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RELATIVE ADVANTAGE AS MEDIATING VARIABLES ON FACTORS INFLUENCING ADOPTION OF INTERNET TV

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

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RELATIVE ADVANTAGE AS MEDIATING VARIABLES ON FACTORS INFLUENCING ADOPTION OF INTERNET TV

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Chairman : Megat Imran Al Yasin, PhD
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Internet TV in Malaysia which uses open Internet Protocol is becoming every consumer's favourite for its portable feature that allows media to be accessed through broadcasts TV without having to be at a specific place. *Tonton* or tonton.com.my and Astro Go are among the award-winning TV and video portals which offer online catch-up and live television services, and premium paid content. Claiming its popularity in 2013, more Internet TV service providers such as Iflix, Viu and Netflix are made available for Malaysian users recently. The arrival of Internet TV has shaken the traditional revenue from advertisements as television is no longer the main medium of businesses' product promotion. Many studies have mainly taken an economic and technological approach but less on consumers' needs such as Internet TV, is rarely studied in Malaysia. Limited scholarly research and knowledge about this innovative technology have been conducted. Thus, the importance of this study is to identify the factors that predict consumers' decisions to adopt Internet TV. In identifying the innovation factors that contribute to Internet TV adoption, a theory of Diffusion of Innovation by Rogers (2003) has been used in this study. The adoption factors are the relative advantage, ease of use, compatibility, trialability and observability. Rogers also mentioned that the importance of unique attributes of Internet TV and personal characteristics were also used in this study.

This sequential explanatory mixed methods study investigates the factors that influence users' adoption of Internet TV. In the first phase, the quantitative survey was designed using a self-administrated questionnaire. All variables were measured through scales previously used by other researchers. The scales were checked for convergent and discriminant validity using Confirmatory Factor Analysis (CFA) and data analysis using Structural Equation Modelling (SEM) under AMOS software on 518 respondents in Malaysia. Meanwhile, the qualitative phase has identified 12

informants from the quantitative data analysis. A thematic analysis was used to interpret the data from a semi- structured interview.

Results of the quantitative and qualitative reported that innovation diffusion attributes, specific attributes of Internet TV and personal characteristic overall influence people to adopt Internet TV. Meanwhile, specific attributes of Internet TV reported being better than traditional TV. Moreover, the two attributes from content (variety) and technology (interactivity) were identified as specific attributes of Internet TV that affect the overall use. The SEM analysis determined the hypotheses' study and overall influence the adoption. However, demographic characteristics were found insignificant except for education. The relative advantage as a mediating construct, however, showed an insignificant effect. The qualitative results are overall in line with quantitative findings and contribute a better understanding of factors that influence users to adopt Internet TV. This study contributes to provide various recommendations to the policymaker, media practitioners (broadcasters and content providers), an expanded theory where relative advantage was used as a mediating effect and the use of mixed method strategies. It is hoped that the suggestions may be beneficial to further understand user's behavior among the competitive Internet TV providers and how this may affect advertising and traditional business models.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KELEBIHAN RELATIF SEBAGAI PEMBOLEH UBAH PENGANTARAAN TERHADAP FAKTOR-FAKTOR YANG MEMPENGARUHI PENERIMAGUNAAN TV INTERNET

Oleh

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TV Internet di Malaysia menggunakan Protokol Internet terbuka yang menjadi kegemaran setiap pengguna kerana mempunyai ciri mudah alih dan boleh diakses terus ke siaran TV tanpa perlu berada di tempat yang tertentu. Laman sesawang Tonton atau *tonton.com.my* dan *Astro Go* merupakan video dan TV portal yang memenangi anugerah perkhidmatan televisyen yang menawarkan *catch up* atas talian, perkhidmatan siaran langsung dan pakej premium berbayar. Perkhidmatan TV Internet seperti *Iflix, Viu* dan *Netflix* kini kian banyak disediakan untuk pengguna Malaysia atas sebab populariti pada tahun 2013. Kewujudan TV Internet merombak hasil tradisional daripada aktiviti pengiklanan kerana televisyen tidak lagi menjadi medium utama untuk mempromosikan produk perniagaan. Kajian terdahulu lebih mengambil pendekatan ekonomi dan teknologi tetapi kurang penekanan terhadap keperluan pengguna seperti TV Internet, yang jarang sekali dikaji di Malaysia. Penyelidikan dan pengetahuan ilmiah yang terhad mengenai teknologi inovatif ini telah dijalankan. Oleh itu, kepentingan kajian ini ialah untuk mengenal pasti faktor-faktor yang meramalkan keputusan pengguna untuk menerima pakai TV Internet. Dalam mengenal pasti faktor inovasi yang menyumbang kepada penggunaan Internet TV, teori Difusi Inovasi oleh Rogers (2003) telah digunakan dalam kajian ini. Faktor-faktor penggunaan ialah kelebihan relatif, kemudahan penggunaan, keserasian, percubaan, dan pemerhatian. Rogers juga menerangkan bahawa kepentingan atribut unik TV Internet dan ciri-ciri keperibadian juga digunakan dalam kajian ini.

Kajian kaedah campuran berurutan ini mengkaji faktor-faktor yang mempengaruhi penerimagunaan TV Internet; suatu terjemahan inovasi penumpuan servis yang menggabungkan komunikasi dan teknologi media. Pada fasa pertama, pendekatan kuantitatif telah dijalankan dengan menggunakan borang soal selidik. Semua

pemboleh ubah diukur mengikut skala yang telah ditetapkan sebelum ini oleh penyelidik lain. Skala itu disemak dan diuji untuk *convergent validity* dan *discriminant validity* dengan menggunakan *Confirmatory Factor Analysis (CFA)* dan analisa data menggunakan *Structural Equation Modelling (SEM)* di bawah perisian AMOS terhadap 518 responden di seluruh Malaysia. Pendekatan kualitatif pula digunakan untuk mengenal pasti 12 informan daripada analisis data kuantitatif. Satu analisis tematik dilakukan untuk mentafsir data iaitu melalui temu bual separuh berstruktur.

Dapatan analisis pendekatan kuantitatif dan kualitatif menunjukkan bahawa ciri-ciri penyebaran inovasi, spesifik elemen TV Internet dan ciri-ciri keperibadian secara keseluruhannya mempengaruhi masyarakat untuk adopsi. Sementara itu, spesifik elemen TV Internet dilaporkan lebih baik daripada TV tradisional. Selain itu, kedua-dua atribut kandungan (pelbagai) dan teknologi (interaktiviti) telah dikenalpasti sebagai ciri-ciri khusus TV Internet yang memberi kesan kepada penggunaan secara keseluruhan. Walau bagaimanapun, ciri-ciri demografi didapati tidak signifikan kecuali pendidikan. Kelebihan relatif sebagai konstruk pengantaraan, bagaimanapun, menunjukkan kesan yang tidak signifikan. Hasil kualitatif secara keseluruhannya selaras dengan penemuan kuantitatif dan menyumbang kepada pemahaman yang lebih baik mengenai faktor-faktor yang mempengaruhi pengguna untuk mengadopsi TV Internet. Kajian ini menyumbang penyediakan pelbagai saranan kepada pembuat dasar seperti, pengamal media (penyiar dan pembekal kandungan), teori yang dipanjangkan di mana kelebihan relatif digunakan sebagai kesan pengantaraan dan penggunaan strategi kaedah campuran. Diharapkan cadangan itu dapat memberi manfaat untuk terus memahami perilaku pengguna di kalangan penyedia TV Internet yang berdaya saing dan bagaimana ini dapat mempengaruhi model perniagaan tradisional dan periklanan.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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This is to confirm that:

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LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Moment Structure
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CV	Convergent validity
DV	Discriminant validity
EFA	Exploratory Factor Analysis
GFI	Goodness of Fit Index
GFIs	Government Financing Institutions
GOF	Goodness of Fit
IPTV	Internet TV Protocol
ISP	Internet Service Provider
M	Mean
N	Number of Participants
NFI	Normed Fit Index
OLS	Ordinary Least Squares
RMSEA	Root Mean Square Error of Approximation
SE	Standard Error
SEM	Structural Equation Modelling
Sig.	Significant
SPSS	Statistical Package for Social Sciences
TV	Television
U&G	Uses and Gratification
α	(Cronbach's) Alpha
ρ	Rho (Composite Reliability)

CHAPTER 1

INTRODUCTION

1.1 Overview of study

Mass media and communication play an important role in individual, family, society, and organization. Each media technologies has its own functions and they have been used in different ways. People perceive and use these technologies for various purposes and eventually adopt this new media in their daily life without fail. The use of portable media such as tablet PC, laptop and mobile phones are able to change the course of human life no matter young or old. Television viewing is one of the most popular activities during pastimes. Internet TV programmes are an important addition to its portable media services especially mobile phones where users want communication and entertainment to be combined in one device. In the perspective of broadcasting and communications, technologies with internet and digital convergence designate an important function in delivering innovative options to consumers, particularly the Internet TV.

According to Rodman (2012), convergence in media studies refers to three types of mergers which involve technology, industry, and content. First, the convergence of technologies refers to the merging of computer, telephone and mass media such as smartphones. Second, the convergence of industries refers to corporate mergers that allow companies to combine their media technologies. For example, a TV station acquires internet services in delivering its TV shows with matters concerning the bandwidth, hosting, capacity, usage and many more. Third, the convergence of content is a natural extension of technological convergence. It involves mediated interpersonal messages including mobile phone, emails and also social networking site which combines traditional yearbooks with community websites, email, blogs, bulletin boards, audio, and video. The internet is a prime example of a convergent medium because it is used for both interpersonal and mass communication.

Thus, Internet TV is a convergent technology that delivers TV shows through the internet, which is more customized and interactive to users. Currently, the Internet TV has become famous and has been acknowledged by the public and private sectors. Moreover, Internet TV is known as the worthwhile technology that affects the communications and broadcasting industries which capable of contributing a new business model to the world.

There is no common agreement on a definition for this new kind of broadcasting (Noll, 2004). However, Gerberg and Noam (2004) offered the complex definition of Internet television:

> 'At the lower end of complexity, it is merely a narrowband two–way internet–style individualized (asynchronous) channel that accompanies a regular one–way "synchronous" broadband broadcast TV or cable. This internet channel can provide information in conjunction with broadcast programmes, such as details on news and sports, or enable transactions (including e–commerce) in responses to TV advertisements. This is known as (enhanced TV). At the other end of complexity is a fully asynchronous two–way TV, with each user receiving and transmitting individualized TV programmes, including direct interaction in the program plot line. In between is one–way broadband with a narrowband return channel that can be used to select video programmes on demand (VOD)' (p. xxi)

Held (2007) mentioned that "Internet TV refers to the broadcast of news, weather, and TV shows from television stations that add an internet interface to their over-the-air broadcasts" (p.177). Waterman (2001) described that Internet TV is "another syndication outlet by which program suppliers can segment their overall markets and thus support higher production investments" (p. 2) with an innovative and more focused program. Schechner and Stewart (2012) explained that "Internet TV is an online video service that uses website streaming to offer TV programmes or videos". Ferguson (2012) claimed that Internet TV is "online programming that makes media content available through a computer screen, tablet or speaker. It can displace or substantially supply the use of non-computer media content" (p. 143). Einav (2004) added that TV shows which can be streamed simultaneously over-the-air and through the World Wide Web, or may be accessible after broadcast for general contact (streaming or for downloading) over the public internet. Noll (2004) mentioned that Internet TV is "conventional television obtained over the internet; video streaming provides television programmes in real time" (p. 1). He added that people are able to pick and select any video or TV shows for downloading and watching at their convenience, thus merging the TV set with the personal computer.

Meanwhile, Croteau and Hoynes (2003) claimed that "Internet TV allows users to combine the specialization of media products with interactivity to make choices, provide responses, and customize media products" (p. 1) Additionally, Eastman and Ferguson (2012) urged that Internet TV has extended to global audiences in offering TV shows. The viewers are expecting to "new services to match or exceed what they currently use" (Carey, 2004, p.189). Thus, Internet TV provides interactive video or TV programmes that have not been offered by the conventional TV (Gibs, 2009). As stated by McQuail (2010), the audiences can be attracted by social and personal needs, thus the use of media can satisfy their needs in searching for information. There are also audiences who watched a news program on the internet since these programmes

allowed users to connect to the world searching for news that interest them (Baran & Davis, 2012).

Internet TV is slightly different to IPTV (Internet Protocol TV) where Martinsson (2006) explained that "IPTV mean distribution of television or video content over a controlled IP network, where the end consumer receives the information through a set-top box which is connected to its normal broadband connection" (p. 5). It also refers to the delivery of video and interactive information and communication services over landline networks by the telcos. In Malaysia, Astro Beyond and HyppTV are known as IPTV services which linked to specific Internet Service Providers such as Streamyx, Unifi and Maxis.

Meanwhile, Over the Top services (OTT) is a huge internet industry.

> 'The delivery of video, audio, and other media transmitted to different types of devices via the internet. Generally, OTT is defined as serviced delivered over the internet by a service provider that is not responsible for the transmission of the signals to the end-user; users access the OTT service via the public internet. The OTT service provider is an entity separate from, and not contracted to, the internet service provider' (National Media and Infocommunications Authority Report, 2014, p. 11).

The services can be divided into two large groups. Figure 1.1 shows the classification of OTT services which include voice and chat services; and content provision services.

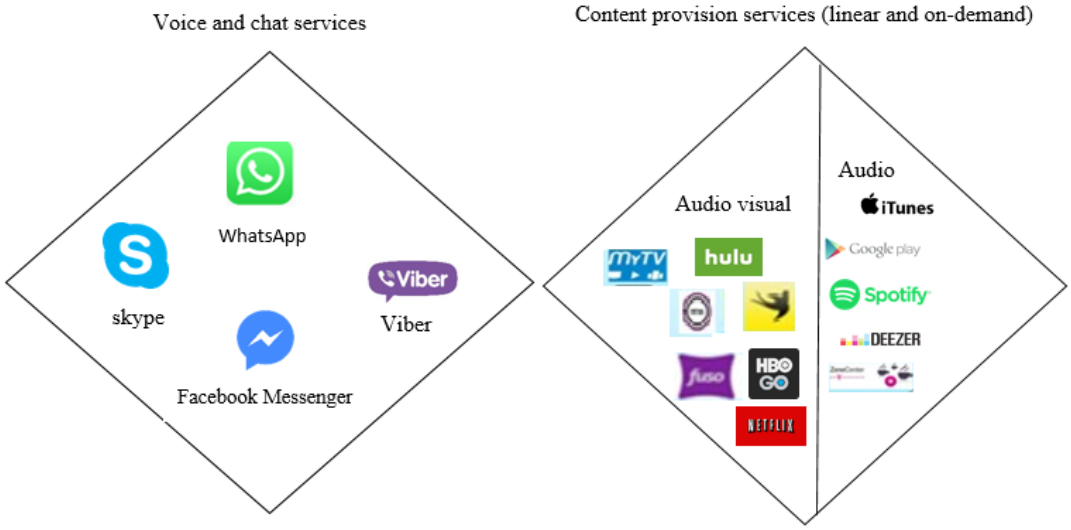

Figure 1.1: Classification of OTT services
(National Media and Infocommunications Authority, 2014)

In User Generated Content (UGC) such as the *YouTube, Metacafe, Kik, Dailymotion*, users can upload videos for free, allow file sharing and post textual comments on the video as well as on other user's comments (Nisha Aggarwal, Swati Agrawal, Ashish Sureka Indraprastha, 2014). Meanwhile, Wunsh and Vikery (2006) explained that in UGC, the content on the internet is made for the public, which reflects some creative effort and created by the unprofessional.

Unlike mobile TV which can be defined as a device to watch television on the move from a wireless pocket-sized portable screen (Sodegard, 2000). Cheng (2006) explained that "mobile TV is TV Broadcasting through UHF channel that has more channels, tailored for mobile device less consuming solution" (p. 5). Users may watch the content by live-broadcast (not streaming or downloading). The sound, picture, and data transmitted by Internet Protocol (IP) Datacasting.

As for this research, Internet TV can be defined as a type of OTT service providers which offers media content services (either free or paid contents) on any digital devices via open internet streaming that uses the official website (Schechner & Stewart, 2012) or mobile apps which the programmes or TV shows produced by the broadcast TV station (Held, 2007), cable, satellite or Internet TV provider (Waterman, 2001) and does not allow for user-generated content (UGC). Example: *Tonton*, 1malaysiatv.com, TVAlhijrahmedia.com, MyKlik, Astro-on-the-go, HyppTV Everywhere, Iflix, Netflix, and Viu Malaysia.

Apart from its function such as communication, information, social networking, and entertainment, people nowadays can access to television through the internet via a personal computer, tablets, laptop, and mobile phone. Internet TV is like watching regular television through electronic devices and can be accessed while on the move, anytime and anywhere, instead of sitting at home. Internet TV besides its entertainment function, can also be used as an information and communication platform as well. This result in some TV programmes on the internet that allows viewers to comment and later link to social networking sites. Mobile media is becoming part of our life and practice especially for those who really depend on these technologies since it is a popular device. For example:

> Astro offers 'a versatile and innovative service that enable all Malaysians in Malaysia and worldwide to enjoy a seamless and personalized viewing experience and access the best of Astro TV, Radio and Video-On-Demand across multiple devices be it on Smartphones, tablets or laptops anytime, anywhere.' (Astro-on-the-go annual report, 2013).

The growth of mobile media around the world has enhanced the development of mobile multimedia technologies that can provide internet access, email service, text messaging, multimedia messaging services (MMS), music, games, MP3 player and

digital camera (Lee, 2008). Today, these technologies are converging into one mobile media that can have many utilities in a single device. Thus, the number of television viewers through the internet has also increased. Internet TV in Malaysia that uses open internet protocol is becoming a trend nowadays when every consumer of portable media can access to TV broadcasts without having to be at specific places.

As Internet TV technological experiences unique attributes and market trend, this study is focused by the fact that Internet TV offers a new information service model with a variety of digital TV shows, transform the way content services or TV shows are delivered and the early stage of marketable. Internet TV offers useful consequences regarding theoretical perspectives and research framework which are related to the adoption of Internet TV. Firstly, Internet TV can be viewed as new information and content services that transform the way of designing, delivering and use. In order to conceptualize Internet TV at a theoretical level, it is important to identify Internet TV as an innovation of information and content services delivery that is motivated by technology. Secondly, the researcher has identified the unique attributes of Internet TV which are important factors to adopt such as the content related attributes, cost, and technological attributes. Therefore, the specific attributes of Internet TV are important aspects to identify the decision factors for adoption. Lastly, the technology and innovativeness are parallel with users' experiences with the same technologies and users' competence to engage with new innovations of technologies that become an important factor in Internet TV adoption.

The study aims to have a better understanding of why Internet TV is emerging and diffusing into people's lives, what is expected from the use of Internet TV and the impact it brings to people. Thus, this study is to explore users' behaviour in adopting and using Internet TV as part of their life.

1.2 Statement of the research problem

The diffusion of new media technologies such as the Internet TV service has changed the broadcasting environment in Malaysia. To a certain extent Internet TV has caused competition among television station and broadcasters, loss of advertising incomes, criticism on the inefficient existing local programme in terms of the content varieties, quality and up to date programme, and fragmentation that happened among the audience. Nevertheless, the time used to broadcast for certain programme is not suitable for certain viewers. At the same time, the Internet TV service has also brought new opportunities for the development of local television and broadcasting and has helped to develop new business cooperation between local or international players. It has provided the incentive for change and encouraged policymakers to respond to the flow of foreign programming. Therefore, it is important to study the diffusion of Internet TV adoption in Malaysia. However, little empirical research on Internet TV has been conducted. Due to the novelty of the Internet TV technology and limited scholarly research, information on this innovative technology and phenomenon is too limited to acknowledge or contribute to the finding of new fields. Many studies have

implemented the diffusion of innovation theoretical perspective on new media adoption but less study had been conducted on Internet TV. Studying the early diffusion of Internet TV will offer insights on how it may develop, the factors that influence users to adopt Internet TV, the consequences to local broadcast television from the economic perspective.

Many studies have mainly taken an economic and technological approach but less on consumers' needs and the use of new technologies such as Internet TV is rarely studied. Because of this new technology in Malaysia, limited scholarly research and knowledge about this innovative technology have been conducted. It is too limited to allow for new study or exploration of why people adopt and use it. New behavioural studies need to examine the Internet TV usage patterns. In what ways do people adapt innovative technologies such as Internet TV? Does the use of Internet TV influence users' behaviour? Do Internet TV's specific attributes influence people to adopt? Do the innovative attributes as claimed by Rogers (2003) give an impact on users' intention to adopt? And lastly, what role does the Internet TV play in our lives and society? In order to answer these questions, the researcher has developed an adoption model consisting of 11 variables of key determinants of Internet TV adoption. The model is based on the innovation of diffusion theory, takes into account the specific attributes of Internet TV, personal characteristics and demography as the predictor.

With the arrival of local and international digital contents on Internet TV platform, the competition faced by the public and private broadcasters in Malaysia became more powerful due to viewers' ability to have more additional viewing selections. In addition, the technologies of digital contents on Internet TV platform can easily be used on mobile devices such as a computer, internet, laptop, and mobile phone. Hence, the Internet TV use had been associated with an individual's activity, part of lives and practices. Nielsen reported in Malaysia Digital Landscape (2016) that out of total population of 31,545,990 (as of February 2016), Malaysians spent the average of 18 hours using the internet each week, of which 7.2 hours are used on watching online videos and 10.6 hours on TV. 42% of Malaysian netizen watched TV content and movies via the internet and 80% of Malaysian netizen stream or download online video content each month. These changes affect the definition of TV itself. The free to air television (FTA) has become a niche for news show, reality show, reruns and sports. Meanwhile, the satellite television is used to watch high quality subscription-based channels. As at today, viewers can stream football, movies or news sometimes simultaneously with their tablet, laptop or smartphones. The commentary moves immediately to social media and not to a weekly TV guide or the daily newspaper. Meanwhile, YouTube and commercial content intermingle. Television has a powerful tool to bring people together, by getting people to participate in its characters and their stories. People badly want to know what happens to their favourite drama at 7 pm on TV3. But they want to know at a time that is best for them, not best for the network, and they want the world to know what they thought about it. Therefore, it is important to know how technology, the internet, and users' behaviors are interconnected. The content providers and distributors have to look at this opportunity seriously.

Recently, Internet TV has involved or attracted the attention of public and private sectors. It is acknowledged as a viable trend influencing the communication and broadcast industries in future. Therefore, it is capable of becoming a new business model with large potential growth in the convergent market. As reported by The Star (2016), the arrival of Netflix in January 2016 in Malaysia has caused "the shares of Malaysian satellite television provider, Astro Malaysia Holdings Berhad had come under pressure and its share price fell into a record low since October 2015" (Sidhu, 2016, para 2). Meanwhile, The Malaysian Reserve reported that "Media Prima Bhd, one of Malaysia's largest media companies reported losses for the second quarter of 2017, as traditional revenue from advertisements continues to drop with a net loss of RM132.9 million" (Alifah, 2017, para 2). A spokesperson of media company named Cocombee Studio in Kuala Lumpur which produced professional digital advertisements for its clients claimed that advertising on television is no longer the main medium for businesses to promote their products as internet services, social media, and mobile devices are developing, consumers are spending less time watching traditional TV (Christin, 2017). It is vital for the media companies to focus their marketing strategies on internet-based media instead of traditional media. Therefore, the important factors that influence people to adopt Internet TV in this research, should be studied far ahead as these factors contribute to major decision making. How and why people adopt is crucial in understanding users' behaviors nowadays. Based on market research, there is a high commercial demand for Internet TV, thus, the success will likely depend on the income generated from advertising and consequently, there is a pressing need to investigate on the factors that influence users' behavior intention.

In conclusion, the shift of research on consumer needs and the impact of social issues address a critical dimension about the diffusion of Internet TV. On the other hand, Malaysia does not want to be left behind in terms of the adoption of new information and communication technologies such as satellite television service. The relationships between Internet TV and consumer adoption behaviour are important and need further exploration. Therefore, it is crucial to conduct this research in identifying the adoption factors and the development process through the internet. Thus, the following research questions are designed for the study:

1.3 Research Questions

1. What specific attributes of Internet TV affect the overall use of Internet TV to be better than traditional TV?
2. What is the relationship between innovation diffusion attributes of Internet TV and user's intention to adopt Internet TV?
3. What is the relationship between specific attributes of Internet TV and user's intention to adopt Internet TV?
4. What is the relationship between personal characteristics and user's intention to adopt Internet TV?
5. What is the relationship between demographic characteristics and user's intention to adopt Internet TV?

6. Does relative advantage give impact on the relationship between specific attributes of Internet TV and user's intention to adopt Internet TV?

Objectives of the study

The general objective of the study is to investigate the major factors that influence the adoption of Internet TV use in daily life.

1.4 Research Objectives

1. To identify the specific attribute of Internet TV which affect the overall useof Internet TV to be better than traditional TV.
2. To determine the relationship between innovation diffusion attributes of Internet TV and user's intention to adopt Internet TV.
3. To determine the relationship between specific attributes of Internet TV and user's intention to adopt Internet TV.
4. To determine the relationship between personal characteristics and user's intention to adopt Internet TV
5. To determine the relationship between demographic characteristics and user's intention to adopt Internet TV.
6. To determine the mediating effect of relative advantage towards the relationship between specific attributes of Internet TV and user's intention to adopt Internet TV

1.5 Significance of study

The finding of this study would contribute to the theoretical field of media adoption. It suggests that persuading a positive perception of Internet TV's relative advantage may increase the level of consumers' expectations of Internet TV and the likelihood that they would adopt Internet TV. The researcher used Rogers' innovation diffusion model which concentrates on innovation attributes and the theory expanded the relative advantage as a mediating effect to examine the unique attributes of Internet TV in the study of media adoption. Thus, this study would contribute to a new framework that has been developed specifically for Internet TV adoption which also focuses on other constructs such as personal characteristics and demography in order to study the factors that influence the Internet TV adoption.

Second, the study would try to investigate the new format of media content distribution with a new style of living. Internet TV may represent as a multimedia use that merges the mobile media technology between the telecommunication companies, broadcast TV industries, and the content providers. The findings would contribute to practice as Internet TV can be used as an individual entertainment and information search platform. In addition, Internet TV may create a new market for multimedia content

delivery and thus, the proposed model of Internet TV adoption can be suggested as a practical guide to the estimation of Internet TV values and prediction of the technology development system. The study is also important to Malaysian broadcasters as it can contribute to the expansion of rules, strategies and establish criteria for evaluating the audience, the efficiency of the programmes and the relevance to the broadcasting system.

Third, for information policy planners, this study would be particularly useful, as it would encourage them to increase the information on users' behaviour especially on new technology adoption such as factors that motivate them to use and adopt. The statistics on usage pattern and the relationships between independent, mediating and dependent variables may help the policymakers such as Malaysian Communication and Multimedia Commission (MCMC) in formulating policies such as law and regulations especially on the contents and distributions factors among the Internet TV providers. In addition, it is beneficial to the Ministry of Communication and Multimedia to identify the medium used by the most Malaysians in order to deliver the government's political message or public service announcement.

Fourth, this study would be particularly useful for collecting data by using mixed method research. The study uses survey research and employed self-administrated questionnaires as a method of data collection which successfully reduced time and cost. Meanwhile, the qualitative approach helps to explain and offer better understandings into the quantitative findings with a smaller group of participants. Therefore, the study would provide a guideline and methodology for communication and media researchers in conducting a study regarding the factors that influence the adoption.

1.6 Scope of the study

This research examines the major factors that influence users to adopt Internet TV in daily life which focused on innovation diffusion attributes, personal characteristics, Internet TV specific attributes and demographic characteristics. With new converging multimedia technologies, people can watch the news, information and entertainment anytime, anywhere without any limits and get connected with people at the same time. Here, the researcher is focusing on the emerging trends that transform media use practices and the role of Internet TV in diffusing into people's daily lives. Thus, the study concentrates on Internet TV users from which the TV contents are produced by the broadcast TV station and content services providers. The locations are limited to five states in Malaysia and concentrated at the urban areas which have strong internet connection such as 4G or LTE as explained in chapter 3.

1.7 Keywords Definition

In order to have a better understanding of this research, it is important to establish a clear concept for the specific terms that have been used in this research. Therefore, the following key terms have been identified as below:

Adoption - Adoption can be defined as a decision to use an innovation and acceptance of the new idea by an individual or organization. Thus, the decision-making process is to accept an innovation, mass media or interpersonal communications with opinion leaders or social networks that able to influence people's perception of an innovation. Trepte, Ranne, and Becker (2003) defined adoption as an innovation process by which an innovation develops in a society and is used by early adopters.

Internet TV - An online video service that uses website streaming and applications (apps) to offer TV programmes or videos. Held (2007) defined "Internet TV as a broadcast of news, weather, and TV shows from television stations that add an internet interface to their over-the-air broadcasts". The audience can stream the programmes simultaneously over the air and through the World Wide Web or available after broadcast for general access either streaming or downloading over the public internet (Einav, 2004).

Diffusion of Innovation - The innovation diffusion attempts to understand and explain how innovations are spread across a population of potential adopters over time (Rogers, 1983) and its application in the individual (Moore & Benbasat, 1991) or organizational context. It can be an idea, product, program or technology which are new to the adoption unit (Rogers, 2003). There are five important factors in determining to perceive attributes of innovation such as relative advantage, complexity, compatible, trialability and observation.

Relative Advantage - Relative advantage is "the degree to which the innovation is perceived as better than the idea it supersedes. It refers to the extent to which the innovation is more productive, efficient, costs less, or improves in some other manner upon existing practices" (Rogers, 2003, p. 229). When new technology supersedes the older one, users are mostly preferred the new technology (Lin, 2001). The relative advantage of Internet TV refers to the satisfaction of Internet TV use is higher than traditional TV.

Specific attributes of Internet TV - Specific attributes or characteristics that have been associated with the unique features of new media technology and its usage contexts. In investigating new technology adoption characteristics, factors such as content, cost, technology (Lin, 2001; & Lee, Son, Yoo & Lee, 2011) and monetary related attributes (Lee et al., 2011) become the main important factors in determining consumer's expectation and adoption. The content attributes of Internet TV are

referring to the variety, quality and latest TV content. The cost attributes of Internet TV are identified as time, effort and money efficiency. And lastly, the technology attributes emphasized on interactivity, personalization, time shifting, information related media and reliability.

Personal characteristics – Individual's or user's prior exposure to similar technology and service adoption and the individual's tendency to absorb new types of "technologies and services, which are reflected in the decision process in adoption" (Zhu, Kraemer, Gurbaxani & Xu, 2006, p. 518). In this study, personal innovativeness has been recognized as an important role in encouraging possible user's behaviour for the adoption. The level of personal innovativeness might be different from others and the impact may contribute to different degrees of benefits, expectation and finally, generate various findings in the adoption study McCreery & Krugman (2015).

Social interaction – "Social interaction refers to the degree to which an individual perceives that important peers believe he or she should use the innovation" (Venkatesh, Morris, Davis, and Davis, 2003, p. 451). In addition, it is the innovation diffusion approach that used to determine interpersonal persuasion and influence in adopting new technology (T. Stafford, M. Stafford, & Schkade, 2004). Social interactions with communication channels provide direct detailed information on adoption (Stafford et al., 2004).

Traditional TV - It is a conventional television that has three types of signals to deliver TV programmes: broadcast, cable, and satellite TV (Carroll, 2001). It is limited to a specific geographic market. The TV programmes are broadcast at specific times on specific days and accessible to all, like broadcast network television.

Streaming - Is a content sent in a compressed form over the internet and displayed by the users in real time. With streaming video or streaming media, a Web user does not have to wait to download a file to play it. The user needs a player, which is a special program that decompresses and sends video data to the display and audio data to speakers. "Streaming video is usually sent from prerecorded video files but can be also distributed as part of a live broadcast. In a live broadcast, the video signal is converted into a compressed digital signal and transmitted from a special Web server that is able to do multicast, sending the same file to multiple users at the same time" (Rodman, 2012, p. 275).

Mobile Media - A technology which allows for wireless data transfer and which must allow for seamless transfer as the user moves between different telecommunication cells. This distinguishes mobile telephony from technologies such as Wi-Fi and this definition also exclude devices which cannot assess to a mobile telephony network such as iPods.

Time displacement or complements effect - It explained that time displacement is connected to time spent on new activities basically decreases the time spent on other media and thus contribute to less participation in other activities which is based on the time shared to many activities (Robinson, Kestnbaum, Neustadtl, & Alvarez, A., 2000).

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She has successfully published her research works in various indexed journals, chapter in books, conferences and won several medals in several international innovation competitions. She is also appointed as a reviewer for Malaysian Journal of Media and Society, UiTM Melaka. Furthermore, her passion for teaching technology has brought her to become one of the content developers and facilitators in online learning for Massive Open Online Course (MOOC). In 2012, she won the best presentation award and received US$300 in Pacific & Asian Communication Association (PACA) Conference, Seoul, (9th Biennial PACA) which was held in Sungkyunkwan University. She has working experience in the broadcast TV station for ten years since 1996 and continues working as a part-time lecturer in Stanford College and Twintech University before joining her current position.

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