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Curbing Digital Music Piracy Through on-Demand Streaming Music Service

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Abstract: The Excitement of Internet of Things (IoT) has overlooked its effect on music industry; demanding a need to curb digital music piracy before IoT's booming. Technology Acceptance Model 2 is still too general despite of validations by many researches on information technology consumption specifically online music piracy and requires integration of additional theories or model for complete information technology consumption details. This study proposes an integrated model of Technology Acceptance Model 2 (TAM2) with self-control theory upon finding solutions to music industry's threats by digital music piracy through on-demand streaming music services. First research objective is to test the constructs of digital music piracy; perceived of usefulness, perceived ease of use, social influence, perceived enjoyment and self-control. Second research objective is to test the mediating role of on-demand streaming music services in curbing digital music piracy.

Key words: Technology Acceptance Model 2 (TAM2), self-control theory, digital music piracy, on-demand streaming music services, integrated, overlooked

INTRODUCTION

In the era of Internet of Things (IoT) users have a chance to play their choice of songs through internet connected speakers in their house, cars or mobile (IIA., 2015) such as Mighty, an iPod Shuffle-like which sync with smartphone through internet and Amazon Echo (McDonnel, 2016). The excitement of IoT creating end user experience with entertainment has somehow overlooked its weight on worldwide music industry that is currently threatened by digital music piracy. The record industries in Malaysia itself evaluated that USD 8, 800, 000 or approximately 25% of total losses in Malaysia music industries are caused by digital music piracy (IIPA., 2011). Credit Suisse analyst has recently recorded and predicted physical, digital and subscription revenues of global music industry. A big drop of revenues is seen after the worldwide internet boom in early 2000. The increasing demand of digital music through legal digital download and subscription somehow is not enough to bring back the glory of music industry's economy. Demand for entertainment never stop and will continue cannibalizing music industry with this easy access and control to digital music. It is predicament for music industry to curb Digital Music Piracy (DMP) before the booming of IoT.

Since, its successful era during 1990's, music industry is one of the biggest industries that has ladled up the artists and their artwork and has moved them to a level of sharing, purchasing, marketing and distributing music. By the late of 1990's, many record companies and independent artists have expanded their music distribution through internet and online database (Akatwijuka and Regner, 2004).

As the technology keeps improving in 21st centuries, the era of Bundling music in terms of Cassette and Compact Disk (CD) have been swiped away. The production of the physical or bundled products was costly while the Internet successfully equips the company to trade a single product that was sold in a whole package with the other products (Elberse, 2010). The example is iTunes Store that started in 2004 by providing the digital version of music products legally with two different options of purchase. One is to purchase a single song and the other option is to purchase the whole album. ITunes store by Apple has successfully added a new level of complexity to the market potential, offering a way for record labels to recover a portion of their seeming displaced sales (Gamal, 2012).

The advent of internet technology and P2P sharing such as Napster, Morpheus, Megadownload and Pirate Bay in 1990's has somehow threatened the mainstream

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Table 1: Past researches on digital music piracy

Researchers and years	Theory or model used	Findings
Keppels	TAM for hedonic information system by Van der Heijden (2004)	Global apple music users have high acceptance towards OSMS due to usefulness of the service
Delikan (2010)	TAM and TAM2 by Venkatesh and Davis (2000)	Spotify FB members-significant change in music consumption behaviour from digital music piracy to OSMS due to perceived usefulness
Veitch and Constantiou (2011)	Goal directed behaviour by Perugini and Bagozzi, General theory of marketing ethics by Hunt and Vitel, Economic theory of crime by Becker and Clenet (2006), Concept of price perception by Thaler and typology of consumer risk by Kaplan	Denmark-consumer's acquisition decision towards digital product is influenced by price perception, perceived risk, product desire and internal regulators of behaviour (subjective norms and ethical belief)
Higgins *et al.* (2008)	Crime behaviour development through self control theory by Gottfredson and Hirschi	USA self-control has negative correlation with Digital Music Piracy (DMP)
Dorr and Benlian	Theory of planned behaviour by Ajzen and equity theory by Kabanoff	USA college students are heavy users of DMP and OSMSRelevance of demographics, attitudes and ethical belief (self-control) reduced due to OSMS

music industry through the amplified circulation rate of illegal copies of copyrighted music with the recorded losses starting in year 2000 (Leyshon *et al*., 2005). Ever, since, the digital music arose, digital music piracy appeared as a big opponent of record labels when the current music industries still rely on copyright law enforcement and sales of their music (Leyshon *et al*., 2005). International Federation of the Phonographic Industry (IFPI) has been continuously working together with record labels to initiate around 20,000 lawsuits to individuals in 17 countries under copyright law over illegal music sharing on internet (Goldschmied, 2008).

Music business owners, authorities and researches have suggested and carried out few actions to reduce music industry's losses to the pirates, hence, reduce the growth of creative industry worldwide-close down P2P sharing websites (Pagliery, 2016; BBC., 2012; Leyshon *et al*., 2005), issuance of legal framework against internet piracy (IFPI., 2012; Leyshon *et al*., 2005), low price music download through Apple ITunes, to name a few (Leyshon *et al*., 2005). Despite the many stern efforts undertaken to control digital music piracy such as imposing, legal actions towards P2P platforms and individual P2P users, prudent protection of copyrights and stiffer penalties against infringements, all attempts, however, seem to be futile in combating this issue (Leyshon *et al*., 2005).

A range of studies have been conducted exploring various aspects; economic, social psychology, criminology and business ethics to ensure further understanding on consumer's intention and behaviour towards music consumption and most importantly on illegal music download (Table 1).

MATERIALS AND METHODS

Digital music piracy: As evidently verified by many studies, music piracy in general simply affects the demand of music sales (Rob and Waldfogel, 2006; Zentner, 2006; Liebowitz, 2008; Walfdogel, 2010). Music piracy itself in general, is often declared as the main reason of the decreasing album in the type Compact Disk (CD) sales (Giletti, 2012), supported by another study showing the number of CD sales went down, since, 1998 during the era of traditional music piracy appearance (Hui and Png, 2003). However, it might not be relevant and justifiable anymore to this discussion, since, there was no digital music piracy yet in 1998. In the late of 90's era, the music piracy term was still defined as the reproduction of a music product by rerecording the music or copying the original music into a CD and selling it for a cheaper price than the original music product. The focus discussion was the physical copyright infringement. As the deed of copyright infringement, digital music piracy brings the artist and record labels becoming uncompensated when customers download the digital music illegally (Bender and Wang, 2009). In another reason, it is found that 99% digital music files on the internet of Malaysia are imitation and illegal and Malaysia is ranked 26th in the world in terms of the amount connections to unauthorized peer-to-peer file sharing (IIPA., 2011).

Recording Industry Association of America (RIAA) clearly described the college students as a single group that has been downloading the illegal music the most. Most likely, the youngsters are more favourably disposed towards the illegal downloading than the older consumers (Giletti, 2012).

On-demand Streaming Music Service (OSMS): While seeing the stiff competition between digital music piracy and the original music sales, the invention of the On-demand Streaming Music Service (OSMS) such as Spotify, Guvera, Jango, Last.fm, Pandora, Sound Cloud, etc., appeared. They are new technology-based services and the most popular sources of digital music that offer various music subscriptions with no requirements of paying or illegally downloading the

products. On-demand streaming music service has given a big hope to shrink digital music piracy (Giletti, 2012).

Stephen Garrett, an executive-chairman of Kudos Production refers the new consumption habit as 'Climate Change' where consumers prefer the accessibility of music anywhere while doing anything they do using any portable player device. With the development of internet technology, music is no longer known as a tangible product but online service (Delikan, 2010). A study revealed that most artists found OSMS as a usual traditional business that only focus on their own profits and market share while there is neither win-win situation nor benefits for the artists themselves. The artists earn less money than they did in 15 years ago. For the real case, the artists will receive 7 cents payment every time their song is played, compared to a one-time purchase that cost $2.00 (Swanson, 2013). However, the limitation of Swanson argument is the uncertainty of the profit that the artists will get. If the song is played at least 30 times by a consumer, the artists will get more profit from users streaming than music purchasing.

In this all-needs-money world, OSMS attracts consumers with its special subscriptions and packages. Most OSMS offer various genres from pop, jazz, rock, hip-hop, alternative, RnB and independent music with two different types of subscription. The first one and the most used subscription is the free subscription with the ad-supported and the second one is the premium subscription that costs USD8.99 until USD19.99 per month with ad-free and the offline mode feature where the users can download the songs to their OSMS apps and play it offline with a limitation of song numbers. OSMS also gives the limitation from three until six devices logged in to each consumer with the up to 192 or 320 KBps audio quality from their personal web, desktop, Android, iOS or Windows phone device (Rob and Waldfogel, 2006).

OSMS' affects on digital music piracy: ABI Research reported a big hike in OSMS using mobile phones. It is expected that in 2016 number of online subscribers to exceed 150 million (Nguyen *et al*., 2013). To date, Apple Music and Spotify has reached 35 million subscribers worldwide. On-demand streaming music service is a step of alternating illegal downloading to the right direction and it has the possibility to alleviate general music piracy slowly yet promising (Swanson, 2013).

This is supported by another discussion stating the drop of digital music piracy cause by on-demand streaming music service. The statement is taken after analysing spotify case study. Spotify is also one of the leading OSMS that available in 60 countries and has the most users compared to other services in Malaysia. Since, the rise of Spotify in 2008, it has reached more than 24 million users with quarter of them subscribe to either $4.99 or 9.99 monthly package. Spotify company itself has posted growth at a staggering rate of nearly 8,000 subscriptions per day and is currently valued at USD3, 000, 000, 000. It is also proven, since, 2009 where digital music piracy has dropped until 25% in Sweden. Sweden is the home country of Pirate Bay, the very famous P2P providers. Pirate Bay once had its own political party and requested their Prime Minister to declare the freedom of downloading music for free (digital music piracy) on television. Although, Pirate Bay was temporarily closed for months in the beginning of 2015, there are still other existing P2P providers such as KickAss Torrents or Torrentz. However, they are all becoming less popular, since, the users have drifted towards OSMS after it appeared.

The study believed that the on-demand streaming music service has provided the feeling of accessing and enjoying music legally for free, because the number of OSMS users in Sweden is greater than the number of music pirates there (Wiegandt, 2013). However, different impacts and results might occur, since, the previous study focused on the Spotify case study based. However, only one study proved the correlation of on-demand streaming music service to the level of digital music piracy while the other studies only state the statistic number for each. Besides that, these studies cannot be fully used as strong references, since, many OSMS in Europe, England and United States have existed for years, while there are only a few OSMS existing in Malaysia-despite of online radio and they are still new.

This study focuses on identifying the factors influencing music consumers to be involved in digital music piracy and the effectiveness of OSMS in curbing DMP. Digital music piracy has caught many researcher's interest with the studies based on many models such as model of ethical behaviour (Gopal *et al*., 2004), Many studies of digital music piracy behaviour have been conducted based on (Technology Acceptance Model (TAM) by Venkatesh and Davis (2000), Amoroso and Guo (2006), Hiramatsu *et al*. (2009), Malhotra and Galetta (1999) and self control theory (Higgins *et al*., 2008) separately. TAM is a good basis of information technology consumption and has been validated through various research specifically for music consumption too. However, TAM is too general and any study on information technology consumption requires more details which are not fully covered in TAM. It is shown in a study conducted among students in

Malaysia resulted with only 0.132 β coefficient in its regression analysis. Therefore, additional antecedents are commonly integrated into TAM framework to improve the application of TAM in the studies (Delikan, 2010; Van der Heidjen, 2004). Other study of DMP has been conducted by Higgins *et al.* (2008) by looking at the crime behaviour development as DMP is related to copyright crime. None of the related studies have been done combining both TAM2 and self control theory despite of the application of both theories in the study of DMP.

RESULTS AND DISCUSSION

Extended TAM 2, TAM for hedonic system and self-control: TAM2 is an extended TAM by Venkatesh and Davis (2000) which explains the acceptance of information technologies through "Perceived usefulness", "Perceived ease of use" and "Social influence"[29] which influence user's behavior. "Perceived Usefulness" (PU) is related to the usefulness of the technology towards improving user's performance, "Perceived Ease of Use" (PEU) is related to the easiness of a user to consume the technology, "Social Influence" (SI) refers to the social environment of the user being complying to the environment, acceptance in the group and 'value system' (Delikan, 2010).

In regards to SI, it is possible to say digital music piracy is caused by two different groups; primary group, such as family and peers and the secondary group such as schools and government officials although, they spread less intense affection. Individuals learn how to get involved from the primary group after they are exposed to the act of getting music with cost free and witness none impacts of illegal downloading (Sutherland and Cressey, 2003). Individuals may refer the digital music piracy as a theft but they will not contemplate it as a crime because it is a repeated practice over society in a population. A lenient government policy in dealing with piracy perpetrators is also affecting the society to pirate music (Balestrino, 2008). Illegal downloaders tend to possess attitude "everyone else is doing it" which makes music piracy a normal habit in the society inclining them to act such way (Shanahan and Hyman, 2010).

Digital music is a hedonic information system which offers pleasure, hence it is relevant to include "Perceived Enjoyment" (PE) in identifying level of DMP being enjoyed by its users. Previous study in United Kingdom found a strong contribution of PE towards usage intention of technology (Van der Heidjen, 2004).

A few studies have identified an inverse relationship between self-control and music piracy. People with low self-control most likely will be attentive to show to show their consideration for the copyright holder and not forgetting the big support from the Internet to execute digital music piracy cited from Higgins *et al.* (2008). Self-control theory by Higgins *et al.* (2008) is known as crime theory that explains the development of crime behavior negatively. Crimes are perceived as easy, simple and thrilling despite of being risky directed to needs satisfaction. They do not respect and understand copyright privilege in any creative work, hence, digital piracy. Low self-control is found to be directly related to digital piracy behavior (Higgins *et al.*, 2008). A study done on high school students has concluded self-control directly negatively affect student's intention towards digital music piracy (Malin and Fowers, 2008). Digital music piracy perpetrators commit the crime due to exposure to overabundance motives, attitudes and techniques to violate the actual law and after spotting others' large-scale music library (Giletti, 2012). Besides that, the Internet users believe that sharing is the act of unselfishness, mutualism and the duty of a network (Becker and Clenet, 2006). Such act of DMP behaviour is very much related to individual's ethical judgment of this behaviour with a 23% contribution to music piracy acquisition among students in Danish universities (Veitch and Constantiou, 2011) consistent with another study among students in Malaysia with 0.30 β coefficient in its regression analysis. The extension of TAM2 with the additional antecedent which is PE and SE is illustrated in Fig. 1. SI is included in TAM2 as per explained by several DMP (Sutherland and Cressey, 2003; Higgins *et al.*, 2008; Malin and Fowers, 2008). This study will also test the role of OSMS as mediating role in curbing the level of DMP (Fig. 2). Hampp's report in 2013 has concluded the drop of DMP to be caused by Spotify; the leading OSMS in the market. Delikan (2010)'s study has found a significant inverse influence of music

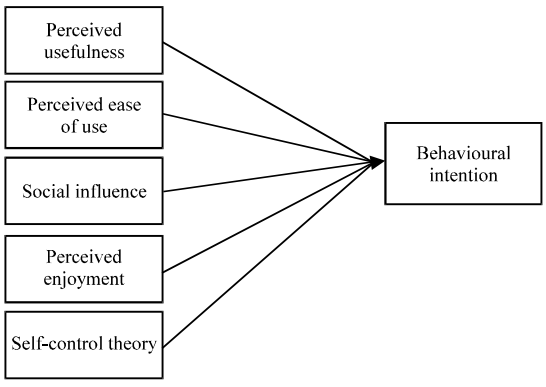

Fig. 1: Research framework for digital music piracy and on-demand streaming music service

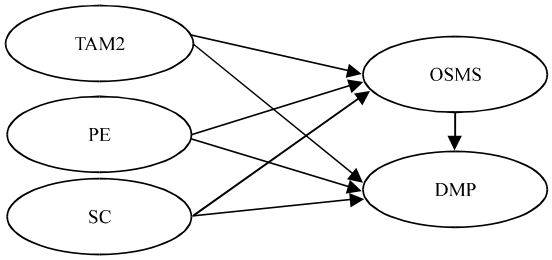

Fig. 2: Extended framework mediating effect of on-demand streaming music service on digital music piracy

streaming consumption towards illegal music consumption amongst users in Denmark. The usefulness of Spotify has significantly contributed to the increase of time spent on Spotify. Respondents were found to have reduced their illegal music sharing activity after started using Spotify. DMP users have developed positive attitude towards Spotify after being introduced due to moral and ethical advantages offered by Spotify where importance of factors such as demographics, collective attitudes and beliefs about risk and rewards drop due to the control of the consumption of music streaming (Borja *et al*., 2015). Hence, leading to the role of OSMS as the mediator in curbing the consumption of illegal music downloads; DMP among users as explained in Fig. 2.

CONCLUSION

The objective of this study is to propose an integrated model of TAM2 with self control theory towards controlling digital music piracy through Online Streaming Music Service such as Spotify. Each of these theories have however, independently failed to explain the usage of information technology, especially, digital music consumption among individuals. Integration of theories and models have been applied by various researchers for this purpose.

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