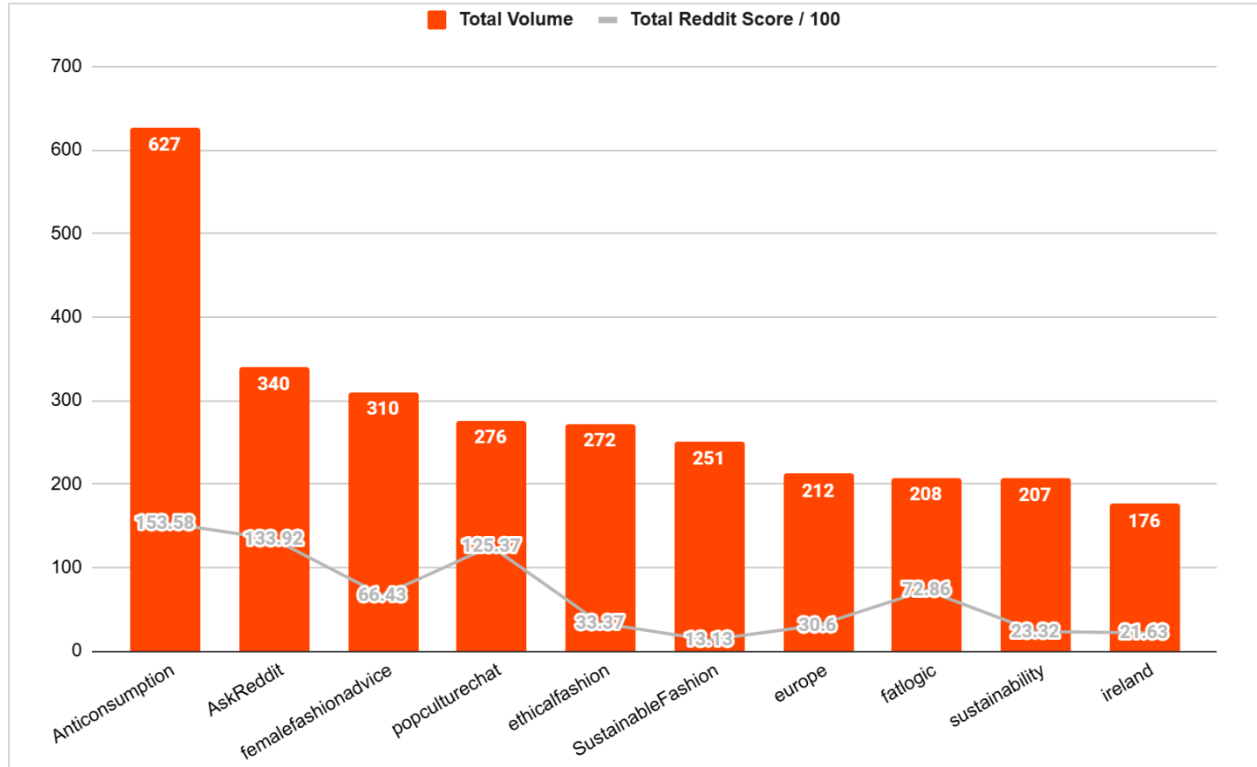
Executives (e.g., @anderswijkman, @janezpococnik22, and @lexkiefhaber), who make up 19% of the participants, likely represent stakeholders within the fashion industry who are interested in the strategic implications of sustainability and personalization algorithms. Their engagement underscores the importance of sustainability in corporate strategy and brand management, indicating that the integration of technology and sustainability practices is a topic of relevance at the executive level.

Journalists (e.g., @thetimes, @imaniamrani, and @rachel_arthur) account for 14% of the discussions, highlighting the media's role in shaping the narrative around fast fashion and sustainability. Journalistic engagement suggests that these topics have societal significance and are subjects of public interest and scrutiny. Journalists' involvement may also contribute to the dissemination of information and shaping public discourse, thereby influencing consumer perceptions and brand reputation.

Key Finding 5:

Some leading subreddit communities engage in discussions on fast fashion and its sustainable practices.

Figure 5: Top 10 subreddits that related to fast fashion and its sustainable topics



*Total Reddit Score is divided by 100 to maintain a proper visual scale.

An analysis of the top subreddits engaging in discussions about fast fashion and sustainability reveals a clear distinction in community focus and engagement. The subreddit **r/Anticonsumption** emerges as the most active community, with a total volume of 627 discussions, indicating a strong interest in sustainable consumption and ethical practices within the fashion industry. This subreddit's high volume of posts and comments suggests it plays a critical role in shaping the dialogue around anti-consumption movements and sustainability. In addition, other subreddits such as **r/femalefashionadvice** and **r/ethicalfashion** also feature prominently, emphasizing that sustainability in fashion is a key concern among fashion-conscious users. These communities represent a blend of users seeking both fashion advice and ethical fashion solutions, indicating that the conversation around sustainability extends beyond environmental concerns to include personal styling and consumer choices. Moreover, **r/SustainableFashion** further reinforces this focus, highlighting users' growing demand for fashion brands that align with sustainable practices.

Interestingly, **r/AskReddit** ranks second in total volume, despite not being a fashion-focused

subreddit, reflecting that sustainability and fast fashion are topics of broad interest that transcend niche communities and enter mainstream discussions.

The analysis of total volume alongside **Reddit Score**, which measures user engagement and post popularity, indicates that while **r/Anticonsumption** leads in both volume and engagement, other subreddits such as **r/popculturechat** also demonstrate a high level of user interaction, suggesting a growing trend where pop culture and sustainability intersect.

This finding indicates that conversations around sustainability in fast fashion are thriving in diverse subreddit communities, each contributing uniquely to the overall discourse. PR and marketing professionals targeting fast fashion brands should recognize the value of engaging these specific communities, particularly **r/Anticonsumption** and **r/ethicalfashion**, as they are influential spaces where sustainability and ethical consumption are actively discussed. Engaging with these communities could enhance brand perception, particularly among consumers who prioritize sustainable fashion choices.

Implications

The findings from this research carry significant implications for both fast fashion brands and the public relations (PR) industry. As consumers increasingly emphasize sustainability, PR professionals and brand strategists should recognize the critical role personalization algorithms play in shaping perceptions and fostering consumer trust. The combination of sustainability efforts and data-driven personalization technologies is not only an operational shift but also a communication challenge, where transparency, ethical practices, and customer engagement need to be at the forefront.

1. Strategic Alignment Between Personalization and Sustainability:

The data reveals that while sustainability is a critical focus for fast fashion brands, personalization algorithms are not yet widely discussed in this context. However, their potential to impact brand perception is evident. PR professionals should ensure that messaging around personalization efforts aligns with sustainability goals. Highlighting how personalization algorithms can contribute to more sustainable consumption patterns—such as reducing waste through customized recommendations—can help brands bridge the gap between technological innovation and ethical responsibility.

2. Targeted Messaging Across Platforms:

The analysis underscores the importance of tailoring communication strategies across different platforms. X serves as a broader platform for sustainability discussions led by influential figures and brands, while Reddit fosters more in-depth conversations where consumers express both positive and negative sentiments. Brands should take advantage of these dynamics by developing targeted campaigns that resonate with the unique characteristics of each platform. On Reddit, for example, PR professionals could focus on fostering meaningful dialogue, addressing consumer concerns about sustainability

practices in a transparent manner.

3. **Engagement with Generational and Professional Audiences:**

Generational differences in how users perceive sustainability and fast fashion should inform messaging strategies. Millennials, who are more positive about fast fashion's sustainability efforts, should be a primary target for brands promoting their sustainable innovations and personalization technologies. Additionally, insights into professional engagement—such as the active participation of artists, executives, and journalists—indicate an opportunity for strategic partnerships with key opinion leaders in these sectors. Brands can enhance their reputation by working with artists to promote eco-friendly designs or collaborating with media professionals to shape positive narratives around their sustainability efforts.

4. **Navigating the Privacy Paradox:**

As brands increasingly rely on data-driven marketing strategies, they must address the privacy concerns that come with personalization technologies. The research highlights the ongoing privacy paradox, where consumers express concern over data security but continue to share personal information online. PR professionals should prioritize transparent communication regarding data collection and use, assuring consumers of the ethical practices employed by the brand. By addressing these concerns proactively, brands can mitigate potential reputational risks and foster stronger relationships with their customers.

5. **Engaging Niche Communities:**

The top subreddits identified in the research, particularly r/Anticonsumption and r/ethicalfashion, are crucial spaces for brands to engage in conversations about sustainable fashion. These niche communities provide an opportunity for PR professionals to interact directly with consumers who are deeply invested in sustainability. By participating in these discussions, brands can gain valuable insights into consumer concerns and expectations while demonstrating their commitment to ethical practices. Engaging with these communities also allows brands to tap into the growing demand for sustainable fashion and build a more loyal and conscious consumer base.

Conclusion

This research highlights the evolving discourse on fast fashion and sustainability, with a specific focus on the role of personalization algorithms in shaping consumer sentiment and brand reputation. Analysis from X and Reddit reveals that while sustainability remains a key concern, discussions on personalization algorithms and their integration with sustainable practices are still emerging. Sentiment across platforms demonstrates that consumers on Reddit engage more critically with these issues, suggesting the need for brands to foster deeper conversations in these spaces. Furthermore, generational and gender dynamics further influence these discussions, with Millennials and female users showing more positive engagement towards sustainable initiatives.

However, male users and younger cohorts are more involved when personalization technologies are incorporated, highlighting the importance of targeting communication strategies accordingly.

The findings underscore the necessity for fast fashion brands to adopt transparent and ethical personalization strategies that align with sustainability goals. By effectively engaging diverse online communities and addressing consumer concerns about sustainability and data privacy, brands can enhance their reputation and foster long-term trust. As the conversation around sustainable fashion grows, there remains significant potential for brands to lead these discussions by integrating technology and ethical practices, thus positioning themselves as forward-thinking and responsible players in the industry.

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