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AI Recommendation Algorithms and their Influence on Listener Behaviour on Music Streaming Platforms: A Study of Spotify and YouTube Music

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Abstract

The rapid growth of music streaming platforms has significantly transformed the way audiences discover and consume music. Platforms such as Spotify and YouTube Music rely extensively on artificial intelligence (AI)–based recommendation algorithms to personalize user experiences by suggesting songs, playlists, and artists aligned with individual preferences. These AI-driven recommendation systems play a crucial role in shaping listener behaviour by influencing music discovery, listening patterns, engagement levels, and platform loyalty. The present study aims to examine the influence of AI recommendation algorithms on listener behaviour on Spotify and YouTube Music. The research adopts a descriptive and analytical approach, using primary data collected through a structured questionnaire administered to active music streaming users. Secondary data were collected from academic journals, industry reports, and digital media studies related to AI and music streaming platforms. The findings of the study are expected to provide insights into how AI-based personalization affects user satisfaction, trust in recommendations, and overall engagement with music streaming platforms. The study also offers practical implications for music marketers, independent artists, and streaming platforms in effectively leveraging AI-driven recommendations for audience engagement and content promotion.

Keywords: **Music streaming platforms, Artificial Intelligence (AI), Recommendation Algorithms, Listener Behaviour**

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I. INTRODUCTION

The music industry has undergone a significant transformation with the rapid advancement of digital technologies and the widespread adoption of internet-based platforms. Traditional methods of music distribution such as physical albums and downloads have largely been replaced by music streaming services, which provide instant access to vast libraries of songs across different genres and languages. Music streaming platforms have become the primary mode of music consumption for millions of users worldwide, offering convenience, accessibility, and personalized listening experiences. Artificial intelligence (AI) has emerged as a critical technological component in enhancing the functionality and competitiveness of music streaming platforms. AI-powered recommendation algorithms analyze large volumes of user data, including listening history, search patterns, preferences, and engagement behaviour, to predict user interests and recommend relevant music content.

Features such as personalized playlists, auto-generated mixes, recommended tracks, and artist suggestions are driven by these AI-based systems. By reducing search effort and improving content relevance, AI recommendations aim to increase user satisfaction and platform engagement. Spotify and YouTube Music are among the most widely used music streaming platforms globally and in the Indian market. Spotify is particularly recognized for its advanced recommendation features such as Discover Weekly, Release Radar, and Daily Mixes, which are developed using machine learning techniques and collaborative filtering. YouTube Music, on the other hand, leverages user behaviour data from the broader YouTube ecosystem along with AI-driven algorithms to recommend both audio and video-based music content. The recommendation systems of both platforms play a crucial role in shaping how users discover new music and interact with artists.

From a marketing and consumer behaviour perspective, understanding the influence of AI recommendation algorithms is essential. These algorithms not only affect user listening habits but also impact artist visibility, music promotion strategies, and audience engagement. For independent artists and music marketers, algorithm-driven discovery can significantly influence reach and success in a highly competitive digital environment. Similarly, music streaming platforms depend on the effectiveness of their recommendation systems to retain users, increase listening time, and build long-term platform loyalty.

Despite the growing reliance on AI recommendation systems, there is limited empirical research examining how these algorithms influence listener behaviour, particularly in terms of music discovery, trust in recommendations, and engagement levels. Moreover, comparative studies analyzing the influence of recommendation algorithms across different platforms such as Spotify and YouTube Music remain limited. This study seeks to address this gap by examining the influence of AI recommendation algorithms on listener behaviour, with specific reference to Spotify and YouTube Music, thereby contributing to academic research and offering practical insights for digital music marketing strategies.

Music streaming platforms such as Spotify and YouTube Music extensively use artificial intelligence–based recommendation algorithms to personalize content and enhance user experience. While these algorithms play a significant role in music discovery and user engagement, there is limited empirical evidence explaining how listeners perceive and respond to AI-driven recommendations. The influence of recommendation algorithms on listener behaviour, including listening patterns, trust in suggested content, and platform preference, remains underexplored, particularly in the Indian context. This lack of clarity creates a research gap that necessitates systematic investigation to understand the behavioural impact of AI recommendation systems on music streaming platform users.

II. RESEARCH OBJECTIVES

The objectives of the present study are as follows:

1. To examine the level of awareness among listeners regarding AI-based recommendation algorithms on music streaming platforms.
2. To analyse the influence of AI recommendation algorithms on music discovery and listening behaviour of users.
3. To study the impact of personalized recommendations on listener engagement and listening time.
4. To compare the effectiveness of AI recommendation systems on Spotify and YouTube Music.
5. To assess listener trust and satisfaction with AI-generated music recommendations.

III. REVIEW OF PREVIOUS STUDIES

Smith and Linden (2017) studied the impact of recommendation algorithms on digital content consumption and found that personalized recommendations significantly increase user

engagement and content discovery. Their research highlighted that algorithm-driven personalization reduces search costs and improves user satisfaction on streaming platforms.

Celma (2018) examined music recommendation systems and emphasized the role of collaborative filtering and machine learning techniques in predicting user preferences. The study concluded that accurate recommendations enhance listener retention and platform loyalty.

Zhang et al. (2019) analysed the influence of AI-driven personalization on consumer behaviour across digital platforms. The findings revealed that personalized recommendations positively affect user trust and increase the likelihood of repeated platform usage.

Datta, Knox, and Bronnenberg (2018) investigated the effects of algorithmic recommendations on online consumption patterns. Their study indicated that recommendation systems shape consumer choices by guiding attention toward specific content, thereby influencing overall consumption behaviour.

Schedl et al. (2020) focused on music streaming platforms and explored how recommendation algorithms affect music discovery. The study found that algorithmic playlists play a crucial role in exposing users to new artists and genres, particularly for independent musicians.

Aguiar and Waldfogel (2018) studied the impact of streaming platforms on music consumption and concluded that algorithm-driven discovery expands consumer exposure to a wider variety of music, thereby influencing listening diversity.

Gomez-Uribe and Hunt (2016) analysed Netflix's recommendation system and demonstrated how AI-based personalization increases user engagement and viewing time. Although focused on video streaming, the findings are relevant to music streaming platforms due to similar algorithmic mechanisms.

Vonderau (2019) examined the cultural and behavioural implications of algorithmic recommendations in digital media platforms. The study suggested that while algorithms enhance convenience, they also significantly influence user preferences and consumption patterns.

IV. RESEARCH GAP

From the review of existing literature, it is evident that several studies have explored AI-driven recommendation systems and their impact on user engagement and content discovery on digital platforms. However, limited empirical research focuses specifically on listener behaviour in music streaming platforms, particularly in the Indian context. Moreover, comparative studies analysing the influence of recommendation algorithms across platforms such as Spotify and YouTube Music remain scarce. Therefore, there exists a research gap in understanding listener perceptions, trust, and behavioural responses to AI recommendation algorithms on music streaming platforms, which the present study seeks to address.

V. HYPOTHESES

The following hypotheses have been formulated for the study:

H1: AI-based recommendation algorithms have a significant influence on music discovery among listeners on streaming platforms.

H2: Personalized music recommendations significantly increase listener engagement and listening time.

H3: Listener trust in AI-generated recommendations positively affects satisfaction with music streaming platforms.

H4: There is a significant difference in the influence of recommendation algorithms between Spotify and YouTube Music on listener behaviour.

VI. RESEARCH METHODOLOGY

Research Design

The present study adopts a descriptive and analytical research design. Descriptive research is used to understand listener behaviour and perceptions toward AI-based recommendation algorithms on music streaming platforms. The analytical approach helps in examining relationships between AI recommendations, music discovery, listener engagement, and platform preference. This research design is appropriate as it enables systematic collection and analysis of data to draw meaningful conclusions related to listener behaviour on Spotify and YouTube Music.

Sources of Data

The study is based on both primary and secondary data. Primary data were collected directly from users of music streaming platforms through a structured questionnaire. Secondary data were collected from academic journals, research articles, industry reports, websites, and published literature related to artificial intelligence, recommendation algorithms, digital marketing, and music streaming platforms.

Sample Design

The target population for the study consists of active users of music streaming platforms such as Spotify and YouTube Music. The respondents selected for the study belong to the age group of 18 to 35 years, as this segment represents the most active users of digital music streaming services. A convenience sampling technique was used to collect responses, considering accessibility and time constraints. A sample size of approximately 28 respondents was considered adequate for the purpose of this study.

Data Collection Method

Primary data were collected using a structured questionnaire designed in the form of a Google Form. The questionnaire included demographic questions, platform usage patterns, and Likert-scale statements related to AI-based recommendations, music discovery, engagement, and trust in recommendations. The questionnaire was circulated online through social media platforms and messaging applications to collect responses from music streaming users.

Tools Used for Data Analysis

The collected data were analyzed using Microsoft Excel. Descriptive statistical tools such as percentage analysis, bar charts, and pie charts were used to interpret the data. Mean score analysis was also used to evaluate respondent perceptions regarding AI recommendation algorithms and their influence on listener behaviour. The results were presented in the form of tables and graphical representations for clarity and better understanding.

VII. DATA ANALYSIS AND INTERPRETATION

Overview of Data Analysis

This section presents the analysis and interpretation of primary data collected from 28 respondents through a structured questionnaire. The analysis was carried out using Microsoft Excel with the help of percentage analysis, graphical representation, and mean score analysis. The objective of the analysis is to understand listener behaviour and perceptions toward AI-based recommendation algorithms on music streaming platforms such as Spotify and YouTube Music.

Demographic Profile of Respondents

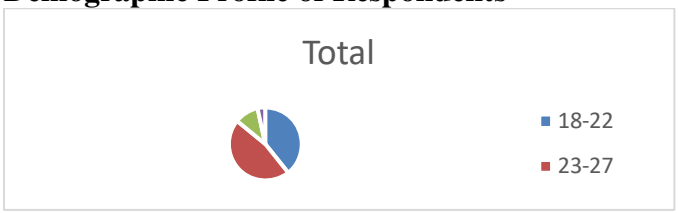

Fig. 1 Age-wise Distribution of Respondents

Age-wise Distribution of Respondents

The age-wise distribution of respondents indicates that most participants belong to the age group of 18–27 years. This suggests that younger listeners are the most active users of music streaming platforms, making them a relevant segment for studying the influence of AI-based recommendation algorithms.

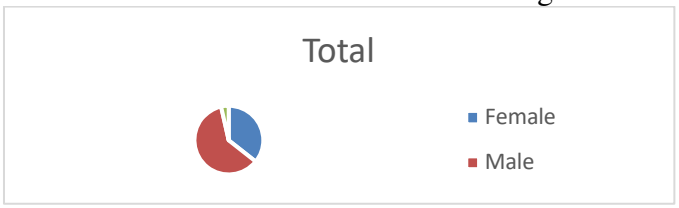

Fig 1 Gender-wise Distribution of Respondents

Gender-wise Distribution of Respondents

The gender-wise analysis shows participation from respondents of different genders, indicating diverse representation in music streaming usage. This diversity helps in capturing varied listener perceptions toward AI-driven music recommendations.

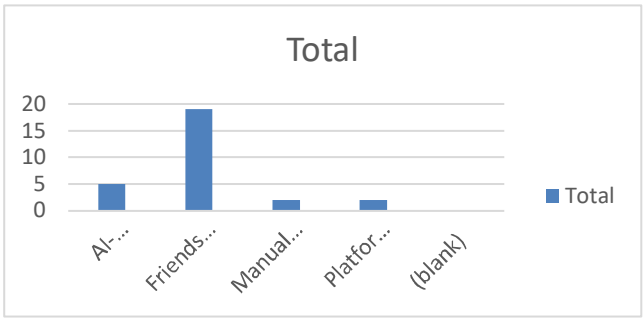

Fig 2 Methods of Music Discovery

Methods of Music Discovery

The results show that AI-recommended playlists and platform suggestions are among the most common methods for discovering new music. This confirms the growing reliance on recommendation algorithms for content discovery rather than manual searching.

Statement	Mean Score
AI-based recommendations help me discover new music that matches my taste	3.18
Personalized playlists increase my listening time on music streaming platforms	3.89
I trust the music recommendations generated by AI algorithms	3.5
AI recommendations influence my decision to explore new artists or genres	3.59
Accurate recommendations increase my satisfaction with the music streaming platform	3.89
Overall, I am satisfied with AI-based music recommendations on streaming platforms	3.21

Mean Score Analysis

The mean score analysis indicates a generally positive perception of AI-based recommendation algorithms among respondents. Higher mean values for statements related to personalized playlists and user satisfaction suggest that AI-driven recommendations significantly enhance listening time and overall platform experience. Moderate mean scores for trust and music discovery indicate that while listeners recognize the benefits of AI recommendations, there remains scope for improvement in accuracy and transparency.

VIII. FINDINGS

Based on the analysis and interpretation of the collected data, the following key findings were observed:

- Music streaming platforms are widely used by young listeners on a regular basis.
- AI-based recommendation algorithms significantly influence music discovery among listeners.
- Personalized playlists increase listening time and overall engagement on streaming platforms.
- Listeners show moderate to high levels of trust in AI-generated music recommendations.
- Spotify and YouTube Music are both perceived as effective platforms for AI-driven music recommendations.

IX. SUGGESTIONS

Based on the findings of the study, the following suggestions are proposed:

- Music streaming platforms should enhance transparency regarding how AI-based recommendations are generated to build greater user trust.
- Recommendation algorithms should be continuously refined to ensure diversity in music suggestions and avoid repetitive content.
- Independent artists and music marketers should optimize content metadata and engagement strategies to improve algorithmic visibility.

Streaming platforms can leverage AI insights to design personalized marketing and promotional campaigns for different listener segments.

X. LIMITATIONS OF THE STUDY

The study has certain limitations that should be acknowledged. The sample size of 28 respondents is relatively small and may not fully represent the entire population of music streaming users. The study focuses on

selected platforms and relies on self-reported data, which may involve respondent bias. Additionally, time constraints limited the scope of the research.

XI. CONCLUSION

The study concludes that AI-based recommendation algorithms play a significant role in influencing listener behaviour on music streaming platforms such as Spotify and YouTube Music. AI-driven personalization enhances music discovery, increases listener engagement, and contributes to overall user satisfaction. The findings emphasize the importance of recommendation systems in shaping digital music consumption and provide valuable insights for streaming platforms, music marketers, and artists in effectively leveraging AI for audience engagement.

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