APPLICABILITY OF THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY IN MUSIC STREAMING SERVICES FOR YOUNG USERS

[1]**Luis Hernan Contreras Pinochet**
[2]**Guilherme Neves Nunes**
[3]**Eliane Herrero**

ABSTRACT

Purpose: Our main purpose with this study was to analyze the applicability of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model, developed by Venkatesh, Thong and Xu (2012), on the acceptance and use of music streaming service by college students.

Method: In this study, we do not intend to perform a replication of research, but rather the use of a well-established theoretical model. For this, we used a survey with a final sample of 419 individuals, whose data were analyzed through the Structural Equation Modeling (SEM), with estimation by Partial Least Square (PLS), in order to verify both the direct and indirect relationships of the original model.

Results: The latent variable Facilitating Conditions was not sustained in the adjustment phase, since the analyzed sample demonstrates ease and intuitive use in the access to this type of technology. In addition, the results demonstrate that most of the model is valid for music streaming services, except the Effort Expectation to Intention to Use and Hedonic Motivation to Intention to Use.

Theoretical contributions: We verified that the Habit construct is highly relevant for the consumption of these services, enabling companies to seek alternatives to generate greater motivation and engagement with applications and websites that stimulate the consumers.

Originality/relevance: The use of the UTAUT2 model on the phenomenon of streaming technology is relevant and allows the understanding of its effects.

Keywords: Music Streaming, Applicability, Utaut2, Young People.

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[1] Universidade Federal de São Paulo-UNIFESP, São Paulo (Brasil). Orcid: < https://orcid.org/0000-0003-2088-5283>. Email: <luis.hernan@unifesp.br>

[2] Universidade Federal de São Paulo-UNIFESP, São Paulo (Brasil). Email: <guilherme.neves.nunes@gmail.com>

[3] Programa de Pós-graduação em Administração-PPGA/UNINOVE, São Paulo (Brasil). Orcid: < https://orcid.org/0000-0002-4515-7242>. Email: <liaherrero@gmail.com>

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Luis Hernan Contreras Pinochet, Guilherme Neves Nunes & Eliane Herrero

APLICABILIDADE DA TEORIA UNIFICADA DE ACEITAÇÃO E USO DA TECNOLOGIA EM SERVIÇOS DE STREAMING MUSICAL EM JOVENS USUÁRIOS

RESUMO

Objetivo: O objetivo deste estudo é analisar a aplicabilidade do modelo Unified Theory of Acceptance and use of Technology 2 (UTAUT2), desenvolvido por Venkatesh, Thong e Xu (2012), sobre aceitação e utilização de serviço de streaming musical por estudantes universitários.

Método: Assim, este estudo não se propõe a realizar uma replicação de pesquisa, mas sim a utilização de um modelo teórico consagrado. A pesquisa, do tipo survey, contemplou uma amostra final de 419 indivíduos, cujos dados foram analisados por meio da Modelagem de Equações Estruturais (MEE), com estimação por Partial Least Square (PLS), para verificar as relações diretas e indiretas do modelo original.

Resultados: A variável latente Condições Facilitadoras não se sustentou no modelo na fase de ajustamento, pois o perfil analisado demonstra facilidade e uso intuitivo no acesso a esse tipo de infraestrutura. Ademais, os resultados demonstraram que a maior parte do modelo é válida para o serviço de streaming musical, com exceção da Expectativa de Esforço para Intenção de Uso e Motivação Hedônica para Intenção de Uso.

Contribuições teóricas: Verificou-se que o construto Hábito é altamente relevante para o consumo desses serviços, possibilitando que as empresas busquem alternativas para a geração de maior motivação e engajamento com os aplicativos e sites que estimulem o consumidor.

Originalidade/Relevância: O uso do modelo UTAUT 2, para analisar o fenômeno da tecnologia streaming, é relevante para a compreensão dos seus efeitos.

Palavras-chave: Transmissão De Música, Aplicabilidade, Utaut2, Pessoas Jovens.

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INTRODUCTION

Rapid technological development of the internet and mobile devices have caused significant changes in customer consumption, especially among younger audiences. This has encouraged companies to discover new ways of exploiting the distribution of content (Kim, Chan & Gupta, 2007; Capapé & Ojer, 2012).

People are gaining interest in the consumption of musical streaming, changing their habits and seeking new experiences, preferring a more individualized and personalized consumption. This includes using mobile devices, in which it is possible to select what and when they want to watch, with the logic consumption in virtual services that is based on the experience of buying digital content. With this demand, companies with catalogs with great diversity of consumption through music streaming appear, starting from a monthly payment (Bi, Xu, & Wang, 2014; Xu et al., 2014; Li, Xu, & Zhao, 2015; Agarwal, & Xu, 2015).

According to the International Federation of the Phonographic Industry (IFPI), the term streaming is characterized by a transmission of music, movies or TV in real time that can be played on a computer or other devices, with the advantage of not using the device storage space. In addition, streaming is a technology in which the broadband connection has to be executed quickly enough to show the data in real time (The Guardia Web Wise, 2012, IFPI, 2016).

The music industry is currently transitioning from physics to digital and consumers need to be directed to the use of digital services that provide value to the industry. The most advanced and profitable digital service model is known as signature-based music transmission or Music as a Service (MaaS) (Lee, 2013; Helkkula, 2016).

The increased consumer relationship, with the acceptance of technology, is additionally a factor that opens doors to the use of music streaming technology. It is a technology embedded in the context of consumption, thus, the acceptance and use of music streaming technologies can be tested by Venkatesh, Thong and Xu's (2012), Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model, published in the international academic journal Mis Quarterly, stands out within the context of consumption at the individual level.

The use of the UTAUT2 model to analyze the phenomenon of streaming technology is relevant to a better understanding of its effects, since this study does not propose to perform a replication of research, but rather to verify the use of a well-established theoretical model.

Therefore, this article aims to analyze the applicability of the UTAUT2 model, on the acceptance and use of music streaming service by university students.

The structure of this follows: introduction, theoretical reference, which provides conceptual basis of the theme, as well as the construction of the theoretical model and, in sequence, the method, the data analysis and the conclusions.

THEORETICAL REFERENCE AND PRESENTATION OF THE MODEL

In this section, the theoretical bases that were used as pillars for the development of this study will be discussed. For a better understanding of the subjects, the theoretical framework was subdivided into the following subsections: (2.1) the extended consumer model of the Unified Theory of Acceptance and Use of Technology (UTAUT2) and (2.2) the consumer behavior of entertainment and the streaming market musical.

The Extended Model for Consumption of the Unified Theory of Acceptance and Use of Technology (UTAUT2)

Based on a review of the current literature, Venkatesh et al. (2003), developed the UTAUT as a comprehensive synthesis of previous technology acceptance research. The UTAUT model has four key constructs (1) expectation of performance, (2) expectation of effort, (3) social influence, and (4) facilitating conditions, which influence the intention to Use a technology (Neufeld, Dong, & Higgins, 2007).

After the creation of the UTAUT model, which was intended for use in a work environment, Venkatesh, Thong and Xu (2012), developed UTAUT2. UTAUT2 in its structure, brings new constructs: Hedonic Price, Habit and Motivation in context of consumption with the objective of extending the UTAUT model to a scenario of individual consumption.

The UTAUT2 model presents the relationships of influence among constructs, which include performance expectancy, expectation of effort, social influence, facilitating conditions, hedonic motivation, price, habit and behavioral intention and use of services streaming music.

The Expectation of Performance represents the degree to which the individual, using a certain technology, will have its performance enhanced in the execution of an activity. Thus, it is defined in terms of utility extracted by the individual in the use of technology, such as saving time, money and effort, convenience of payment and service efficiency (Venkatesh, Thong, & Xu, 2012; Tarhini et al., 2016). Similar to perceived utility and relative advantage, performance expectancy has been presented as a significant predictor of behavioral intent. The construction of performance expectancy consists of four criteria (1) perceived utility (Brown & Venkatesh,

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1989; Davis, 1989), (2) extrinsic motivation (Teo, 1999, Chong, 2013), (3) employment adjustment (Thompson, Higgins & Howell, 1991, Jeng & Tzeng, 2012), and (4) relative advantage (Rogers, 2003). Studies applied in different contexts, such as Tandon, Kiran and Sah (2016), confirm this relation. Therefore, the following hypothesis is proposed:

H1: Performance Expectancy positively affects the Intention to Use music streaming services.

Effort Expectation is understood as the degree of ease perceived by the individual in the use of technology, which is associated with the use of a new technology or a technological product (Venkatesh, Thong & Xu (2012).) According to the results of the literature review, construction of the effort expectation consists of three criteria: (1) perceived ease of use (Venkatesh et al., 2003), (2) ease of use (Jeng & Tzeng, 2012), and (3) complexity (Rogers, 2003). According to previous empirical studies, it was demonstrated that the Effort Expectation would influence the behavioral intention of consumers in both compulsory and voluntary use (Venkatesh et al., 2003; Venkatesh, Thong, & Xu, 2012; Madigan et al., 2016). In this sense, the following hypothesis is formulated:

H2: Effort Expectation positively affects the Intention to Use streaming music services.

Social Influence is defined as the individual perception that other significant people believe that the individual in question should adopt the use of technology (Kit, 2014). Venkatesh et al. (2003), defined social influence as the degree of importance of being recognized by others to use an innovative technology. In this context, Loureiro, Cavallero and Miranda (2018), observed that consumers change their perceptions, attitudes, and behaviors depending on the comments of others. Hence, the way other individuals recommend or do not recommend the use of an online platform or the purchase of an item is considered a factor that impacts behavioral intention (Mishra et al., 2017). In this research, the subjective norm is perceived social pressure to use streaming music services. Drawing on the literature review above, the use of an innovative product can be determined by behavioral intent, based on the following hypothesis:

H3: Social Influence positively affects the Intention to Use music streaming services.

Hedonic Motivation is defined as the motivation to do something due to internal satisfaction (Ryan & Deci, 2000), and to the enjoyment and / or pleasure provided to the individual by the use of technology (Venkatesh, Thong, & Xu, 2012). From the hedonic perspective of individual behaviors, this type of motivation is related to the essence of the individual's psychological and emotional experiences, which can be triggered by both individual traits and cognitive states (Magni, Taylor, & Venkatesh, 2010). In addition, various previous empirical studies demonstrated that hedonic experiences and traits influence consumer technology acceptances in both individual and organizational contexts (Zhou & Lu, 2011). That is to say, the hedonic experience of the individual, when using a technology product such as a music streaming service, is more likely to generate experimental behavior. Within a hedonic perspective, consumers are looking for pleasure with the use of a product or service, considering the purchase process as a pleasant practice (Anderson et al., 2014). Having been found as a strong predictor of behavioral intention by Herrero et al. (2017), in view of the above, it follows the related hypothesis:

H4: Hedonic Motivation positively affects the Intention to Use music streaming services.

The construction of Price Value can be defined as the cognitive trade off of users between the apparent benefits of the technologies and the economic costs for acquiring them, because, in general, people opt for products and services when the benefit brought by them is higher than the monetary value spent on the purchase (Venkatesh, Thong, & Xu, 2012; Alazzam et al., 2016). The value of price has been emphasized by researchers in the fields of information technology and consumer electronics traders (Dodds, Monroe, & Grewal, 1991; Boksberger & Melsen, 2011, Zhao, Lu, Zhang & Chau, 2012; Soltani & Gharbi, 2008; Venkatesh, Thong & Xu, 2012). The value of the price was added to the UTAUT2 model, since a relevant difference between the use of technology in the organizational environment and the use of the consumer is the monetary expenditure of the consumer to use the technology. Perception of price and costs for the use of technology can have a significant impact on consumers' use of music streaming services. We have accordingly:

H5: Price Value positively affects the Intention to Use music streaming services.

The construct Facilitating Conditions is defined as the degree to which a person believes there is an organization and a technical infrastructure to support the use of a system (Venkatesh et al., 2003). Facilitating conditions measure the extent to which the individual perceives resources and environmental support to the use of technology. Involving consumers in certain tasks will depend on an infrastructure of conditions capable of facilitating the necessary interactions. Acquiring music streaming services can

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include computers, smartphones, tablets, internet, online customer support, skills and abilities (Singh & Matsui, 2018). As the facilitating conditions are pointed out as determinants of behavioral intention and use behavior (Venkatesh, Thong, & Xu, 2012; Tandon, Kiran, & Sah, 2016), the following hypothesis is formulated:

H6a: Facilitating Conditions positively affect the Intention to Use music streaming services.

H6b: Facilitating Conditions positively affect the Use of streaming music services.

H6c: Facilitating Conditions mediated by Intention to Use positively affect the use of music streaming services.

Aarts, Verplanken, and Knippenberg (1998), have found that the force of habit reduces the amount of information being acquired before the decision is made. Limayem, Hirt and Cheung (2007), and Venkatesh, Thong and Xu (2012), define Habit as the degree to which consumers tend to make use of technologies or the use of technology products automatically because of learning. The habit is understood as the extent to which people tend to perform automatic behaviors through learning (Limayem, Imayem, Hirt, & Cheung, 2007). Habit has been observed as a significant predictor of behavioral intention (Herrero et al., 2017). Existing studies also highlight the effects of habit on use behavior (Gupta, Dogra, & George, 2017). Therefore, the following hypotheses are formulated:

H7a: Habit affects the Intention to Use streaming music services.

H7b: Habit affects the Use of streaming music services.

H7c: Habit mediated by Intention to Use positively affects the Use of streaming music services.

Lastly, the Intention to Use was observed by social psychologists, who extensively explored behavioral intentions and relationships with future behavior (Aarts, Verplanken, & Knippenberg, 1998). Behavioral intent, or intention-to-use, refers to the degree to which a person has formulated conscious plans to perform or not to perform certain specified future behaviors. Behavioral intent was often measured as cognitive loyalty, which is an important marketing goal (Giovanis, Tomaras, & Zondiros, 2013). In the marketing context, loyalty is defined as the degree to which customers are willing to repurchase a product and support the company with positive word-of-mouth communications (Webb, Sheeran, &, Luszczynska, 2009). For companies that provide music streaming service applications, these results are very important in understanding how members become agents for companies, encouraging friends and acquaintances to buy their products (Ajzen & Madden, 1986; Burke, 2002). Like this:

H8: Intention to Use affects the Use of streaming music services.

Based on the latent variables described above, the hypotheses were formulated, based on the constructs of the UTAUT2 model, according to the relationships that are presented in Figure 1 below.

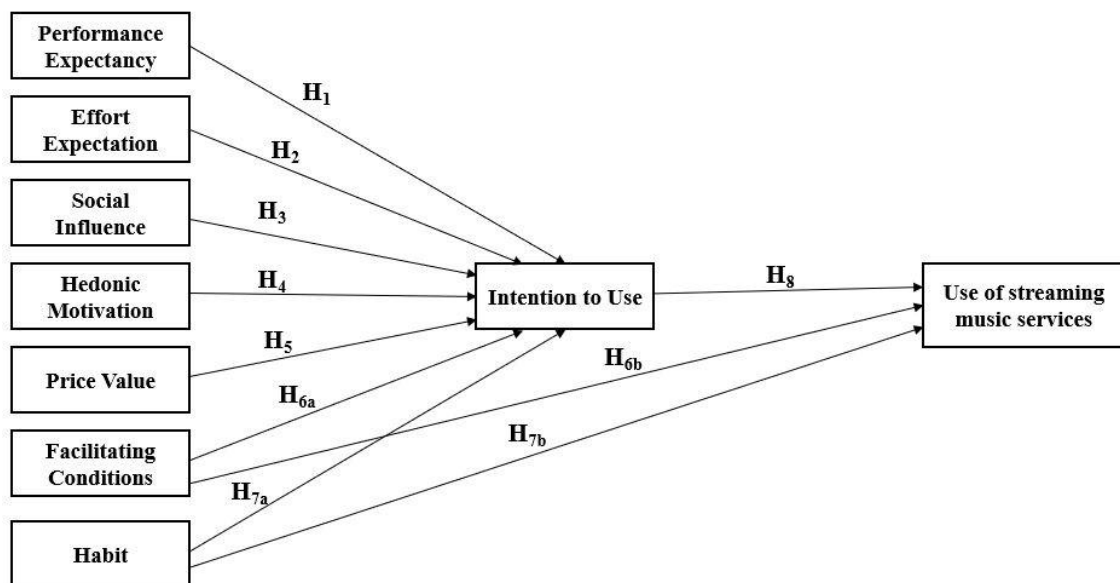**Figure 1 –** Presentation of the proposed model with the relation of the hypotheses
Source: adapted from Venkatesh, Thong and Xu (2012, p. 160).

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Consumer behavior and the music streaming market

The high speed with which new products are created generates a creative marketing need and causes companies to seek innovative alternatives to sell traditional products, such as streaming (Hermann, 2012).

This perception is evidenced by the signature of musical streaming platforms. Streaming is a way of distributing multimedia information through a packet network. The technology allows you to listen and view sound and image files quickly and without the need to download the file (Burkart, 2008).

The consumer, by paying a monthly fee, has a login and password to access a page on the web, and through it to access videos that will be watched through an on-demand transmission. For Hermann (2012), this practice brings greater convenience in the acquisition of products, faster delivery, which becomes instantaneous, and offers a wide range of available products with financial benefits (Silva & Hamza, 2018).

Since 2006, music streaming has advanced, based on iTunes, and this market is developing platforms that allow the user to play music online. In other words, it is possible for the user to listen to songs without having to download them (Vrijens, 2013).

The best-known companies, which provide the services of streaming music, are: Spotify, Apple Music, Deezer, Rhapsody/Napster, Google Play Music, Tidal, and others. Table 1 shows the number of paying users (service subscribers) of each platform (Financial Times, 2017).

Service	Country of origin	Users (millions)
Spotify	Sweden	43 millions
Apple Music	USA	20.9 millions
Deezer	France	6.9 millions
Rhapsody/Napster	USA	4.5 millions
Google Play Music	USA	2.7 millions
Tidal	USA	1 million
Others	-	21.4 millions

Table 1 – Number of paying users for streaming music services
Source: Financial Times: "How streaming saved the music industry" – Media Research (2017, p. 6).

Lee (2013), noted that for a few years the recording industry suffered a downturn and the internet was seen as a factor for such an event because it provided users with illegal access to the content they produced, since download programs share the content without authorization and without passing on profit to the record companies. However, this scenario is changing, and the technological advances have been assisting in the resumption of this segment and gaining new consumers.

Musical streaming is born as a possibility of cloud file consumption, without any physical storage of the audio, which directly implies a new form of content distribution and the emergence of new intermediaries in the digital music commercial process.

The music streaming in "progressive downloads" has become the clear motor of this growth, with a 60.4% revenue increase. Streaming reached a significant milestone with more than 100 million users of paid subscriptions globally, constituting the majority of digital revenue, which in turn now accounts for 50% of total recorded music revenue.

Spotify continues to attract customers: more than 100 million use the service and 40 million pay around $10 a month for the services. Founded in 2006, the company raised more than $1.5 billion, with the latest round of funding assessing it at $8.5 billion (Financial Times, 2017).

Therefore, the subject is current and world-wide, proving the importance of the study on the subject, to identify even more what the factors are that influence this sudden growth and what consequences will be generated by this new trend.

METHOD

The analyzed population consisted of users of music streaming services to a greater or lesser degree. The data were collected and resulted in a non-probabilistic sampling technique, limiting, therefore, causing the generalization of the results of this research (Malhotra, 2014).

This study was developed based on data collected through a survey, adapted from the model of Venkatesh, Thong and Xu (2012). The data collection instrument consisted of 28 assertions (Appendix A), which were answered using a Likert scale, with end points anchored at 1 = totally disagree and 5 = totally

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agree to the first 28 (independent variables). For the question that indicated the degree of agreement regarding the use of musical streaming (dependent variable), the scale contained end points anchored in 1 = totally disagree and 7 = totally agree. Additionally, instruments listed demographic issues and issues regarding the use of streaming music services. The questionnaires were completed by the respondents themselves, in the presence of the researchers, after a brief presentation of the research.

The data collection instrument comprised of a structured questionnaire based on theoretical aspects, which was divided and grouped into latent variables, that is, questions that deal with the same aspect. The data collection was composed by means of the questionnaire technique, with face-to-face application, conducted in a university environment in April 2017.

For the adaptation of the model to the Brazilian context, the reverse translation process (verified by experts in the field) was used, and before the questionnaire was applied, a pre-test was performed with 30 individuals, in order to validate the understanding of the instrument. The next step was to apply the survey with the extension of the sample, and 419 valid questionnaires were considered for the final sample after the data purification procedure, which eliminated 88 questionnaires from respondents considered outliers (those who left many questions blank or used only one or two points of the interval scale) of the 507 participants of the initial sample. The present study follows the mainstream of research devoted to analyzing the individual behavior of technology acceptance and use (Davis, Venkatesh, & Davis, 2000; Venkatesh et al., 2003; Venkatesh, Thong, & Xu, 2012).

G*Power 3.1 software was used to identify the minimum sample size from the identification of the latent variable that receives the largest number of arrows. In the case of this study, the variable Intention to Use was identified, with seven independent variables linked to it. Using the parameters: effect size f2 equal to 0.15 and test power equal to 0.80, indicated by Hair et al. (2006), and p<.1, the result is a critical F of 3.15, with a minimum sample of 68 individuals. In this research, with a sample of 419 individuals, f2 effect size is equal to 0.15 and 7 predictors, F critical 3.01, the test power (1-□ err prob) is equal to 1.00.

For this research, we opted for the model based on partial least squares, or abbreviated, PLS (Partial Least Squares). Due to the presence of a non-normal distribution in the data sets of several sample variables, the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach was used, leading to the use of the SmartPLS application (v3.2.7). For questions related to demographic characteristics and related to music streaming services, the software Microsoft Excel and SPSS were used.

ANALYSIS OF RESULTS

In this section, descriptive analyzes, characteristics of respondents and music streaming services are presented, as well as the multivariate analysis, which corresponds to the premise, and the structural equation model.

Characteristics of respondents and music streaming services

The descriptive analysis of this research made possible the contextualization of the socioeconomic reality of the participants of this study. According to the demographic analysis of the respondents, there was a uniform sample between the number of men (50.1%) and women (49.9%). In addition, slightly more than half (52.0%) is under 20 years of age and, even if it is a non-probabilistic sample, its characteristics match the target audience that uses music streaming services products: Spotify, Deter and Apple Music.

In the sample, 94.75% of the respondents are enrolled in undergraduate courses, which is likely due to the fact that it was applied in a university environment. Also, 30.31% have a monthly family income of R$4,427.36 (R$ = reais, Brazilian currency) to R$8,695.88. According to the Brazilian Association of Research Companies (ABEP), most of the respondents have a socioeconomic stratum B2. Gender remains similar when it comes to monthly family income, but female gender is more prominent in the incomes of R$4,427.36 to R$8,695.88 (ABEP, class B2), while males in incomes from R$8,695.88 to R$20,272.56 (ABEP, class B1).

Features related to music streaming services

The present study analyzed the respondents' knowledge of the applications that provide music streaming services and it was observed that among the applications listed, the most popular application is Spotify (31.31%) followed by Googleplay (23.17%). When the questioning verified utilization, Spotify (69.33%) proved to be the most utilized service, which can be related to the fact that it is the best known, and secondly is Deezer (11.76%). In relation to the evaluation of the quality of service to the user from the experience with the application, the best evaluated was Spotify (51.59%), the second being AppleMusic (16.28%).

In questions about gender and time of use, classified in months, only 87.59% answered the questions. With this, the N will be considered for 367, who were the respondents who use the applications.

It is noticed that the majority of users are in the "time of use" of up to twelve months, with no significant difference between genders, men (14.4%) and women (14.2%). When the time from 31 to 48

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months is verified, a difference between the genders is observed, being men (6.8%) and women (3.8%).

When observing gender and quantity of use, which indicates weekly hours in which people use the applications, it is possible to note that the female gender stands out for being in the highest ranges of use between 30 and 42 hours a week and up to over 50 hours a week. The female gender would be considered high users, standing out from the masculine gender, that differs in the bands of use less than 5 hours weekly.

In relation to gender and price, majority of users who contract services pay between R$10.00 and R$20.00, with men at 21.96%, being slightly different from women at 19, 81%. However, when the value rises to R$20.00 to R$30.00, the scenario reverses and women (8.59%) differ little more from men (7.64%). In the relationship between age and price, when the age is over 20 years, the incidence of free membership (20.76%) is higher than the other plans, a fact that can be explained by the respondents being university students and are unwilling to sign a plan with greater cost. When age increases to 21 to 24 years (16.71%), the highest percentage of acquisition is in the plans from R$10.00 to R$20.00 per month. Another issue applied was the environment that users considered more appropriate to use music streaming applications, and most users considered the best environment (81.86%) at home and, second (81.15%) public transportation.

Assumptions and analysis of the structural model

In multivariate analysis techniques that use metric variables and statistical tests, multivariate normality is the fundamental condition of application. Normality of the data was verified by observing the kurtosis and asymmetry present in the data sample by the Komolgorov-Smirnov (K-S) test and the respective p-value of each variable (Appendix A). This procedure was necessary to limit the possibility of using some techniques of statistical analysis that have as characteristic the normal distribution of the data.

In relation to the predictive variables, related to the latent variable Intention of Purchase, in the context of the theme of this research, it was possible to accommodate the multicollinearity in the model, since all values of Variance Influence Factors (VIFs) were below 5, varying between 1.251 and 2.243. All p-values of the test for the indicators were significant at p <.01. In addition, the normality test result corroborated the estimation of the structural model in partial least squares.

After the first iteration, the results of factorial loads of the indicators obtained by each of the latent variables were presented, and no indicator was necessary, since all were with factorial loads above 0.5. It was necessary to exclude indicators for the adjustment of the Average Variances Extracted (AVEs) in the model (EE01 = 0.637, PE04 = 0.655, FC01 = 0.623, FC02 = 0.679, FC = 0.598). It was observed that in view of the situation, all indicators presented values above .7. In this sense, the latent variable Facilitating Conditions was not based on the model and was withdrawn from this study, which also resulted in the elimination of three hypotheses (H6a, H6b and H6c).

Discriminant validity assesses whether the items reflecting the factor are not correlated with other factors, which is demonstrated when the mean extracted variances are greater than or equal to the square of the correlation between the factors. Table 2 shows that all the mean extracted variances are greater than or equal to the square of the correlation between the factors, so it was not necessary to eliminate items from the measurement model.

Latent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Performance Expectation	**.803**						
(2) Effort Expectation	.649	**.798**					
(3) Habit	.723	.615	**.801**				
(4) Social Influence	.258	.223	.407	**.866**			
(5) Intention to Use	.736	.566	.789	.269	**.864**		
(6) Hedonic Motivation	.772	.694	.732	.311	.709	**.842**	
(7) Use	.730	.612	.798	.278	.771	.678	**1.000**
(8) Price Value	.423	.477	.581	.376	.537	.519	.524	**.828**

Table 2 – Discriminant Validity: Criterion of Fornell and Larcker
Source: survey data.
Note: The highlighted diagonal shows the square roots of the AVE.

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The analysis of the measurement model must precede the analysis of the relationships between the latent variables. The next step was to examine the AVEs and the quadratic correlations between the constructs, the convergent validity, and the composite reliability, presented in Table 3.

Latent Variables	Cronbach Alpha	Compound Reliability	Average Variance Extracted (AVE)	R^2
References	>.7	>.7	>.5	
Performance Expectation	.728	.845	.645	
Effort Expectation	.713	.840	.636	
Habit	.813	.877	.642	
Social Influence	.837	.900	.750	
Hedonic Motivation	.794	.879	.709	
Price Value	.773	.867	.686	
Intention to Use	.830	.898	.746	.778
Use	1.000	1.000	1.000	.681

Table 3 – Convergent validity: Cronbach's Alpha, Reliability, AVE and R²
Source: survey data

Since all the variables of a questionnaire use the same measurement scale, the coefficient is calculated from the variance of the individual items (Table 3). Cronbach's alpha ranged from .713 to 1.00, with values above .60 to .75 being considered moderate, and from .75 to 0.90, high (Malhotra, 2014).

According to Hair et al. (2006), the composite reliability consists of the evaluation made from the results obtained from the confirmatory factorial analysis model for the measurement coefficients and the measurement errors. Thus, composite reliabilities ranged from 0.840 to 1.00, which is considered very good.

For this model, AVEs ranged from .636 to 1.00. The criteria of Fornell and Larcker (1981), were used, and it was verified that all values of AVEs presented results greater than .50. Thus, according to Chin (1994), the existence of convergent validity occurred.

The R² value measures the predictive accuracy of the model, representing the combined effects of the endogenous variables on the exogenous variables. In the present study, R² value demonstrated that the model has predictive accuracy and relevance in all constructs: Intention to Use (.778) and Use (.681), which represents substantial predictive accuracy.

The Q2 evaluates how much the model approaches what was expected of it (or quality of the prediction of the model or would estimate the adjusted model). Values greater than zero should be obtained as evaluation criteria (Hair et al., 2014). A perfect model would have Q2 = 1 (shows that the model reflects reality - no errors). The Q2 values are obtained by reading the general redundancy of the model in the blindfolding module of the SmartPLS software.

The criterion for considering a good accuracy is that Q2> 1. In this case, the Intent of Use construct obtained Q2 = .543 and Use obtained Q2 = .663 of the model of the adjusted model, which is considered adequate.

The construction of the measurement model also involved the validation of the constructs, based on the verification of reliability and significance among the variables, through confirmatory factorial analysis (Figure 2), according to the final model obtained in this study.
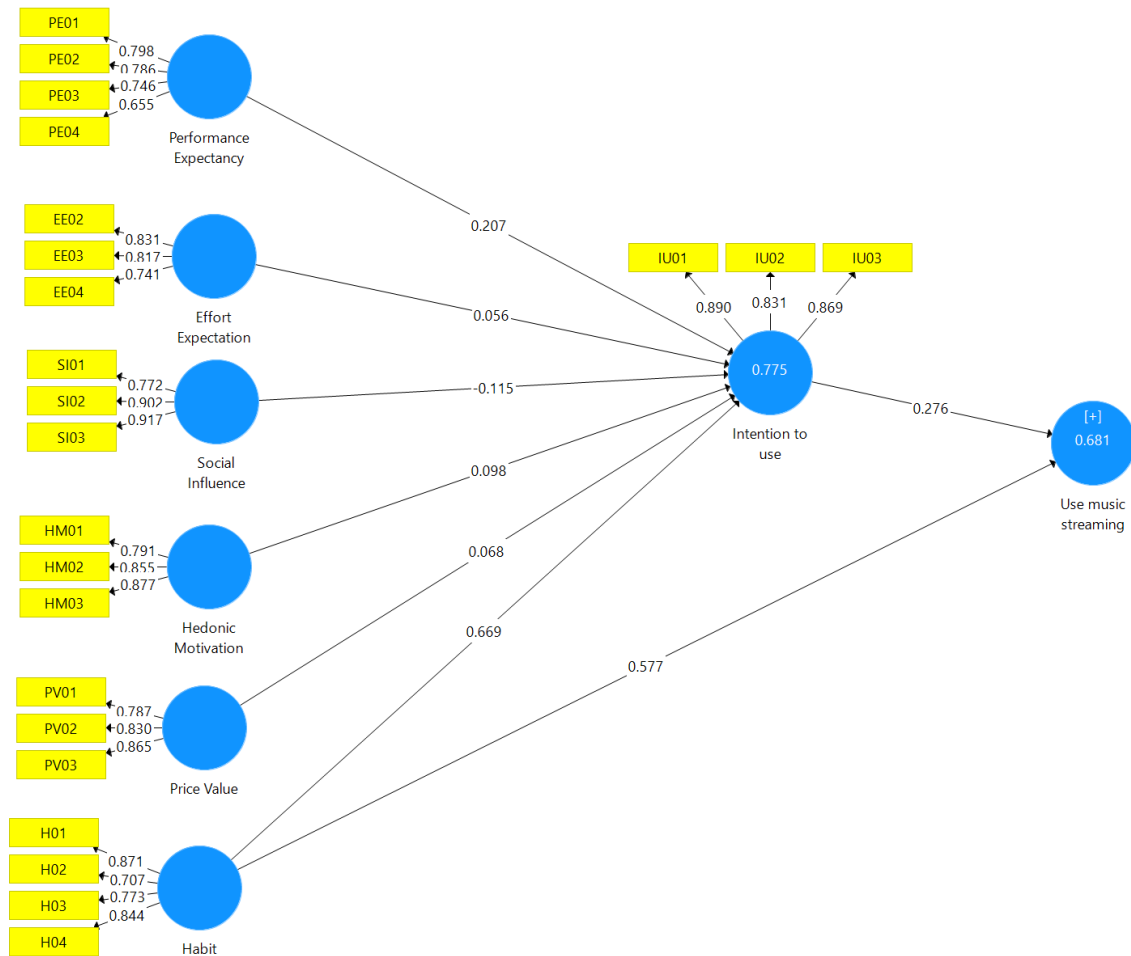
Figure 2 – Convergent Validity Model
Source: research data

In the practical application of the modeling of structural equations for the proposed model, the approach suggests the evaluation of the measurement models individually, seeking to verify their validity and consistency and then carrying out the approach of the structural model.

The model proposed in this research was estimated using the bootstrapping technique, comparing the original sample with the samples generated by this technique. A further 500 subsamples were generated, with the analysis of the significance of the paths, which can be verified from t-values and factorial loads of observable variables (Chin, 1994). These values are interpreted below in Table 4.

Hyphotesis	Paths	(β)	Bootstrapping of 500	SE	Test t	P Values	Sig.
H_1	Performance Expectation -> Intention to Use	.221	.224	.052	4.226	.000	*
H_2	Effort Expectation -> Intention to Use	.063	.064	.035	1.791	.074	N.S.
H_3	Social Influence-> Intention to Use	.104	.102	.026	3.990	.000	*
H_4	Hedonic Motivation -> Intention of Use	.079	.080	.045	1.770	.077	N.S.
H_5	Price Value -> Intention to Use	.079	.083	.034	2.335	.020	**
H_{7a}	Habit -> Intention to Use	.675	.671	.042	16.045	.000	*

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H₇ᵦ	Habit -> Use	.576	.574	.059	9.832	.000	*
H₈	Intention of Use -> Use	.276	.278	.064	4.300	.000	*

Table 4 – Interaction of constructs
Notes: significance: * p <.01 ** p <.05 *** N.S. = not significant.
Source: survey data.

The results obtained in the analysis of the significance of the paths indicated that the majority did not obtain differences between the original sample and the subsamples generated by the statistical technique with the critical limits for Student's t-test (Hair et al., 2006).

The path of H1 - Performance Expectation and Intention to Use was supported with p <0.001. This is explained according to Venkatesh, Thong and Xu (2012), performance expectancy means the extent to which the use of a new technology or a new technology product can provide consumers with benefits in performing specific activities. According to Aarts, Verplanken and Knippenberg (1998), the intention to use refers to the degree to which a person has formulated conscious plans to carry out certain specified future behaviors or not. Thus, we perceive the significance of expectation of performance in relation to the intention to use, because the respondents made choices and analyzed how the uses of music streaming services would affect their lives when they become users. The expectation of performance is related to the perception of utility of a certain technology. In the case of music streaming services, the perception of utility of the service to meet the needs of entertainment strongly influences the intention to use the technology.

The relation between Effort Expectation and Intention to Use, referring to H2, was rejected with p> 5%. This is because the Effort Expectation refers to the degree of ease of use, which is associated with the use of a new technology or a technological product (Venkatesh, Thong, & Xu, 2012). For the formation of the expectation of effort, three criteria are used (1) perceived ease of use, (2) ease of use and (3) complexity. From these criteria, it is possible to analyze that according to users, such criteria do not influence the intention to use in relation to music streaming services. As most respondents (52%) are <20 years of age, using these services does not require them to perceive such a degree of complexity, so as to prevent them from using these new technologies, thus making the Effort Expectation insignificant.

Subsequently, the path of H3 between Social Influence and Intention to Use was supported with p <0.001. This demonstrates that the decision-making process of the users in adopting an innovative technology is influenced by the social notion. Therefore, it is possible to explain how social influence becomes significant in relation to the Intention to Use using as an example, Spotify, which has the largest number of users (69.33%). This may be due to the nature of the research being within a university context, with a sample of similar age and schooling, where much of it uses the same application, and probably new users of these technologies will be influenced by a large part of their social circle use of the same application, because as a new user, it considers the opinion of others.

Social Influence relates to the degree of influence of people important to the user in the use of technology, positively impacting the intention to use the services of streaming music, in which users become more likely to use this service after indicating groups such as family, friends, co-workers, use the service. Social media are important opinion-forming sources as digital influencers from electronic word-of-mouth communication (eWOM). Also, since there is a monetary value involved in using this type of service, individuals prefer to research or learn more in their groups about what they are contracting.

The relationship proposed by H4 between Hedonic Motivation and Intention to Use was rejected with p> 5%. According to Ryan and Deci (2000), hedonic motivation is defined as the motivation to do something due to internal satisfaction. In the hedonic perspective of individual behaviors, the motivation to use music streaming services is related to the experiences of using similar disruptive technologies. The sample indicated that although the purchase process is a pleasant practice, it does not generate a hedonic need, but rather it is utilitarian within this process of choosing and selecting songs or playlists (Magni, Taylor, & Venkatesh, 2010; Anderson et al., 2014).

The Hedonic Motivation had no relation to the intention to use, likely do to the technology of streaming music is not directly providing fun, joy and entertainment. Many of the users of these services consider that this type of technology, with playlist support, was not such a big technological change compared to recording and listening to music on the smartphone itself. However, it is observed that a difficulty is still seen in the use of streaming in the need for a connection and quality infrastructure for access to the internet for reception. In addition, there were numerous complaints about the consumption and instability of the data packets of its operators. Alternatively, in a study developed by Silva and Hamza (2017), a positive relation between these constructs was

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verified, when the streaming service is video for younger audiences.

The path of the relation between Price Value and Intention to Use, referring to H5 was supported with p <0.05. One argument for this is that the definition of price value is a trade-off between benefits and sacrifices (Zeithaml, 1988), forcing the user to make a cost-benefit analysis in relation to the contracted service. In this way, Venkatesh, Thong and Xu (2012), describe the value of price as the cognitive commitments of consumers between the perceived benefits of the applications and the monetary costs to use them (Dodds, Monroe, & Grewal, 1991). This phenomenon is related to the fact that 57.04% (n = 419) are paying for this type of service, monetary values ranging from R$10.00 to R$30.00. This shows that the respondents are willing to pay to use the application and in such a way that cost is something that would not prevent them from using the applications. Thus, according to Aarts, Verplanken and Knippenberg (1998), the intention to use refers to the degree to which a person has formulated conscious plans to carry out certain specified future behaviors or not.

In relation to the value of the price, this construct is not related only to the price of the service, but to the perception of the cost-benefit of the consumer. The range of possibilities that is presented to the consumer is quite diverse in this type of music streaming service, in addition, many consider the price charged fair or even adequate. This positively influences the intention to use the service.

The ratio of H7a between Habit and Intention to Use, with the highest beta, β = .675 and test t = 16.045, was supported with p <.001. According to Limayem, Hirt and Cheung (2007), and Venkatesh, Thong and Xu (2012), the habit is the degree to which consumers tend to make use of technologies or behaviors about the use of technology automatically because of learning. Therefore, the habit is significant in relation to the intention to use, because the user is willing to make the use of daily or routine music streaming services, making it a habit, not something premeditated, but a common activity. According to Burke (2002), behavioral intention plays a significant role in real behaviors, with cognitive loyalty as the intention of consumer buyback, through a learning process (Giovanis, Tomaras, & Zondiros, 2013).

The path of H7b between Habit and Use was supported with p <.001. According to Limayem, Hirt and Cheung (2007), it was verified that the music streaming service allows the construction of the habit, due to previous behaviors of users in other computing platforms, following the behavior of users or customs, which are regular parts such as home, car, and work.

In addition, another factor is individual experience regarding experiences of stable routines established by users, norms and habits of use of technology products. These experiences reduced the need for effortful discussion, coordination, or decision-making. The habit becomes significant in relation to use because the individual assimilates the use of music streaming services as a daily activity, something that is intrinsic to their routine.

The habit observed in hypotheses H7a and H7b indicated a tendency of the user to perform behaviors in an automated way. It was verified that the construct is highly relevant for the consumption of music streaming services, allowing the supplier companies to look for alternatives for the generation of greater motivation and engagement with the applications and sites that stimulate the consumer habit.

Finally, H8 indicated that the relation between Intention to Use and Use was supported with p <.001. According to Aarts, Verplanken and Knippenberg (1998), the intention to use refers to the degree to which a person has formulated conscious plans to carry out certain specified future behaviors or not. Thus, the Intention to Use construct is sustained and has an influence on the use of music streaming services.

Mediation analysis is a method used to verify the direct and indirect path of relations between variables. The relationship between three variables must be verified, one being the mediating variable between the independent variable and the dependent variable. Of the two mediations found in this model, only H7c was tested and considered partial, according to the previously established concepts, and both hypotheses of direct relation (H7b) and indirect relation (H7c) had results supported with p <.001.

CONCLUSIONS

This study sought to advance the research on streaming services, specifically in music streaming, with the help of the UTAUT2 model, proposed by Venkatesh, Thong and Xu (2012), and it is possible to affirm that most of the constructs developed by the authors are applicable to the Intention to Use and use of music streaming services by the sample observed in the young audience.

Streaming services are considered a trend because they are recent technologies, as the internet has given the user the possibility to consume music, videos, movies, among others, in real time only with access to an internet connection. With the advent of the Internet, the music industry worldwide fell sharply, as users stopped buying physical media and began downloading music, most of which was done illegally. However, with the emergence of music streaming applications, this scenario has changed since it has added ease of access to songs and artists with legality as these companies pay copyright to the record companies.

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The construct Facilitating Conditions did not support the model in the adjustment phase; this is due to the fact that the profile analyzed demonstrates ease of access to this type of infrastructure, which is an intuitive ability to use.

When checking the results of all the constructs, what was most relevant about the intention to use and use of musical streaming was the Habit, that is, the act of listening to music daily affects the intention to use these types of service. The research also showed that the environments that the respondents think are most suitable for using these applications are at home and on public transport, thus showing that, increasingly, this practice is in their daily lives.

Therefore, it was verified that the habit is an automatic behavior generated by the learning with the new digital technologies.

This research intends to contribute to the companies that develop music streaming applications to take a look at some of the variables explored here that may become relevant to understand users' preferences and what is expressive at the time of their final choice.

It is important to note that some telephone companies have been using the partnership with companies that provide music streaming in order to stand out from others and at the same time create a service included to the telephony service, such as Tim music by Deezer, which promotes the dissemination of the application and creates a differential in the telephone company itself.

Another important factor is that the target audience is composed of young individuals, and it is up to companies to seek to retain their users through promotions, and most companies in this segment already do, including giving a free trial month or offering lower prices. However, the market must be sought for other publics, as they are also potential users, as they have higher purchasing power than the young public, even though they may present barriers to migrate to this type of technology platform. Given this, it is crucial for companies to understand the needs of consumers and, with this, to capture and maintain these potential new users. In addition, new user profiles can help companies develop platforms to make it easier for them to interact with and reach out to a wider audience.

Because it belongs to a market with enormous growth potential, each streaming service company needs to establish a goal of insertion and occupation, as well as to develop methods to differentiate between other applications, thus acquiring competitive differential, which can change the success of the organization in the long term.

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Appendix A: Latent Variables, Indicators, Assertive Description, K-S Test, and Significance

Latent Variable	Indicator	Description of assertives	K-S Test	Sig.
Performance Expectation	PE01	I find the music streaming service useful in my day-to-day	7.149	.000
	PE02	Using the streaming music service increases the likelihood of listening to more music.	8.459	.000
	PE03	The use of music streaming service gives me access to music more quickly.	7.342	.000
	PE04	Using music streaming service increases my productivity.	2.997	.000
Effort Expectation	EE01	Learning how to use streaming music services is easy to me.	8.544	.000
	EE02	My interaction with the streaming music service is a simple task.	7.288	.000
	EE03	I find it easy to use streaming music service.	7.378	.000
	EE04	It's easy for me to become a skilled user of streaming music service.	5.335	.000
Social Influence	SI01	People who are important to me think I should use the music streaming service.	4.742	.000
	SI02	People who influence my behavior think I should use the streaming music service.	3.800	.000
	SI03	People whose opinions I value encourage the use of streaming music service.	3.901	.000
Facilitating Conditions	FC01	I have the resources to use the music streaming service. (For example: broadband internet, computer, smartphone, tablets, among others).	9.451	.000
	FC02	I have the necessary knowledge to use the streaming music service.	9.466	.000
	FC03	The music streaming service is compatible with other technologies that I use.	6.399	.000
	FC04	I get help easily when I have difficulty using the streaming music service.	4.404	.000
Hedonic Motivation	HM01	Using the streaming music service is fun.	9.315	.000
	HM02	The use of the streaming service pleases me.	6.601	.000
	HM03	Using the streaming music service entertains me.	5.901	.000
Price Value	PV01	The streaming music service has a fair price.	3.943	.000
	PV02	I do not consider a waste of money signing streaming services.	4.454	.000
	PV03	Looking at the current price, I consider the service of streaming music with good cost.	4.060	.000
Habit	H01	The use of music streaming service has become a habit for me.	8.729	.000
	H02	I'm addicted to using streaming music service.	4.052	.000
	H03	I believe I should use the streaming music service.	4.518	.000
	H04	The use of the streaming music service has become natural to me.	6.174	.000
Intention to Use	IU01	. I intend to continue to use the streaming music service in the future.	7.363	.000
	IU02	I always try to use the streaming music service in my day to day.	8.109	.000
	IU03	I want to use the music streaming service frequently.	5.077	.000
Use	Consider__Use	I consider myself a music streaming user.	4.486	.000

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