"Cultural Diversity Dilemma" Caused by Algorithm Recommendation System of Streaming Media Platform and Optimization Suggestions

Yuling Ma

Nanjing Xiaozhuang University, Nanjing, China
JjiuxxKiera@outlook.com

Abstract. At present, the algorithm of streaming media platforms is penetrating into every smart phone user's life. With accurate user data analysis, it has significantly improved the information matching degree, but at the same time, it has also triggered the dilemma of cultural diversity. This study focuses on the essence of the cultural diversity dilemma caused by streaming media algorithm recommendation, the analysis of the user end and the optimization suggestions to break the dilemma. Through the mixed research method, it is found that user dissatisfaction stems from the sense of repetition and trapped caused by excessive accuracy; Users are not unwilling to explore, but subject to the platform search defects and the understanding threshold of niche content. Theoretically, the research no longer focuses on the accuracy of algorithm push, but focuses on the deeper dilemma of cultural diversity, trying to find a mutually inclusive balance between technical efficiency and humanistic value. In practical application, these findings can help the platform recalibrate the value orientation of the algorithm, and also provide data support for the design of some simple and easy-to-use "diversity" functions. At the same time, findings call on everyone to pay attention to the improvement of algorithm literacy, and strive to make cultural diversity truly take root on the streaming media platform.

Keywords: streaming media, platform algorithm, cultural diversity.

1. Introduction

How does the algorithm affect cultural diversity by platform shrinkage? What role does the user play in this process? This study focuses on the "cultural diversity dilemma" caused by the algorithm recommendation system of streaming media platform. At present, the algorithm of streaming media platform is infiltrating into the lives of every smartphone user. It has significantly improved the information matching degree by virtue of accurate user data analysis, but it also caused the dilemma of cultural diversity. This research is of great significance to help the public understand "what the dilemma is", reveal "how the dilemma is formed" and the possible improvement direction. This research mainly starts from the dilemma of the formation of streaming media platform to giving suggestions to solve the dilemma, and uses the literature analysis method to search and read the relevant data and literature. The advantage of this method is that it can well analyze the general

situation of the current streaming media platform with the help of academic conclusions, which is conducive to the research. The ultimate goal of this study is to find a solution to the dilemma. In order to achieve the goal, the mixed research method is carried out and summarized, and some conclusions are drawn.

2. Literature review

At present, the emerging streaming media platform has certain influence and discourse power [1]. The algorithm recommendation technology of the platform accurately pushes the content that meets the user's needs according to the user's historical behavior and interest preferences [2]. However, the product of the algorithm system "information cocoon room" is the key to the plight of cultural diversity. The stratification of network culture among young people leads to their interests and one-sided values [2]. In order to pursue user stickiness and commercial interests, the platform intensified the "information cocoon room" effect through algorithms, and further increased the difficulty of cross-cultural understanding and empathy [3]. The information cocoon room is reflected in the narrowing of information channels, the focus of topic areas and the convergence of views, so the scope of people's content contact is narrowed [4]. Many micro, small and medium-sized enterprises use streaming media platforms to attract potential customers and compete with competitors for traffic and market [5].

Influenced by business and interests, the algorithm has not only changed people's aesthetics to a certain extent and promoted the "privatization" of public taste, but also the inevitable phenomenon of information cocoon produced by it is profoundly affecting the decision-making of individuals and groups [6,7]. Users are subconsciously led by the algorithm in the process of use. The algorithm will combine the psychological phenomenon of decision-making and self attribution theory to promote users' psychological decision-making [8]. People are gradually becoming distracted, cognitive inertia, shallower thinking and loss of rational investigation ability. These are the "brain corruption" phenomenon caused by the dilemma of cultural diversity caused by the information cocoon house [9]. To sum up, the algorithm system of streaming media platform contains a fundamental paradox, which not only improves the content personalization, but also erodes cultural diversity.

3. Research method

This paper adopts a mixed research method, including questionnaire survey and in-depth interview. The questionnaire survey ensures the standardization and quantification of the data obtained. When all respondents face the same questions, the comparability and consistency of the data are greatly improved; At the same time, the online questionnaire used in the study has the advantages of high efficiency and low cost, which is convenient for macro analysis; The way of anonymity allows respondents to express their ideas more frankly. The in-depth interview is more in-depth and flexible than the questionnaire. It can flexibly adjust the questions according to the answers of the respondents, and dig out the vivid details and deep reasons that the questionnaire cannot touch; Interactivity is also an important advantage of the interview. The expression, tone and emotion of the interviewees during the interview are very important information. The combination of these two methods can often achieve the best results.

3.1. Questionnaire survey

For 70 online users with different backgrounds, the survey was conducted with active users of mainstream streaming media platforms such as Douyin, rednote, iQIYI and other platforms as the main body, taking into account the distribution of different age groups. The questionnaire consists of three parts: a cover letter (stating the purpose of the survey, anonymity, purpose of data and words of thanks), a guide (specifying the filling method, such as "single/multiple choice", "scale scoring rules"), and the main question (divided into three dimensions, a total of 17 questions).

The first dimension of the subject problem starts with the habit of using the streaming media platform, which is used for sample description and cross analysis; In the second dimension, the NPS scale was used to measure the perceived contradiction between "personalization" and "narrowing", "user practice" and "critical of platform strategy"; The third dimension is open-ended questions, which can reflect and prove the questions in the first and second parts from the respondents' subjective written answers, enrich and explain the first two parts from the side, and more directly lead to the user's naive theory of the core contradiction.

3.2. Interview method

On the basis of grasping the overall situation and trend, this study explores the deep experience that users themselves may not have clearly understood and expressed from the core issues of "time change", "relational metaphor", "theoretical contradiction" and "potential resistance", according to the typical differences revealed by the questionnaire results (such as "heavy dependents" and "active explorers"). Ten users (with obviously different styles, different educational backgrounds and ages) were selected for semi-structured in-depth interviews, including opening questions (to understand the basic background of the respondents), core questions, closing remarks (supplementary questions "is there anything else you want to share?") and thanks. Each interview is about 20-45 minutes long, in order to have an in-depth understanding of the complex experience, behavior motivation and the attribution of the dilemma.

Dimension 1: how is taste "developed"? The underlying logic is to guide users to perceive the invisible role of algorithms in shaping taste by reviewing history.

Dimension 2: what kind of "power game" do you play with the algorithm? The underlying logic reveals users' subconscious cognition and complex emotions about algorithm rights through metaphor and hypothesis.

Dimension 3: when "convenience" meets "self". The underlying logic is to touch the deep ethical and psychological dilemma brought by personalized recommendation.

Dimension 4: Find "cracks" in the system. The underlying logic is to find the non mainstream and creative use methods of users, which are the key evidence of cultural initiative.

4. Research results

4.1. Questionnaire results

The data shows that users are highly dependent on the platform, and 76% of respondents use it for more than 2 hours a day. NetEase Cloud Music and Douyin dominate the music and video fields respectively, with significant user stickiness. The recommendation system plays a key role in leisure scenes (68% of users rely on it when they have no clear purpose). Users generally recognize their ability to "understand me" (the average score of the scale is high). But at the same time, it also

exposed deep problems: most users were worried about the content duplication and "information cocoon room" caused by the algorithm, more than half agreed that they "might miss the unpopular content", and were skeptical of the platform "diversity theme" (thinking that it was mostly a marketing gimmick).

4.2. Interview results

Based on the above data, the interview found that users' dissatisfaction with algorithm recommendation did not stem from "imprecision", but from the sense of repetition brought by excessive accuracy. Most of the respondents' emotions showed a progressive trajectory: from being satisfied with the recommendation, to being aware of the convergence of the recommended content, and finally turning to irritability or boredom. This negative sentiment does not prompt users to abandon the platform, but rather triggers inefficient active search - users try to "escape" the recommendation stream through keywords, but often return to the state of passive reception due to the deviation of search results. An interviewee who frequently uses the streaming media platform described this cycle: "I am very upset. I will search other things I want to see and ask the platform to recommend similar ones... But what I found is also wrong. I still scroll them several times." (interviewee A, female, 23 years old) Another interviewee described another form of exploration that was blocked - not that it could not be found, but that it was "incomprehensible": "niche topics always contain too high-end scripts. If you can't understand them, you'll lose interest." (interviewee F, male, 21 years old) Another interviewee said that her exposure to new content was not due to the platform algorithm, but through the sharing of his friends: "My friend wanted to talk with me about a recent hot spot. After being popularized, I found that the discussion was really high, but before that, I had never scrolled it on the Internet and felt isolated by the Internet." (interviewee M, female, 39 years old)

5. Discussion

This study shows that the streaming media platform algorithmic recommendation, while achieving a high degree of personalization, is dragging users into the paradox of "Accurate Repetition" and "Knowledge Hut": although users are highly dependent on recommendation, they generally perceive the homogenization of content, and their efforts to actively break the cocoon often fail due to the structural defects of the platform search mechanism. In short, the platform is good at retaining users, but not good at sending them out, which reflects the deep connection between the platform's technical efficiency and the humanistic value in the culture: the purpose of technical efficiency is to make users click more and scroll longer, while the humanistic value is to widen or narrow the field of vision after scrolling the mobile phone. The current dilemma is that the platform is only good at doing the first thing, and the better the first thing is done, the less people care about the second thing.

This means that the current algorithmic logic, which aims at user duration and uses the streaming media platform to obtain relevant users so as to make profits, has created the risk of cultural narrowing after reaching the peak efficiency, that is, the "dilemma" of cultural diversity - users are not unwilling to explore areas that have never been involved, but lack effective exploration tools [5]. Therefore, the platform needs to shift from "maximum matching" to "gradual expansion", such as reserving a quota for exploration (three of the ten videos are new fields), making the search understand the vague intention (when searching for the intention clothing, it is not necessary to be accurate to "French retro square collar floral dress" and other keywords), and reducing the cognitive

threshold by using the social circle (if the platform detects that users A and B are the same type of people, it will push the content of the fields that B likes and A has never been involved), so as to avoid the over specialization of the algorithm recommendation system while alleviating the information overload, and enable users to enter the "information cocoon room" [10]. Secondly, users' algorithmic literacy needs to be improved. Try to identify and actively intervene in home page recommendation; At the same time, the academic community should further explore the "comprehensible diversity" standard to avoid the marginalization of minority content due to obscure expression.

The problem of cultural diversity is that there is a conflict between the pursuit of efficiency by technology and emphasis on humanistic values. This simplification trend dominated by algorithms is making people's spiritual world more and more barren. To break this dilemma, it can't rely on just one party. Instead, it needs the participation of the platform, regulators and every user to recalibrate the value coordinates of the algorithm, so that it can respect and protect the richness and diversity of culture while pursuing efficiency. The sample size of this study is small, the platform coverage is concentrated on the domestic mainstream software, and the data cannot track the long-term state affected by the algorithm, so it can only be used as a time limited reference.

6. Conclusion

The result of this study is that the algorithm recommendation of streaming media platform is reshaping the definition of cognitive freedom from "optional freedom" to "matched freedom", and cultural diversity is in trouble; The further research conclusion is that the root of the problem of cultural simplification of algorithm recommendation output is not whether technology works or not, but the profit goal of the platform. In fact, the platform is shouting "diversity" in order to keep users on the screen - they have turned the so-called "diversity" into a tool that can be calculated and monetized. In this way, although the things that users see look fancy, they are actually for their liking, which makes users miss out on the really fresh and open vision. Ordinary users' power of active choice is simply beyond their reach in the face of this powerful business logic. This is actually a trade-off between commercial interests and public values: the platform only cares about how to make users scroll mobile video for a longer time, and does not care about the consequences of users' doing so. In the long run, not only are every user trapped in the information cocoon room, but the cultural creation of the whole society may also be forced to move closer to the standard of "flattering algorithm", and finally become the same.

This study provides a lot of valuable reference significance for future research in this direction, mainly affecting the conceptual cognition, mechanism interpretation and practical countermeasures. The discussion of the information cocoon room by the public and academia is often too general. This article clearly defines the abstract "dilemma of cultural diversity" as a specific dynamic process in which the algorithmic recommendation system may inadvertently narrow the user's cultural vision, solidify aesthetic preferences, and marginalize minority content while improving personalized efficiency. From the perspective of users, the research reveals how platform algorithms, user preferences and behaviors interact, which together lead to the emergence of dilemma. Limited by the current sample size, it is necessary to cover more platforms in the future, and conduct long-term tracking to observe the long-term impact of the algorithm on cultural diversity. It is also necessary to continue to explore how to evaluate and intervene in this "comprehensible diversity".

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