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The Impact of Advertising Intrusiveness and Perceived Transaction Security on Premium Subscription Intention of Spotify Users in Medan City

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ABSTRACT

This study examines the association of Advertising Intrusiveness and Perceived Transaction Security with Premium Subscription Intention among free-tier Spotify users in Medan City. Using a quantitative cross-sectional design, data were collected from 100 respondents selected through purposive sampling and analyzed using multiple linear regression in SPSS. Advertising Intrusiveness was positively associated with Premium Subscription Intention (B = 0.917, t = 8.845, p < .001), as was Perceived Transaction Security (B = 0.311, t = 4.063, p < .001). The overall regression model was statistically significant (F = 68.539, p < .001) and explained 58.6% of the variance in subscription intention (R^2 = .586). These findings indicate that both ad-related discomfort in the free tier and confidence in payment security are positively associated with users' intention to upgrade. Because of the cross-sectional design, the results do not establish causal effects. Spotify may consider managing the ad experience on the free tier while strengthening transaction security assurances, although these implications require further testing with behavioral data.

Keywords: Advertising Intrusiveness, Perceived Transaction Security, Premium Subscription Intention, Spotify

INTRODUCTION

The shift from physical music and illegal downloads to digital streaming is a socio-cultural and economic transformation, a move from ownership to access. Among music streaming apps in Indonesia, Spotify is often reported as a leading choice: a Populix survey reported by GoodStats (2024) found that 1,237 of 2,086 respondents (about 59%) named Spotify as their favorite music streaming app, ahead of YouTube Music and JOOX. Results depend on how usage is measured, however; the 2023 APJII survey of 8,510 respondents, reported by GoodStats (2023), found YouTube Music to be the most frequently used music platform (44.18%). Spotify offers both a free, ad-supported tier and a paid Premium tier, which makes it important to understand what drives free users' intention to upgrade.

Spotify operates a freemium model, which attracts a large user base while raising the question of how many free users convert to paid subscriptions. In Q4 2025, Spotify reported 751 million Monthly Active Users (MAUs), of which 476 million used the ad-supported tier, alongside 290 million Premium subscribers (Spotify, 2026). Yulianto and Hillebrandes Oroh (2021), surveying 135 free and Premium Spotify users in Surabaya, found that value for money was the most dominant of four predictors of Premium purchase intention (value for money, enjoyment, app rating, and social value), which suggests that perceived value for money is related to the intention to purchase Premium. The free tier offers limited features and includes advertising, which may lead some free

users to consider Premium. Because subscribing also requires a digital payment, perceived transaction security may be a further consideration (Roca et al., 2009).

As one of Indonesia's largest metropolitan cities, Medan has a young, productive population aged 20-29 numbering 387,368 (Badan Pusat Statistik, 2024), making it a strategic market for digital services such as Spotify. This age group, broadly millennials and Gen Z, is the most dominant segment in music streaming, with high internet penetration and smartphone ownership that make it responsive to app-based services. Medan's demographic base is therefore not only large but also well aligned with the business model of platforms like Spotify.

Wang et al. (2005) identified six key factors that significantly distinguish consumers willing to pay from those who are not: convenience, essentiality, usage frequency, added value, perceived service quality, and perceived fairness. In music streaming, convenience is among the most dominant factors, as users are willing to pay to avoid intrusive ads, download music for offline listening, and enjoy unlimited listening that suits a fast-paced digital lifestyle. In the Spotify context, this study focuses on Advertising Intrusiveness, the disturbance free-tier users perceive, and Perceived Transaction Security, users' confidence in the security of digital payments.

Many Spotify users still choose the free version. To gain an initial picture of Spotify Premium usage and interest, the researchers conducted a pre-survey of 26 respondents aged 18 and above in Medan, all of whom had not subscribed to Spotify Premium. Of these 26 respondents, 9 (35%) expressed interest in subscribing, while 17 (65%) showed no interest. These pre-survey figures, including those on advertising disturbance and perceived security reported below, describe the local context only; they are based on 26 respondents and do not indicate any relationship with subscription intention, which is tested in the regression. All percentages are rounded to the nearest whole number.

Consumers' decision to move from freemium to premium is driven by a combination of perceived functional, social, and emotional value. Mäntymäki et al. (2020) found that ubiquity (access anywhere, anytime) and new content discovery significantly influence users' intention to upgrade. Rachmatullah (2025) showed that Spotify retains customers through easy access, content discovery, and social features that create a positive user experience, which increases loyalty and the decision to keep subscribing. Spotify is also seen as a legal, accessible, and globally reputable streaming platform, giving consumers a sense of security when making subscription transactions (Wulung and Ardyan, 2026).

According to advertising intrusiveness theory (Li et al., 2002), an ad is intrusive when it disrupts a consumer's ongoing cognitive processing, defined as a psychological reaction to that disruption. The concept differs from irritation and ad avoidance, because intrusiveness acts as an initial cognitive mechanism that triggers these negative emotional reactions. It is relevant to Spotify, where audio and visual ads often appear suddenly while users are focused on music or podcasts, and are perceived as interruptions. Li et al. (2002) found that higher perceived intrusiveness leads to greater irritation and avoidance, both cognitive (ignoring ads) and behavioral (closing the app or skipping ads), which can reduce marketing communication effectiveness and trigger negative brand attitudes. The same pre-survey also showed that 19 of the 25 respondents who answered this question (76%) agreed that Spotify’s ads greatly disrupt enjoyment of the free version. Ad intrusiveness is thus felt by most of these respondents and is relevant to examine.

Previous studies on advertising intrusiveness in freemium services show inconsistent results. Mäntymäki et al. (2020) found that ad intrusiveness on the free version of Spotify had no significant effect on upgrade intention. In contrast, Harahap et al. (2025), studying freemium social media users in Indonesia, and Phan Trong and Vo Thi Ngoc (2024), studying freemium OTT users in Vietnam, found that it significantly influenced switching intention to premium, although with small effect sizes. Manala-O (2022), in social media

advertising, found that intrusiveness did not affect consumers' ad recall. These differences suggest that the effect of ad intrusiveness on consumer intention is context-dependent and may vary by platform type and market maturity, making it relevant to re-test in the Spotify context in Medan.

The decision to move from Spotify's free version to Premium is also tied to the app's security. Perceived security has a significant positive effect on customer satisfaction in mobile payment apps, which in turn drives loyalty, showing that consumers prioritize the security of their personal data and transactions, such as the risk of billing information misuse or unauthorized third-party surveillance (Cheah et al., 2021). When consumers believe an e-commerce system is secure and protects their data from irresponsible parties, they are more confident transacting on that platform (Roca et al., 2009). In the same pre-survey, 18 of the 25 respondents who answered this question (72%) said they feel secure when transacting or using Spotify's services, while 7 (28%) said they feel insecure. Perceived transaction security is thus felt by most of these respondents and is relevant to examine.

Previous studies confirm the role of perceived transaction security in consumers' intention to use digital services. Ansori and Nugroho (2024) found that security positively affects trust among mobile payment users in Indonesia, which in turn positively affects continuance intention. Similarly, Nugraha and Rezeki (2025) found that trust in mobile payment, shaped partly by perceived data security, significantly contributes to university students' continued use of digital payment apps in Medan. Riza and Aditya (2025), using the UTAUT2 model, also found that perceived security significantly affects e-wallet users' behavioral intention in Indonesia. These findings suggest that perceived transaction security consistently shapes intention to use digital services, so it is worth re-testing for Spotify Premium in Medan.

Most prior research on premium subscription intention takes a value-based view, treating perceived value, enjoyment, social value, and service quality as the main pull factors toward paid versions. However, it pays little attention to two aspects closely tied to freemium users' daily experience: the disturbance caused by the free product itself (advertising intrusiveness) and the doubt that arises at the final stage of conversion, when users must make a digital payment (perceived transaction security). These are rarely studied together, yet they mark two distinct critical points in the user journey: ad intrusiveness acts as a push factor that makes free users uncomfortable, while transaction security acts as a barrier at the final decision to pay. Similar studies have mostly examined other platforms, with inconsistent results, and none has targeted Spotify users in Medan. This gap motivates this study to test the joint association of Advertising Intrusiveness and Perceived Transaction Security on Premium Subscription Intention.

This study is expected to help Spotify design strategies for converting freemium users into Premium subscribers, particularly by managing the ad experience and strengthening perceived transaction security. On the advertising side, the findings can inform ad frequency and duration that prompt users to consider the paid version without irritating them into leaving the platform. On the security side, they can guide providers in improving cost transparency, payment ease, and data protection assurances. Academically, this study enriches research on digital streaming consumer behavior by testing two freemium variables, the push to leave the free tier and the barrier in payment, together in a single framework.

LITERATURE REVIEW

Premium Subscription Intention

The Theory of Planned Behavior (Ajzen, 1991) views intention as the motivational antecedent of behavior, shaped by attitude, subjective norms, and perceived behavioral control. Dodds et al. (1991) define purchase intention as a consumer's subjective willingness to buy a product or service after evaluating its benefits. In freemium settings, Mäntymäki et al. (2020) distinguish upgrading to premium from retaining a premium subscription. Pratiwi et al. (2024) link subscription intention to perceived enjoyment and money attitude, while Wulung and Ardyan (2026) describe it as a behavioral intention shaped by both rational factors and personal experience. This study therefore defines Premium Subscription Intention as free Spotify users' tendency to move to Premium, based on their evaluation of the free-version experience and the paid subscription process.

Prior research mostly explains subscription intention through value factors. Mäntymäki et al. (2020), studying 436 Spotify users, found that upgrade intention was predicted by enjoyment and price value, while ad intrusiveness on the free version negatively affected price value. In Indonesia, Pratiwi et al. (2024) found that perceived enjoyment and money attitude influenced streaming subscription intention among 151 respondents in Makassar, and Zendrato et al. (2025) found that enjoyment and price value influenced Kompas.id subscription intention among 400 respondents. A review of 20 Scopus/WoS articles likewise identifies enjoyment, cost-benefit ratio, and personalization as key cognitive factors (Wu et al., 2024). However, ad intrusiveness and payment security have rarely been tested as predictors of Spotify Premium subscription intention, especially in Medan.

Premium Subscription Intention follows the conceptual definition of purchase intention of Dodds et al. (1991), widely used in purchase intention research, and is measured with nine items grouped by the authors into three indicators: (1) Intention to Subscribe, the extent of users' desire to subscribe to Spotify Premium; (2) Willingness to Subscribe, their readiness to start using the paid service; and (3) Likelihood to Subscribe, the probability that they will actually subscribe in the near future. The items were adapted from upgrade-intention measures used in freemium research (Mäntymäki et al., 2020).

Advertising Intrusiveness

Advertising intrusiveness can be explained through psychological reactance theory (Brehm, 1966), which holds that consumers react negatively to ads perceived as threatening their freedom to complete an activity. Li et al. (2002) define intrusiveness as a psychological reaction to ads that disrupt a consumer's ongoing cognitive processing. Edwards et al. (2002) see it as the perception that ads interrupt user activity, shaped by the fit between ad content and the task and by cognitive intensity when the ad appears. McCoy et al. (2008) describe it as users' perception that an ad blocks or disturbs their main task on a digital platform, and Wali (2017) as the degree of disturbance smartphone users feel when ads force their attention away from ongoing activity. These definitions agree that intrusiveness is not just ad frequency but users' subjective perception of how far ads interrupt them and are beyond their control. This study therefore defines Advertising Intrusiveness as the extent to which free Spotify users feel ads interrupt their listening and are beyond their control.

Evidence on the effect of ad intrusiveness on intention to switch to paid versions is mixed. Mäntymäki et al. (2020), studying 436 freemium music users, found that ad intrusiveness had no significant effect on upgrade or retention intention and even reduced the price value of premium. In contrast, Harahap et al. (2025) found a significant but small effect on switching intention among 507 freemium social media users in Indonesia ($\beta = 0.100$), and Phan Trong and Vo Thi Ngoc (2024) found a similarly small effect ($f^2 = 0.053$) among 619 freemium OTT users in Vietnam. Riedel et al. (2024) studied which advertising-control features help consumers feel agency over intrusive ads and reported brand-

related outcomes; this is indirect evidence and does not address Spotify Premium subscription intention. Manala-O (2022) found that intrusiveness did not affect ad recall in social media advertising, suggesting the effect depends on how easily users can passively avoid ads. It therefore needs testing among free Spotify users in Medan.
Advertising Intrusiveness is measured by adapting the perception scale of Li et al. (2002) and Edwards et al. (2002) into five-point Likert statements for free Spotify users, through two indicators: (1) interference, the extent to which ads disrupt listening to music or podcasts; and (2) forced exposure, the feeling of being made to accept ads without control over their timing and frequency. In freemium settings, comparable items assess whether free-version ads distract from the main content and make users uncomfortable (Harahap et al., 2025; Mäntymäki et al., 2020). Irritation is an emotional response that follows perceived intrusiveness (Li et al., 2002) and is therefore not treated as part of the construct.

Perceived Transaction Security
Perceived security in online transactions rests on online trust: willingness to transact electronically depends on confidence that data and funds are protected (Roca et al., 2009). Flavián and Guinalíu (2006) define it as consumers' perception that their personal information will not be illegally accessed, stored, or manipulated during online transactions. Salisbury et al. (2001), Kim et al. (2008), and Kumar et al. (2018) similarly describe it as a subjective belief that transactions or payment systems are protected from unauthorized parties. Security is thus a subjective perception, not merely an objective system condition. This study defines Perceived Transaction Security as Spotify users' subjective belief that their personal data and payment process when subscribing to Premium are protected from unauthorized access and misuse.
Prior studies confirm the role of perceived security in behavioral intention toward digital services. Fahmi (2018), studying 90 smartphone users in Malang, found that perceived security and trust significantly shape attitudes toward e-commerce transactions, which in turn form transaction intention. Ansori and Nugroho (2024) found that security positively affects trust among mobile payment users in Indonesia, which then increases continuance intention. Nugraha and Rezeki (2025) found that trust in mobile payment, partly shaped by perceived data security, significantly contributes to students' continued use in Medan, and Riza and Aditya (2025) found that perceived security significantly affects e-wallet behavioral intention in Indonesia. Security thus consistently drives intention to continue using transaction-based digital services, making it relevant to test as a determinant of Premium Subscription Intention among Spotify users in Medan, since subscribing also requires a digital payment.
Perceived Transaction Security is measured by adapting the online transaction security dimensions of Flavián and Guinalíu (2006) to Spotify Premium subscriptions through three aspects: (1) Data Confidentiality, confidence that personal and payment data will not be illegally accessed or used; (2) Transaction Protection, confidence that the platform has adequate mechanisms to secure each transaction; and (3) System Reliability, confidence that the payment system is technically capable of preventing data interception or modification by unauthorized parties.

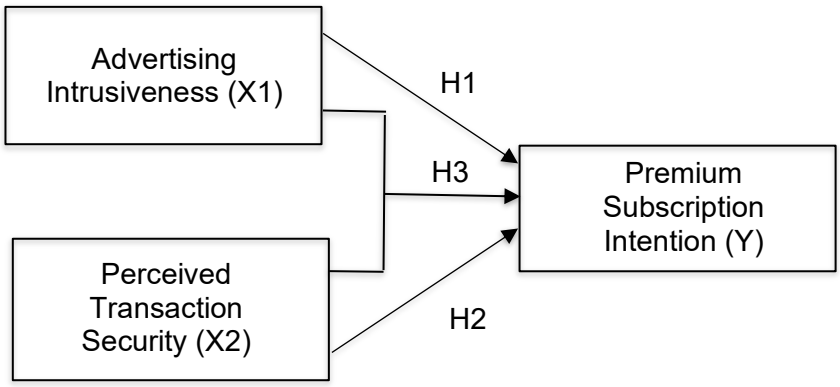


Figure 1. Theoretical Figure

This study formulates the following hypotheses to examine users' behavioral mechanism:

(1) H1: Advertising Intrusiveness (X1) is associated with Premium Subscription Intention (Y) among Spotify users in Medan.
(2) H2: Perceived Transaction Security (X2) is associated with Premium Subscription Intention (Y) among Spotify users in Medan.
(3) H3: Advertising Intrusiveness (X1) and Perceived Transaction Security (X2) are jointly associated with Premium Subscription Intention (Y) among Spotify users in Medan.

RESEARCH METHOD

This study uses a quantitative, cross-sectional approach with data collected through an online questionnaire (Syamsuddin et al., 2022). Because the exact population of Spotify users is unknown and resources were limited, purposive sampling was used, with respondents required to be aged 18 or older, to be self-reported users of the free version who had not subscribed to Premium, and to live in Medan. The sample of 100 respondents exceeded Green's (1991) rule-of-thumb recommendation of 66 ($N \geq 50 + 8m$) for assessing the overall regression relationship with two predictors, but was below the corresponding recommendation of 106 ($N \geq 104 + m$) for assessing individual predictors. These guidelines are rules of thumb and do not constitute a study-specific power analysis. A separate pilot sample of 30 respondents was used for instrument testing and was not included in the final sample of 100. All items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Advertising Intrusiveness (X1) was measured with six items adapted from Li et al. (2002) and Edwards et al. (2002) on two dimensions, interference and forced exposure, while irritation was treated as a separate emotional response to intrusiveness (Li et al., 2002) and not as part of the construct. Perceived Transaction Security (X2) was measured with nine items adapted from Flavián and Guinalíu (2006), and Premium Subscription Intention (Y) with nine items adapted from Mäntymäki et al. (2020). The items were written in Indonesian and translated into English for reporting; the operational definitions of the variables are presented in Table 1, and the item-level operationalization in Table 2. Validity was tested on the separate pilot sample of 30 respondents using Pearson item-total correlations against the r-table value of 0.361, and reliability was assessed using Cronbach's alpha (> 0.70) on the same sample. Data from the final sample were analyzed in SPSS using multiple linear regression ($Y = \alpha + \beta_1 X1 + \beta_2 X2 + e$), after classical assumption tests (Kolmogorov-Smirnov, tolerance/VIF, and Glejser), with hypotheses tested through the t-test, F-test, and R^2 at a 5% significance level.

RESULTS

Table 1.
Respondent Data

Characteristics	Category	Frequency	Percentage
Sex	Male	42	42%
	Female	58	58%
Age	18-24 years	52	52%
	25-34 years	31	31%
	35-44 years	12	12%
	> 44 years	5	5%
Daily Spotify use	Yes	95	95%
	No	5	5%
Length of time as a Spotify user	< 1 year	8	8%
	1-2 year	25	25%
	3-4 year	29	29%
	> 4 year	38	38%
Total		100	100%

Table 2.
Validity and Reliability Tests

Item	Pearson r (item-total)	r-table	Cronbach's Alpha
X1_1	0.908	0.361	0.815
X1_2	0.888		
X1_3	0.903		
X1_4	0.935		
X1_5	0.915		
X1_6	0.865		
X2_1	0.856	0.361	0.794
X2_2	0.888		
X2_3	0.859		
X2_4	0.910		
X2_5	0.875		
X2_6	0.910		
X2_7	0.899		
X2_8	0.898		
X2_9	0.859		
Y_1	0.911	0.361	0.796
Y_2	0.924		
Y_3	0.906		
Y_4	0.901		
Y_5	0.914		
Y_6	0.933		
Y_7	0.937		
Y_8	0.897		
Y_9	0.875		

Instrument testing was based on the separate pilot sample of 30 respondents (Table 4). Item validity was assessed with Pearson correlations between each item and its construct total score, compared with the critical r of 0.361 for n = 30 (df = 28) at the 5% level. All items of Advertising Intrusiveness, Perceived Transaction Security, and Premium Subscription Intention exceeded this value, so all items were retained. Cronbach's alpha was 0.815 for X1, 0.794 for X2, and 0.796 for Y. All values exceed the 0.70 criterion, indicating acceptable internal consistency. The One-Sample Kolmogorov-Smirnov test on the unstandardized residuals of 100 respondents gave a test statistic of 0.056 with an Asymp. Sig. of 0.200 (> 0.05), indicating that the residuals are normally

distributed and the normality assumption is met. The Glejser test, which regressed the absolute residuals on the independent variables, gave significance values of 0.265 for X1 and 0.673 for X2 (both > 0.05), indicating no heteroskedasticity, so the residual variance is constant.

Table 3.
Multicollinearity Test, t-Test, and Multiple Linear Regression Analysis

Model	B	t	Sig	Tolerance	VIF
(Constant)	2.401	1.062	0.291		
Total_X1	0.917	8.845	0.000	0.876	1.142
Total_X2	0.311	4.063	0.000	0.876	1.142

Tolerance (0.876) and VIF (1.142) for both independent variables indicate no multicollinearity. The t-tests show that X1 ($t = 8.845$, $p < .001$) and X2 ($t = 4.063$, $p < .001$) were each positively and significantly associated with Y, so H1 and H2 are supported. The regression equation is $Y = 2.401 + 0.917X1 + 0.311X2$: holding the other variable constant, each one-unit increase in X1 is associated with a 0.917 higher Y, and each one-unit increase in X2 with a 0.311 higher Y. The F-test showed that X1 and X2 were jointly significant ($F = 68.539$, $p < .001$), so H3 is supported. The model explained 58.6% of the variance in Premium Subscription Intention ($R^2 = .586$; adjusted $R^2 = .577$). The remaining 41.4% was unexplained by the model.

The Association of Advertising Intrusiveness with Premium Subscription Intention
Advertising Intrusiveness (X1) was positively and significantly associated with Premium Subscription Intention (Y) ($B = 0.917$, $t = 8.845$, $p < .001$), so H1 is supported. Users who find ads on Spotify's free version more intrusive report a stronger intention to subscribe to Premium. This is in line with Li et al.'s (2002) view that ad-induced cognitive disruption triggers avoidance, which in a freemium context may become a push toward the ad-free paid version, and is consistent with Harahap et al. (2025) and Phan Trong and Vo Thi Ngoc (2024). Riedel et al. (2024), who examined advertising-control features and brand outcomes, offer only indirect context. It differs from Mäntymäki et al. (2020), who found no significant effect on Spotify upgrade intention. One tentative interpretation is that market context matters, for example intrusive ads may weigh more where conversion to paid tiers is low, but this study did not measure market maturity or actual conversion rates, so this remains a hypothesis for future research. Similarly, Manala-O (2022) found intrusiveness unrelated to ad recall on social media; a possible, untested explanation is that such ads are easier to skip passively than Spotify's audio ads.

The Association of Perceived Transaction Security with Premium Subscription Intention
Perceived Transaction Security (X2) was also positively and significantly associated with Y ($B = 0.311$, $t = 4.063$, $p < .001$), so H2 is supported. Users who are more confident in payment security report a stronger intention to subscribe. This is consistent with Flavián and Guinalíu (2006) and Roca et al. (2009), who link confidence in data protection to willingness to transact. It also aligns with Fahmi (2018), Ansori and Nugroho (2024), Nugraha and Rezeki (2025, conducted in Medan), Riza and Aditya (2025), and Kumar et al. (2018), who found that security, directly or through trust, is associated with usage intention in digital payment contexts.

The Joint Association of Advertising Intrusiveness and Perceived Transaction Security with Premium Subscription Intention
The F-test shows that X1 and X2 were jointly significant ($F = 68.539$, $p < .001$), so H3 is supported. Together they explained 58.6% of the variance in Y ($R^2 = .586$; adjusted $R^2 = .577$). This complements the value-based perspective that has dominated studies of subscription intention (Mäntymäki et al., 2020; Yulianto & Hillebrandes Oroh, 2021;

Zendrato et al., 2025), suggesting that ad disruption and confidence in payment security also help explain freemium-to-premium intention among Spotify users in Medan.

CONCLUSION

Multiple linear regression of 100 free-tier Spotify users in Medan showed that Advertising Intrusiveness and Perceived Transaction Security were each positively associated with Premium Subscription Intention. The model explained 58.6% of the variance in Premium Subscription Intention (R^2 = .586; adjusted R^2 = .577). The remaining 41.4% was unexplained by the model. These findings concern reported intention, not actual subscription behavior. Limitations include a sample below Green's (1991) recommendation of 106 for individual predictors, possible conceptual overlap between advertising-related outcome items and Advertising Intrusiveness, adapted scales, unverified freemium status, and unmeasured conversion and ad exposure. Spotify may consider how the free-tier ad experience is perceived and strengthen payment-security assurances, but these implications require testing with behavioral or experimental data.

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