What is Youtube Music?

Youtube Music is a music streaming service offered by Youtube which is owned by Google. The company was founded in 2005 and launched YouTube Music in 2015.

How Youtube Music makes money?

YouTube Music has [Freemium Model](#) which includes:

- **Advertisement Based Model:** Users can access the service for free with limited features along with ads during their usage.
- **Subscription Based Model:** Subscribers pay fees for ad-free access to service along with additional features.

Who uses Youtube Music?

Individuals **who listen to audio content** (music/podcast) and who are familiar with apps/websites. Free Tier for everyone. Premium Tier for those who have disposable income for premium experience.

Big Data!
(Source: [1](#),[2](#))

8.9% Market Share	**$6 Billion Revenue**	**100+ Countries**
80 Million + Subscribers	**2 Billion + Users**	**80 Million+ Tracks**

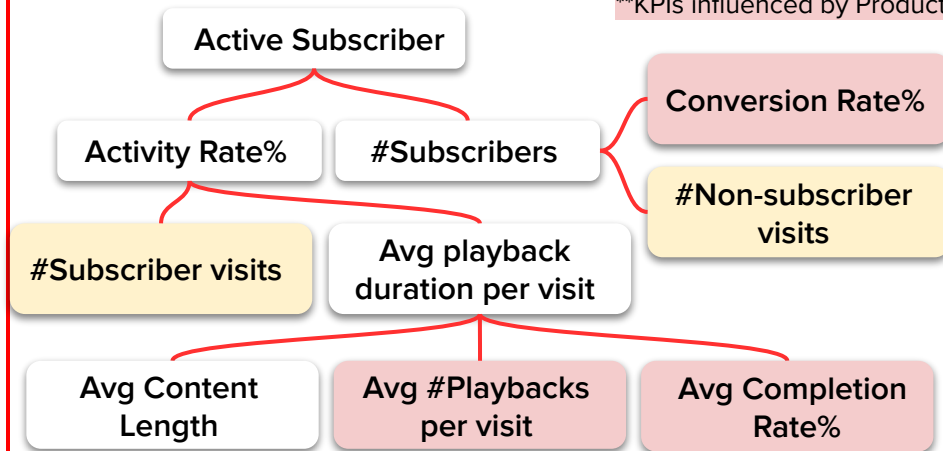**Goal:** Increasing number of active subscribers of subscription plan.
Constraint: Solution must solve user's problem while generating business value.
Assumption: Infinite Tech Bandwidth

What is an active subscriber?

*Inclusive of all device/platform
**KPIs influenced by Product

Why increase active subscriber?

[Subscription-based business models](#) are on the rise nowadays and the music streaming industry is expected to [grow at a CAGR of 15.67%](#) in the upcoming years.

Key Insights from User Survey   (Survey, 200+ Responses)

94.2% users are 16-30 yr old	57.2% users uses free tier	90%+ uses app for Music only	88% uses app for 3hr+ daily	70%+ used app for 6+ months

Learnings from User Survey Interviews   (6 Interviews)

Challenging Music Discoverability: Most users don't discover new music on the app. They often feel confused about what to listen to and also struggle to find the correct version sometimes.

Lack of Collaborative Experience: Users not only want an individual music experience but also want to enjoy music with friends and family and a smooth way to collaborate and play music together.

Lack of value in music experience: Many users feel Premium tier of app lacks value and demand features like Karaoke mode, multi-device support, equalizer etc.
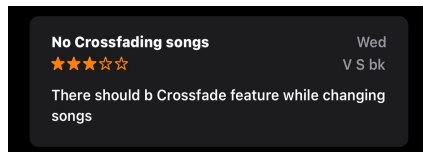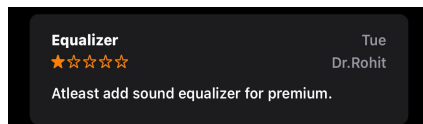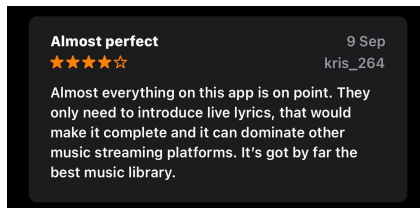
What rival's users say?

"They find their existing app's library limited yet refrain from switching to YouTube Music due to lack of premium features, perception of YouTube as a video platform, inability to migrate custom playlists."

Secondary Research: User Reviews Analysis

Free users are frustrated due to the lack of background playback and excessive ads (almost after every song). None of these issues exists in the competitors' free tier.

Premium users are unsatisfied due to a lack of many "premium features" like crossfade transition, equalizer, multi-device support, and the proper lyrics.

Both (free/premium) users appreciate and like Youtube Music's vast library size, recommendation model and video playback with music.

Equalizer   Tue   Dr.Rohit
★☆☆☆☆
Atleast add sound equalizer for premium.

Almost perfect   9 Sep   kris_264
★★★★☆
Almost everything on this app is on point. They only need to introduce live lyrics, that would make it complete and it can dominate other music streaming platforms. It's got by far the best music library.

No Crossfading songs   Wed   V S bk
★★★☆☆
There should b Crossfade feature while changing songs

Takeaway: There is sufficient friction in the free tier to motivate users to upgrade, yet they don't, due to lack of value and features in the Premium Tier. This is the primary pain point for Premium users.

Challenging Music Discoverability

- Easing music discoverability has **direct impact** on the average no of music playbacks per user visit.
- The current survey failed to accurately depict the extent of the problem, making it **unclear how many users are want to discover** music via app.
- Efforts may be wasted if the number of affected users is not substantial.

Lack of Collaborative Experience

- Providing collaborative experience has **indirect impact** on the average no of music playbacks per user visit and conversion rate
- Feature which offer collaborative experience is **tricky to balance**, too little may not be able to address the pain point, and too much could clutter the app impacting existing user experience.
- None of the competitor have any similar feature, thus educating users on usage of the feature will **require significant effort** (marketing/operational).

Lack of value and features

- Providing more value and features, especially similar to features already offered by competitors, will have a **direct impact** on average music completion rate.
- It will also have an **indirect effect** on the average number of music playbacks per user visit and the conversion rate from free to premium.
- User research indicates that **premium users** feel many music features are missing in the product.
- Additionally, **free users** also feel that the premium tier does not provide enough value.

	Music Discoverability	Collaborative Experience	Enhanced value/features
Avg #Playbacks per visit	Direct Impact	Direct Impact	Indirect Impact
Avg Completion Rate%			Direct Impact
Conversion Rate%		Indirect Impact	Indirect Impact

Arjun
23, IT Professional, Mumbai
Tech-savvy individual

Free User

Needs: Arjun seeks to discover and enjoy music seamlessly during his commute and leisure time.

Pain Points: He is unsatisfied with free tier, yet he does not want upgrade due to lack of value in premium tier.

Behaviour: He closes and reopens the app when an ad appears to skip listening to the ad.

Ananya
32, Marketing Manager, Delhi
Music enthusiast

Premium User

Needs: Ananya wants high-quality music from diverse genres with advanced features.

Pain Points: She is disappointed as many premium features present in other apps are missing in her app.

Behaviour: She uses a third-party app for the equalizer and fetches lyrics from the internet as needed.

What is true Problem?

Lack of music features like crossfade transition, equalizer, proper lyrics, etc in Premium Tier.

Who is facing this?

Both free and premium users who are aware of the offerings of competitors' apps.

Why should we solve it now?

Despite YouTube Music's vast library and strong brand, still [spotify dominates the market](). Also, India's [music industry is booming]() which can be captured

How do we know it is a real Problem?

Our user research as well as blogs from prominent reviewers ([Android Authority](), [MakeUseOf](), [Gizmodo]()) unanimously assert that YouTube Music lack in value .

What value will be generated by solving this?

User: More control over the music experience leading to increased customer satisfaction

Business: Increase in user retention and LTV leading to increase in active subscribers.

AiQulizer

This is an in-built equalizer which records the equalizer adjustments for respective songs. The machine learning model is trained on equalizer adjustments data to preset equalizers for enhanced and tailored music experience.

Risk: Cold Start issue

Initially, due to insufficient data, the preset equalizer may not enhance the music experience; users will need to manually set the equalizer.

27
RIICE score

Reach: 3
Impact on User: 4
Impact on Business: 3
Confidence: 3
Effort: 4

Airoke

This is AI-enabled Karaoke Mode. It uses machine learning model to separate music and vocal and convert it into background music and real-time lyrics in preferred language for enhanced karaoke experience.

Risk: High Operation Cost

Implementing a multiple Machine Learning model on audio content would be costly. If the adoption of this feature is low then this would be a loss making feature

2.4
RIICE score

Reach: 2
Impact on User: 3
Impact on Business: 2
Confidence: 1
Effort: 5

CrossFade Mode

This mode achieves seamless music transitions by blending the ending of one track with the beginning of the next, creating an infinite loop for a smooth, uninterrupted experience.

Risk: Extreme User Experience

Users can alter the music queue thus real-time music blending is required which is time-consuming. This can cause delayed playback, defeating purpose of this feature.
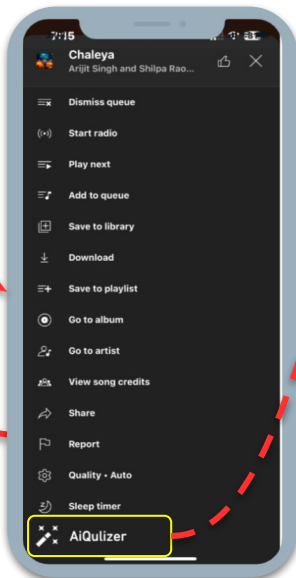
12
RIICE score

Reach: 2
Impact on User: 2
Impact on Business: 2
Confidence: 3
Effort: 2

Note: Scored on range on 1-5 where 1 is Low and 5 is High. Effort is a Negative Factor. Hence Formula used for RIICE Score = (R*I*I*C)/E
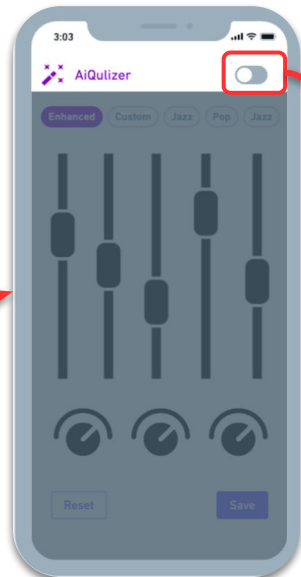
Music

Prioritised Solution: AiQulizer

Exclusively available in Premium tier to provide a better music experience to premium users and make free users perceive greater value in premium tier.
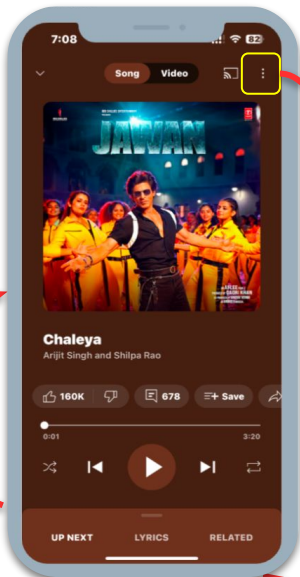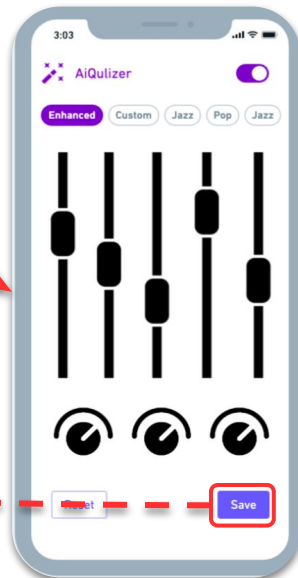

Side Menu Screen: AiQulizer option will be available under the existing three dots menu.

AiQulizer Screen: Custom tab will let user edit setting which will be recorded for model training

Music playback screen. Machine learning model enhances the equalizer settings by default.

AiQulizer Screen: Enhanced tab will have settings as per machine learning model. (Enabled Mode)
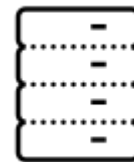
API Gateway:
Routes user requests from all sources.

Load Balancer:
To handle a high volume of incoming user requests.

User Activity Service:
Facilitates user requests and records user activities.

User Activity Database:
Stores user activities, including changes in equalizer settings.

Messaging Queue:
To hold messages about user's equalizer settings data

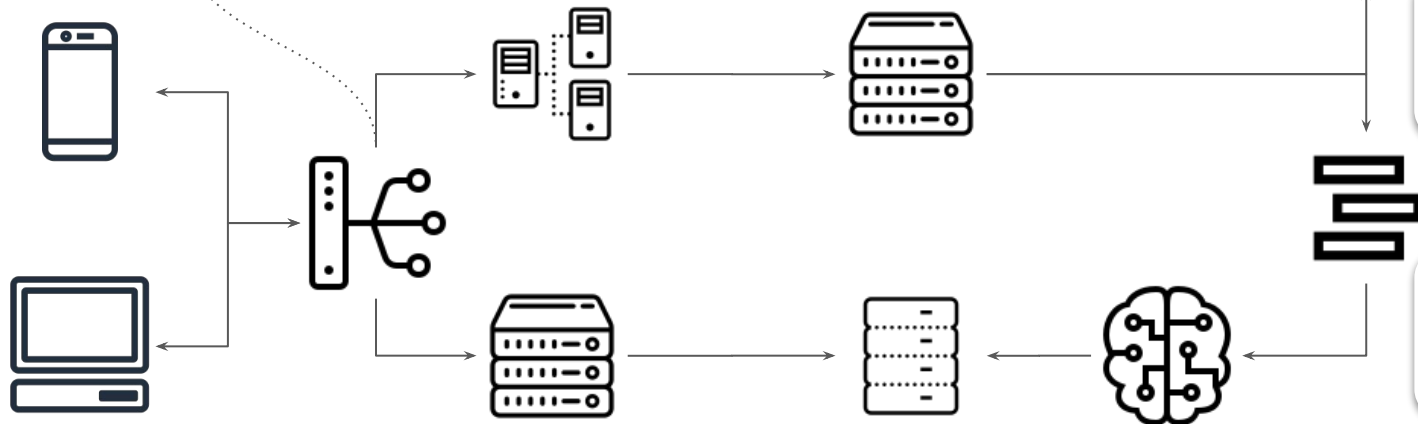**Equalizer Data Service:**
Facilitates equalizer data based on user and song.

Equalizer Settings Database:
Stores equalizer settings for songs determined by ML model.

ML Module:
Runs machine learning model on equalizer setting data.

This system design is designed keeping **Cloud infrastructure** in mind. Equivalent system can be designed for **on-premise infrastructure** also depending on the existing infrastructure of YouTube Music.

Pitfall Mitigation

Subscriber Unfamiliarity Impact

Subscribers unfamiliar with the know-how of the equalizer may unintentionally configure unpleasant settings, resulting in a negative experience and introducing undesirable data into the ML model.

Mitigation: Resetting equalizer settings for music who's reset button CTR has exceeded a certain threshold.

Cold Start Issue

Due to insufficient data initially, preset equalizer settings may not effectively enhance music experience.

Mitigation: Marketing efforts can boost adoption, and operational efforts can add initially generic equalizer settings for songs in the same genre.

Second Order Thinking

YouTube's Music is integrated with it's video platform, enhanced music may impact corresponding videos.

Disputes with artists may arise as this feature arguably modifies original music,

North Star	**Average Completion Rate %**
L0 Metric	• **Avg #Playbacks per visit** • **Conversion Rate %**
L1 Metric	• **Activation Ratio:** Total #AiQuliser enabled subscribers / Total #active subscribers
L2 Metric	• **CTR on AiQuliser Button** • **Engagement Ratio:** Average #equalizer edits per subscriber
Rail Guard	• **CTR on Reset Button**

Note: Engagement Ratio metric is unique in nature. It is expected to be high for newly added songs, while it should be low for older songs on the platform.