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Perception Levels as to the Diffusion of Digital TV Technology in Selected Areas in Cebu, Philippines

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Abstract
The Federal Communication Commission (FCC) had urged that the television broadcasting industries worldwide must shift from the analog to digital TV technology. In consonance with this, the National Telecommunications Commission (NTC) mandated all the TV broadcasting companies in the Philippines to adopt in this digital TV transition by 2014. However, until now the terrestrial TV broadcasting is still analog. Hence, the study aims to determine the level of perceptions of the household members, broadcasters, TV suppliers, and NTC personnel as to cognizance of technology, adoption willingness, readiness of provision, and preparedness to the transition of digital TV technology. Also, this study compares the perceptions of the respondents as to the diffusion of the digital TV technology. The descriptive method is applied with the usage of the purposive random sampling. The research tools are the questionnaires given to the respective respondents. As for the statistical treatment of the data, the weighted mean and Kruskal-Wallis Test are used. It is found out that the different respondent groups had different levels of perceptions as to cognizance, willingness, readiness, and preparedness to the digital TV transition. The perception levels of the respondents as to the different facets as mentioned above are significantly different. In general, there is a must for the diffusion of digital TV technology in selected areas in Cebu, Philippines.

Keywords: terrestrial broadcasting, converter box, Technology Acceptance Model, Perceived Ease of Use (PEU), Perceived Usefulness (PU)

Introduction

Analog TV technology offers disadvantages such as higher power consumption, lower signal to noise ratio, weaker signal reception due to fading. The digital TV technology provides better sound and image quality, higher signal to noise ratio, and enhanced spectrum utilization. Thus, the Federal Communication Commission (FCC) had mandated all the TV broadcasting companies to shift from analog to digital technology.

According to Halonen (2002), the transition to digital TV technology is not as haste as anticipated by experts. The primary obstacles in this transition are the technical standards and spectrum channel allocations. It was mentioned by Galperin (2002) that some terrestrial broadcasters impede the transition in order to accept compensations from some providers to vacate a portion of the spectrum space to fortify its status in the midst of the market-based competitions. Xing (2009) mentioned about the significance of orienting the consumers in the primary stage of the transition to minimize obstacles on the side of the end users. Schubin (2003)

had conducted a study that compared the adoption of HDTV to that of NTSC color TV. It was observed that the transition from analog to digital is faster compared to the transition from black and white to colored TV. This was fortified by Proulx (2004). He found out that the diffusion of the digital TV is faster as compared to the diffusion before of the color TV. Also, Pramik (2002) conducted a study with regards to the obstacles to the transition to digital TV. For him, the obstacles are not purely technical but largely due to political, economic, and cultural challenges. According to Watanabe et. al. (2003), the rate of the substitution of the digital TV technology to the analog TV is quite slow due to insufficiency of information and the hesitations of the general public to pay for this new transition. Shin (2012) identified that the primary hindrance of the effective transition of the digital TV technology is the so-called top-down transition policy by the Korean government. Holmes (2008) researched on the television broadcasters' adoption of digital multicast and ancillary services determined the status of preparation of the broadcast companies on digital TV implementation. He traced that the primary hindrance on such implementation is not on the TV broadcasters and TV manufacturers but rather on the consumers ends. As per Fu (2013), the collaboration of the government and the industries is very significant in maintaining equilibrium in the television market which hastens the diffusion of this digital TV technology.

The studies as reviewed focused more on the rate of diffusion of the digital TV technology. The primary obstacles of such diffusion are also mentioned. The study by Holmes (2008) was dedicated more on the determination of the level of preparation of the TV broadcasting companies. According to Li (2014), the rate of diffusion of the digital TV technology was incongruent with the theory as formulated by Rogers (2003).It was pinpointed that the awareness level plays a significant role in the rate of adoption of the digital TV technology. In the study of Angulo et.al.(2011), the economic status of a country has direct connection with its adoption of the digital TV standards. For them, the third world countries used to select similar standards with the countries to which it has strong economic and political linkages. However, the levels of preparedness of the other social entities involved in this transition were not included. It is also noted that the awareness and willingness of the consumers were not investigated.

This study determines the perception levels of the household members, TV broadcasters, TV suppliers, and NTC personnel as to cognizance of technology, adoption willingness, readiness of provision, and preparedness to digital TV technology in selected areas in Cebu, Philippines. Second, this study compares the difference in the perceptions of the respondents as to the diffusion of the digital TV technology.

Statement of the Problem

In the Philippines, the TV broadcasting companies have not yet fully implemented the digital TV technology. The TV suppliers are still producing analog TV receivers. Most of the homeowners are still dependent on the analog terrestrial TV broadcasting. The diffusion of the digital TV technology has not fully penetrated the society. Such diffusion is affected by these facets such as the cognizance of technology, adoption willingness, readiness, and preparedness of such digital TV transition.

Conceptual Framework

This study is anchored on the theory that the perception levels of the respondents as to the diffusion of the digital TV technology are not significantly different. This is patterned after the Diffusion of Innovation of Technology as created by Everett Rogers (2003). In this theory, Rogers proposed four important elements. These are the following: innovation characteristics, status the nature of the communication media, the time element, and the society through which the innovation diffuses.

The characteristics of the innovation refer to certain attributes which can directly affect the perception of the adopters. The nature of the communication channels also affects the diffusion. To reach a potential adopter, the innovation must be diffused through a certain medium of communication. These communication media can include social media, mass media, and even interpersonal. Another factor that affects the diffusion of innovation is the passage of time. The longer the span of exposure of the innovation to the adopter, the higher is the rate of diffusion. According to Rogers, the social structure through which the innovation diffuses simply affects it. The Theory on Technology Acceptance Model (TAM) by Fred Davis supported the concept of Diffusion of Innovation by Rogers. The TAM theory focuses more on the readiness of the adopters to the utilization of the technology. According to Davis, the readiness for transition is affected by two variables: the Perceived Usefulness (PU) and the Perceived Ease of Use (PEOU). The Perceived Usefulness (PU) refers to the degree a person adheres that the innovation can enhance his or her job performance or well-being. However, the Perceived Ease of Use (PEOU) refers to the extent of complexity of the innovation. A potential adopter tends to be ready in adopting the innovation if he believes that there exists an ease in the utilization.

Significance of the Study

The results of the study serve as guides of the affected sectors of the society to devise comprehensive management programs for the effective implementation of the digital TV technology. With the identified extent levels of the perceptions of the respondents as to the cognizance, willingness, readiness, and preparedness of the digital TV technology, the concerned agencies can evaluate as to what degree they are to push for the diffusion of the digital TV technology for a successful full implementation.

Research Design and Methods

This study utilized the descriptive method of research using researcher-made questionnaire in order to determine the levels of awareness, willingness, readiness, and preparedness of the TV broadcasters, TV suppliers, household members, and NTC specialists in the transition to digital TV technology. In choosing the respondents, the researcher used the purposive or non-random sampling method. For the household members, there were a total of twenty-five (25) respondents as chosen proportionally from the different classes as to family income. The researcher decided to have three (3) respondents for the broadcast engineers since Cebu has only three major TV stations namely: ABS-CBN, GMA, TV5. In the case of the TV suppliers, the researcher chose to have five (5) respondents one for each of the following TV suppliers: Sony, Samsung, LG, JVC, and AIWA. For the NTC specialists, the researcher chose two (2) respondents.

The questionnaire as used in the research has four main parts. The first part of this questionnaire aims to identify the level of cognizance of the respondents. The second part is used to determine the extent of adoption willingness of the respondents. The third part is used to identify the level of readiness of providing the technology to the society. Lastly, fourth part is then used to determine the extent of preparedness for the transition. The questionnaires were personally given by the researcher to the respondents. The researcher explained the details and essence of the questionnaires to the respondents.

Treatment of the Data

The study used the "Weighted Mean" to determine the levels of cognizance, willingness, readiness, and preparedness of the respondents on the transition to digital TV. Shown were the categories and score ranges as used in interpreting the extent of cognizance, willingness, readiness, and preparedness of the respondents on the transition to digital TV technology.

Category	Mean Range	Interpretation
High Extent	2.34 - 3.00	It means that the respondent had HIGH degree of cognizance, willingness, readiness, and preparedness of the transition. The extent level is between 66.68% to 100%.
Average Extent	1.67 - 2.33	It means that the respondent had a MODERATE degree of cognizance, readiness, willingness, or preparedness of the transition. The extent level is between 33.34% to 66.67%.
Low Extent	1.00 - 1.66	It means that the respondent had a LOW degree of cognizance, willingness, readiness, or preparedness of the transition. The extent is between 0% to 33.33%

Another statistical tool as used is the "Kruskal-Wallis Test". It is used to verify if there is no significant difference in the levels of cognizance, adoption willingness, readiness of provision, and preparedness of the household members, TV broadcasters, TV suppliers, and NTC personnel on the transition to digital TV technology.

Results and Discussion

Items A to H are the discussions of the results of the study.

A. Level of cognizance

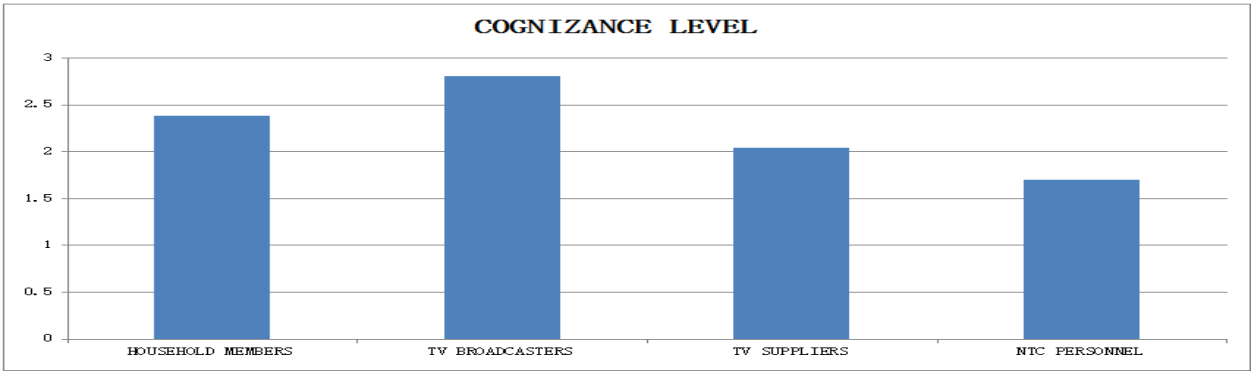

Figure 1: Cognizance level of the respondents

As shown in Figure 1, the cognizance level of the household members (2.38) is High Extent. This implies that household members are highly aware of the transition from analog to digital TV. However, the TV broadcasters (2.8), TV suppliers (2.04), and NTC personnel (1.7) had the same cognizance level of Average Extent. This means that the TV broadcasters, TV suppliers, and the NTC personnel had a moderate degree of awareness of the transition to digital TV technology.

B. Level of adoption willingness

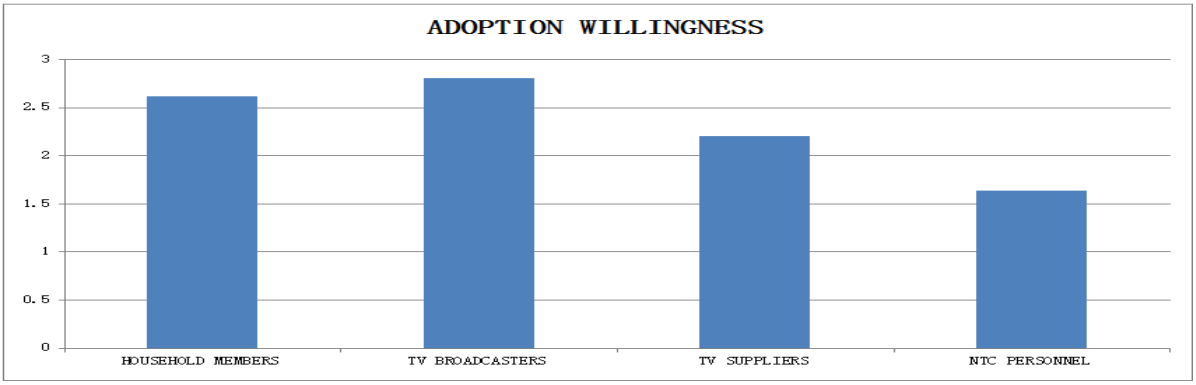

Figure 2: Adoption willingness of the respondents

As shown in Figure 2, the level of adoption willingness of the household members (2.61), TV broadcasters (2.80), and the TV suppliers (2.20) are all High Extent. This means that they had a high level of willingness to adopt with the transition of digital TV. However, the NTC personnel (1.63) had a willingness level of Low Extent. This means that based on the perception of the NTC personnel, they had a low level of willingness to adopt with this transition.

C. Readiness of provision

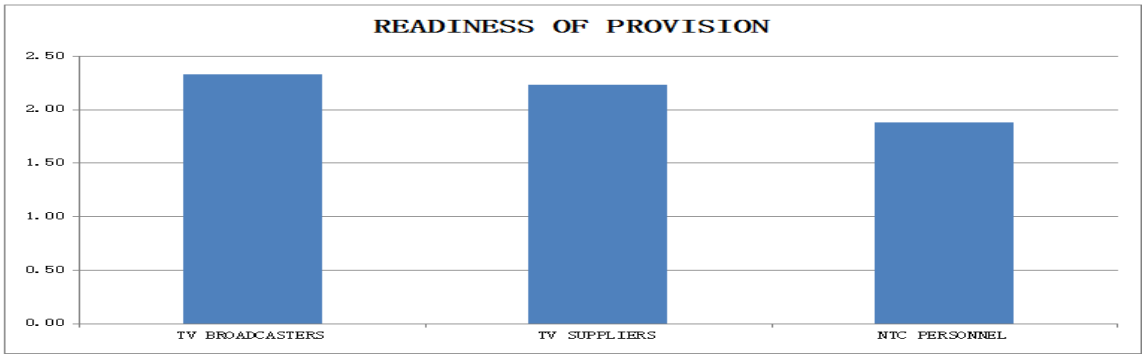

Figure 3: Readiness of provision of the digital TV technology

In Figure 3, the level of readiness to provide the digital TV technology to the general public by the TV Broadcasters (2.33), TV suppliers (2.23), NTC personnel (1.88) are all Average Extent. This means that the concerned entities like the TV broadcasting networks, TV suppliers, and NTC are just moderately ready in terms of physical facilities for this DTV transition.

D. Preparedness of the transition

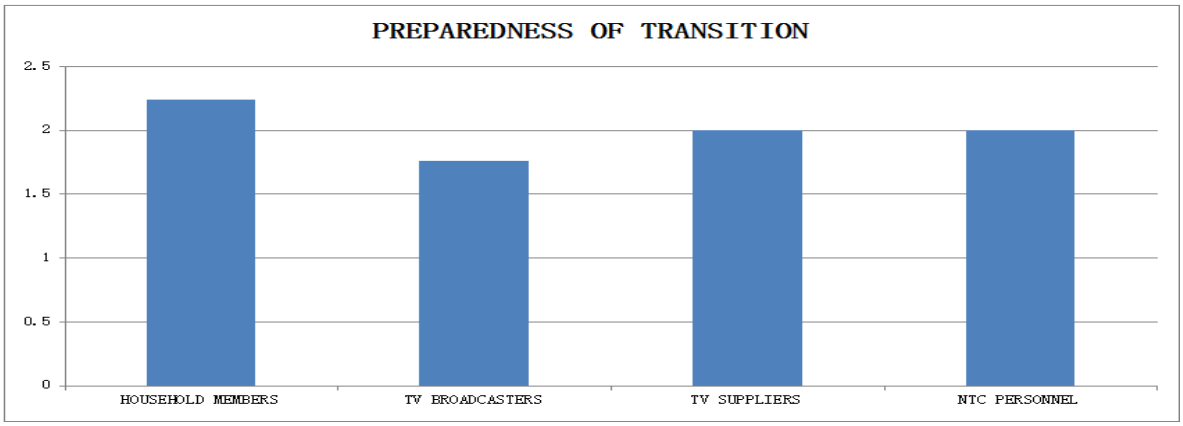

Figure 4: Preparedness level for the DTV transition

As shown in Figure 4, the preparedness level of the household members (2.24), TV broadcasters (1.76), TV suppliers (2.00), NTC personnel (2.00) are Average Extent. This means that the levels of preparation of the respondents are just moderate.

E. Difference of perception of the respondents as to cognizance of the DTV technology

Using Kruskal-Wallis, the test statistic result denoted by h is equal to 8.7289. It is greater than the value indicated in the table of the critical values of chi square using α=0.05 and degrees of freedom (df=3) which is equal to 7.8143. Hence, the null hypothesis is rejected and there is a significant difference in the perception levels of the respondent groups as to cognizance of the DTV technology. This implies that the respondent groups had distinct perception levels as to the awareness of the DTV transition.

F. Difference of perception of the respondents as to adoption willingness of the DTV technology

Using Kruskal-Wallis, the test statistic result denoted by h is equal to 10.1282. It is greater than the value indicated in the table of the critical values of chi square using α=0.05 and degrees of freedom (df=3) which is equal to 7.8143. Hence, the null hypothesis is rejected and there is a significant difference in the perception levels of the respondent groups as to adoption willingness of the DTV technology. This implies that the respondent groups had different extent of willingness to the transition of DTV technology.

G. Difference of perception of the respondents as to readiness of provision of the DTV technology

Using Kruskal-Wallis, the test statistic result denoted by h is equal to 1.09375. It is lesser than the value indicated in the table of the critical values of chi square using α=0.05 and degrees of freedom (df=2) which is equal to 5.99147. Hence, the null hypothesis is accepted and there is no significant difference in the perception levels of the respondent groups as to readiness in the provision of the DTV technology. This implies that the respondent groups have the same degree of readiness to this DTV transition and that is of moderate level.

H. Difference of perception of the respondents as to preparedness of the DTV technology

Using Kruskal-Wallis, the test statistic result denoted by h is equal to 0.7307. It is lesser than the value indicated in the table of the critical values of chi square using α=0.05 and degrees of freedom (df=3) which is equal to 7.8143.Hence, the null hypothesis is accepted and there is no significant difference in the perception levels of the respondent groups as to preparedness in the transition to DTV technology. This implies that the respondent groups have the same level of preparedness for this DTV transition.

Conclusion and Implication

In selected areas in Cebu, Philippines, the perceptions levels of the respondents are identified. As to the cognizance level, the respondent groups have different levels of cognizance. That is high level for household members and average level for the other respondent groups. Second, as to the adoption willingness, the respondent groups have different levels of willingness. That is low level for NTC personnel and high level for the other respondent groups. Third, as to the readiness of the provision of the digital TV technology, the respondent groups have the same level of readiness and that is of average level. Fourth, as to the preparedness of the transition, the respondent groups have the same level of preparation and that is also of average level. Moreover, the perception levels of the respondents in this digital TV transition are significantly different. This means that the respondents in Cebu, Philippines have different perception levels as to the cognizance, willingness, readiness, and preparedness of digital TV technology. Hence, there is a must for the diffusion of the transition from analog to digital TV technology in all sectors of the society. Both private and public agencies involved in this transition must develop comprehensive transition management programs in order to have an effective full implementation of digital TV technology.

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