Article

Understanding the Behavioural Intention to Play the Nintendo Switch: An Extension of the Technology Acceptance Model

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Abstract: Ever since the first games launched in the 1970s, the rapid growth of the video games market has successfully attracted more and more purchasers. In this study, we use Nintendo Switch as a case study to examine the extended technology acceptance model (TAM), which integrates the factors of Perceived Playfulness and Compatibility to determine their relevance in the usage behavior. A total of 266 questionnaires were obtained using snowball sampling and analyzed using the Structural Equation Modeling (SEM). The study results revealed that the expanded TAM model can be effectively used in this context and it also showed a good fit for the proposed model from the data analyzed. Attitude explained an R^2 of 0.85, which indicates that 85% of the variance in user's behavior intention is accounted by attitude. Perceived Ease of Use and Perceived Usefulness were significantly positively associated with attitude. Perceived Playfulness was significantly positively associated with Perceived Usefulness. This study also addresses the implications of the findings for researchers and the game marketing strategies practitioners.

Keywords: Switch; technology acceptance model; attitude toward using

1. Introduction

Computer games are one of the most important entertainment tools for people of all ages. A computer game is played using a computer, typically a video game, also named digital games. Over the last 40 years, computer games have increasingly replaced traditional games as leisure activities and have brought a dramatic change and has had an impact on our leisure activities. Computer games, with characteristics such as being interesting and exciting, consequently attract many people as they create virtual fun and entertaining environments [1]. Playing computer games, video games or digital games, provide engaging activities and entertainment has increasingly gained people's interest in their daily life. The availability of new consoles, platforms, and technologies for the delivery of games is an important factor in this continued growth. During the 1970s, the computer games Pong and Space Invaders were initially introduced to UK families, and digital games have brought about transformational impact on how people spend their leisure time. Games provide appealing and enjoyable activities and the digital games market has expanded to become the fastest growing leisure market, even during a worldwide recession [2]. According to the market value reported from Statista, in 2020, the gaming industry generated $155 billion in revenue. By 2025, analysts predicted that the industry will generate more than $260 billion in revenue.

The Nintendo Switch is a video game console launched in March, 2017. It is a hybrid console that can be used as both a stationary and portable device. Its wireless Joy-Con controllers, which include standard buttons and directional analog sticks, provide players with high-definition tactile feedback. It can also connect to both sides of the console to support handheld-style play. Switches can also connect to a grip accessory to provide a

traditional home console gamepad form, or be operated individually by hand, like the Wii Remote. The Nintendo Switch's software supports online gaming through Nintendo Switch Online Services. Users pay to play online games and voice chat on other Switch consoles via the Nintendo Switch online service. The designation of game console will create different gaming experiences; therefore, researchers have further explored how the experiences can influence the users' behavior intentions and proved that experience will indirectly influence behavior intention [3].

Due to the poor sales of its previous console, the Wii U, and the large market competition from mobile gaming, the Nintendo Switch's design is aimed at a wide range of demographics of video game players through multiple modes of use. As the Wii U had a weak software library, Nintendo preemptively sought the support of many third-party developers and publishers to help build the Switch's game library. By the end of 2017, over 320 game titles were released for players' choice. The Nintendo Switch was released worldwide on March, 2017. By the start of 2018, the Nintendo Switch became the fastest selling home video game console device in both Japan and the United States [4]. As of December 2018, Nintendo Switch has sold more than 32 million units worldwide [5].

As Switch is an innovative technology product, there are still unknown factors influencing users' behavior. Users' satisfaction with the initial technology use is positively associated with the intention to continue using the technology [6]. In today's competitive and progressive technology environment, how to attract users to continue to use has become an important issue.

The Technology Acceptance Model (TAM), proposed by Davis [7], is mainly used to predict and explain the acceptance of new information technology, which has been widely adopted by many research institutes. TAM, adapted from TRA, posits that the most important determinants of the individual's acceptance of technology are perceived usefulness and perceived ease of use. However, the perceived usefulness and perceptive ease of use in the TAM model do not fully explain the user's intent to use [8]. Previous researchers revealed that TAM mainly explores the effects of attitude by using the real benefits of technology products, the theoretical perception of ease of use, and perceptual usefulness are both external motivations and the lack of intrinsic motivation discussed [9]. Researchers later integrated perceived enjoyment in the model as an intrinsic motivation and defined perceived usefulness as an extrinsic motivation [10]. Moon and Kim extended TAM by adding perceived playfulness as an intrinsic motivation factor. They found that perceived playfulness was a significant factor in user acceptance of websites [8].

The diffusion of innovation theory could be considered as one of the most popular theories that can be used to explain factors that affect an individual to adopt an innovation or new technology [11]. Rogers identified five attributes or characteristics of innovation, namely relative advantage, compatibility, complexity, trialability, and observability, which are viewed to determine an individual's rate of innovation adoption during the adoption process [11]. The Diffusion of Innovations (DOI) and Technology Acceptance Model (TAM) are considered to have the most powerful theoretical emphasis in innovation adaptation literature. TAM and DOI share similar premises, which assess innovation adoption on the perception of their characteristics. For example, relative advantage and perceived usefulness can be viewed as value-oriented features; complexity and perceived ease of use can be viewed as effort-oriented features. Moore and Benbasat developed an instrument to measure an individual's perceptions concerning the attributes of an innovation [12]. They renamed Rogers' complexity construct as ease of use, which is consistent with Davis [9]. According to prior research in the meta-analysis of 75 diffusion articles, only the relative advantage, compatibility, and complexity were consistently related to the adoption of technical innovations [13]. In addition, compatibility has repeatedly been observed as a major factor manipulating the adoption of inventions [14]. Therefore, compatibility is separated as an observable independent factor.

Based on this background, this study adds perceived playfulness as an intrinsic motivation to explore the user's motivation for using Nintendo Switch. In addition, considering

the characteristics of Switch, this study also adds the compatibility from Diffusion of Innovations Theory (DOI) to the model for a more complete exploration of the user's acceptance of Nintendo Switch. Such research will help gaming designers and vendors to be better understand Switch users' behavioral patterns. The objective of this study is described as follows: (1) To explore the influence of compatibility on perceived ease of use and perceived playfulness. (2) To explore the influence of perceived usefulness and perceived ease of use on the user's attitude. (3) To explore how attitude influences user's behavioral intention.

2. Theoretical Background and Hypotheses

2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was originally introduced by Davis [7]. The TAM model was adopted from the Theory of Reasoned Action (TRA) [15] and has been proven to be successful in predicting and explaining human behavior. The TAM models consist of factors known as external variables, which can affect Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) to determine the Attitude (ATT) of human behavior intention (BI) to the use of technology products.

Perceived ease of use (PEOU) and perceived usefulness (PU) are the two key constructs of TAM. PEOU can be defined as a degree when a user feels there is no difficulty to use the technology, and PU can be defined as a psychological level that the user perceives how useful the technology would be [16]. Previous studies suggested that both PU and PEOU were influential antecedents that affect user's attitude (ATT) and behavioral intention (BI), which will lead to the actual use of technology [14]. Many researchers have applied TAM in their studies to explore users' willingness to accept new technology, such as online apparel shopping [17,18]. Recently, TAM has become one of the most important theoretical models in the area of technological adaptation. Davis concluded that the TAM constructs were important determinants of computer usage [10].

Chou and Lu studied the e-learning system regarding attitude and intention to use, and found that both perceived ease of use and perceived usefulness were positively associated with attitude [19]. Moreover, attitude was positively associated with intention to use. Hsu and Mou applied TAM and Innovative Features to explore the intention of using Nike+ Running apps and found that the app user's innovation characteristics, perceived usefulness, perceived ease of use, and the attitude toward using have remarkable forecast functions regarding the behavior intention to use [20]. Chang, Chen and Lin's study on Wii Sports gaming users found that perceived usefulness has no significant impact on the attitude toward behavior [21]. Wu and Chang's study on college students explored how TAM functioned by using sport equipment and found that perceived ease of use has positive effects on perceived usefulness [22]. Both perceived ease of use and perceived usefulness have positive effects on attitudes. Attitude has a positive influence on sport equipment usage behavior.

Based on the three factors of TAM, the intentions to use technology is defined in terms of Nintendo Switch users' perceptions about their attitude towards the Nintendo Switch console. The following hypotheses were considered to assess the Switch user's attitude towards the actual intention to play Nintendo Switch or purchase it.

H1. *Switch user's perceived ease of use has a significant effect on the perceived usefulness. [PEOU→PU]*

H2. *Switch user's perceived ease of use has a significant effect on the attitude towards playing Nintendo Switch. [PEOU→ATT]*

H3. *Switch user's perceived usefulness has a significant effect on the attitude towards playing Nintendo Switch. [PU→ATT]*

H4. *Switch user's attitude has a significant effect on the behavior intention of playing Nintendo Switch. [ATT→BI]*

2.2. Diffusion of Innovation Theory (DOI)

Due to the rapid changes in technology, several studies have recommended integrating TAM with DIT to better understand the users' adoption patterns [23,24]. The diffusion of innovation theory (DOI) could be considered as one of the most popular theories that have attempted to predict factors that affect an individual to adopt an innovation or a new technology [25,26]. DIT is an extensive social and psychological theory that seeks to explain the stages that show how new ideas and technology spread among people in different societies, climates, or culture environments. Rogers identified five attributes of innovation that are considered to determine the rate of innovation adoption behavior, which are relative advantage, compatibility, complexity, trialability, and observability [25]. According to Rogers, relative advantage is "the degree to which an innovation is perceived as being better than the idea it supersedes" [25]. Compatibility refers to "the degree to which a service is perceived as consistent with users' existing values, beliefs, habits, and present and previous experiences" [25]. Trialability is "the degree to which an innovation may be experimented with on a limited basis" [25]. Observability is "the visibility of the innovation" [25]. Compatibility is a vital feature of innovation as conformance to the user's lifestyle can advance a rapid rate of adoption [27]. An idea that is incompatible with the users' values or needs will not be rapidly adopted compared to an innovation that is compatible. Researchers indicated that compatibility is a significant antecedent in determining consumers' attitude towards internet banking adoption in Malaysia [28]. Compatibility had a significant correlation with computer adoption and use of mobile banking in Saudi Arabia [29]. Based on the literature discussed above, we added compatibility into the expanded TAM model and hypothesize the following:

H5. *Switch user's perceived compatibility will have a positive effect on the perceived ease of use. [COM→PEOU]*

2.3. Perceived Playfulness

Users not only expect technology benefits but also a playful experience. Perceived playfulness is defined as the psychological state of playfulness or flow, which was gained from enjoyment or pleasurable experiences when an individual is doing the activity itself instead of extrinsic rewards [10]. Hoffman and Novak suggested that a user will become engaged in a website if they experience the effects of flow [30]. Moon and Kim extended TAM by including an intrinsic motivation factor, perceived playfulness, as an intrinsic motivational factor to affect users' acceptance of the World Wide Web [8]. Playfulness is an important factor to motivate users to utilize a new system [31]. Perceived playfulness had a significant positive relationship with attitude toward using [8]. They concluded that it is important for developers to include intrinsic and extrinsic motivational factors in user interface design, thus helping to improve usability.

Perceived playfulness is derived from the user's subjective evaluation of their interaction with technology and is represented through subdimensions: Concentration, enjoyment, and curiosity [32]. Researchers examined two social networking sites (SNSs) and found that providing playful services for users that will keep them engaged without losing their interest. In their study, the results show that there is a positive association between perceived playfulness and a user's attitude toward using the technology [32].

Igbaria et. studied the effect of perceived enjoyment and usefulness on usage in a field study of Finnish computer users and found strong relationships between perceived usefulness and usage, but weak, insignificant links between enjoyment and usage [33]. In contrast, Teo et al. noted that perceived enjoyment correlates positively with the frequency of Internet usage and daily Internet usage [34]. They explained that perceived fun and perceived playfulness are similar to the concept of perceived enjoyment. In this study, these

terms are handled the same and are used interchangeably. Prior research has studied the impact of PU or PEOU on perceived enjoyment, similar to perceived playfulness in our model. Therefore, we hypothesize the following:

H6. *Switch user's perceived playfulness has a significant effect on the perceived usefulness. [PP→PU]*

2.4. Research Model

Based on the literature of the two major theories employed in this study, the two basic TAM factors are PU and PEOU and are important factors for innovation compatibility (trialability and observability are omitted due to the previous analysis of Tomatzky and Klein [13]), which are included as the major determinants in our integrated framework of new technology adoption (see Figure 1).
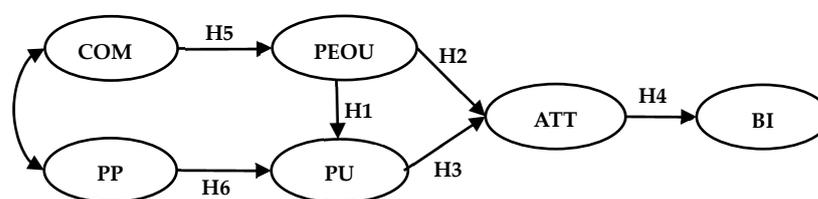

Figure 1. Research model and hypotheses.

3. Materials and Methods

3.1. Research Participants & Data Collection

A web survey was administered via Google forms to collect data. Users who have played Nintendo Switch within the past 3 months were selected using Snowball sampling via social media including personal Facebook and Switch-related Facebook communities. Before the survey starts, an initial page indicates the academic research purpose and use of this questionnaire, and no personal information will be disclosed. After gaining consent from the participants, the questionnaire was filled out, and those who disagreed were not included. The questionnaire for this study was distributed from 15 December 2018 to 15 January 2019. A total of 300 questionnaires were distributed and 266 of them were collected, excluding invalid questionnaires, representing a response rate of 88.67%.

3.2. Research Instruments

The research methodology of our study is an online questionnaire survey that contains two sections. The first section of the questionnaire was designed to identify the demographic characteristics of the respondents, such as gender, age, occupation, average monthly income, and reasons for playing (or purchasing) Nintendo Switch. The second section contains a series of questions, covering perceived usefulness (PU), perceived ease of use (PEOU), perceived playfulness (PP), perceived compatibility (COM), attitude (ATT), and behavior intention (BI). The scale of PU, PEOU and BI were adapted from the measurement by Davis' study [9] and Wu and Jiang's study [35] on usage intention of digital TV [26]. The scale of perceived playfulness (PP) was adapted from the measurement by Moon and Kim [8]. Attitude (ATT) scale, which contains 5 questions, was adapted from the measurement by Bhattacherjee's study on e-commerce services [36]. The scale compatibilities (COM) was adapted from the measurement by Taylor and Todd's study [37]. Questions were modified for the semantic meaning to fit for Switch users, such as: "I think using the Switch will improve my leisure quality (PU)"; "I think the Switch is simple and easy to use for the first time (PEOU)"; "I will continue to use Switch (BI)"; "I think it's fun and joyful to play on the Switch (PP)"; "I am satisfied when I play with Switch (ATT)"; and "I think playing Switch match with my daily habits (COM)". The second section consisted of 22 questions, which were measured on a five-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree").

3.3. Data Analysis

The final data were loaded into a statistical package (SPSS 18.0) for various statistical analyses. We initially applied descriptive statistical analysis to summarize the characteristics of the respondents and the results for the relevant research variables. A confirmatory factor analysis (CFA) was conducted to test the convergent validity of each construct, convergent validity, and discriminant validity. The bivariate Pearson correlation coefficient was computed to investigate the linearity between the observed variables.

Finally, in order to verify the causal relationship of the variables in this study model, referring to recommendations from Dash and Paul [38], this study implemented Structural Equation Modeling (SEM) with Amos to verify the goodness of fit of the proposed model and to describe the relationships among the constructed variables. According to the standard from Kline [39], the study applied the indictors of Root-mean-square residual (RMR), Root-mean-square error of approximation (RMSEA), Good-ness-of-fit index (GFI), and the adjusted goodness of fit index (AGFI).

4. Results and Discussion

4.1. Sample Demographics

Our 266 respondents consisted of 188 (70.7%) males and 78 females (29.3%). Respondents mainly aged from 21 to 30, and most of them were students. The individual's average income ranged from NT$22,001–$30,000. Most of the respondents (76.7%) mainly played (or purchased) Nintendo Switch games because they are interesting and fun. Table 1 presents the profiles of the sample regarding their principal sociodemographic and the reasons they purchased a Nintendo Switch.

Table 1. Profile of the respondents.

Description	Items	Freq.	%
Gender	Male	188	70.7
	Female	78	29.3
Age	Under 20	49	18.4
	21–30	135	50.8
	31–40	60	22.6
	41–50	22	8.3
Occupation	Student	107	40.2
	Government employees	16	6.0
	Professional	45	16.9
	Service Sector	68	25.6
	Others	30	11.3
Average Monthly Income	<NT$22,000	87	32.7
	NT$22,001–30,000	42	15.8
	NT$30,001–40,000	69	25.9
	NT$40,001–50,000	30	11.3
	>NT$50,001	38	14.3
Reason to buy A Nintendo Switch	Interesting and fun games	204	76.7
	Recommendation of friends	22	8.3
	Gift from others	26	9.8
	Others	14	5.3

4.2. Reliability and Validity

Table 2 provides an overview of the Pearson correlation coefficient matrix of the constructs under study. The analysis results show that the variables were significantly correlated and had a relationship. All variable item correlation values were in medium to high levels, ranging from 0.413 to 0.921, indicating that there is a positive correlation between the variables.

Table 2. Pearson correlation coefficient matrix.

Construct	PU	PEOU	COM	PP	ATT	BI
PU	-					
PEOU	0.503 *	-				
COM	0.745 *	0.413 *	-			
PP	0.890 *	0.517 *	0.696 *	-		
ATT	0.807 *	0.614 *	0.726 *	0.930 *	-	
BI	0.817 *	0.527 *	0.711 *	0.828 *	0.921 *	-

* $p < 0.05$.

To assess the reliability and validity of the constructs, we conducted a confirmatory factor analysis (CFA) to test the convergent validity of each construct. A single factor model was specified for each of the constructs. The measurement model included 22 items describing six latent constructs: PU, PEOU, PP, COMP, ATT, and BI. The factor loadings for the various question items of the COM construct ranged between 0.70 and 0.92, PU construct ranged between 0.71 and.83, PEOU ranged between 0.76 and 0.86, PP ranged between 0.73 and 0.86, ATT ranged between 0.80 and 0.84 and BI ranged between 0.77 and 0.82. Convergent validity of the constructs with all factor loadings exceeding 0.70 was demonstrated to be good to excellent on their own constructs [40]. The values of composite reliability (CR) for each construct were 0.87, 0.88, 0.86, 0.89, 0.89, and 0.84, which were all clearly above 0.70 for all constructs, providing internal consistency. The values of AVE were in the range of 0.61 to 0.70, providing a reasonable convergent validity according to Fornell and Larcker [41].

The measurement model revealed a good fit, with $\chi2 = 539.24$, $\chi2/df = 2.67$, GFI = 0.83, AGFI = 0.79, NFI = 0.88, IFI = 0.92, TLI/NNFI = 0.91, CFI = 0.92, SRMR = 0.07 and RMSEA = 0.08. Therefore, all indicators met the requirement for the recommended level of the model fit [42].

Overall, the measurement model indicated that there was a high degree of reliability as well as convergent and discriminant validity. The measurement items with 22 items measuring six latent constructs were applicable in evaluating the users' acceptance of Nintendo Switch.

4.3. Hypothesis Testing

Structural equation modeling results for Switch users are presented in Figure 2. Figure 3 shows the hypothesis and testing results of the structural equation model. Of the proposed six hypotheses, five were supported, and the hypothesis tests are summarized in Table 3.
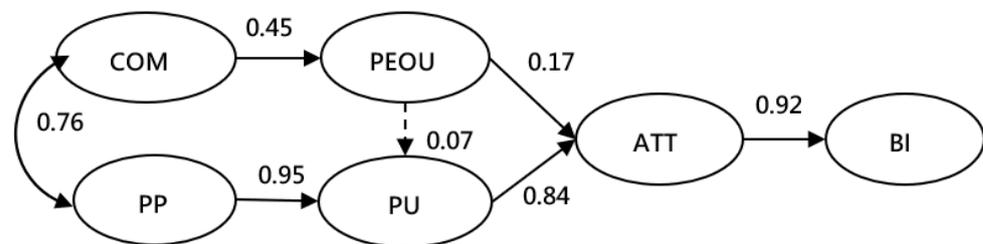

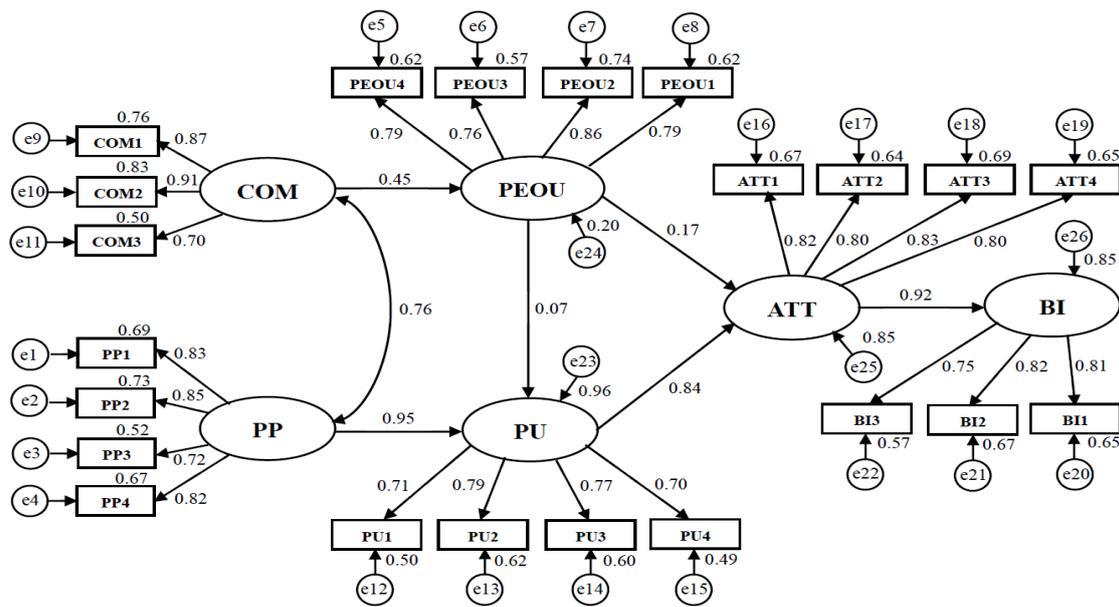**Figure 2.** Switch User's Behavior model results.

Figure 3. Hypothesis Testing Results of the Structural Equation Model. Abbreviation: COM= Compatibility; PP= Perceived Playfulness; PEOU= Perceived Ease of Use; PU= Perceived Usefulness; ATT= Attitude; BI= Behavioral Intention; e1–e26 are measurement errors; COM1-3 are survey questions for COM; PP1-4 are survey questions for PP; PEOU1-4 are survey questions for PEOU; PU1-4 are survey questions for PU; ATT1-4 are survey questions for ATT; BI1-3 are survey questions for BI.

Table 3. Results of hypothesis tests.

Hypothesis	Effects	Estimate	CR (*t*)	*p*	Remarks
H1	PEOU→PU	0.07	1.55	0.12	Not Supported
H2	PEOU→ATT	0.17	3.30	0.00	Supported
H3	PU→ATT	0.84	10.64	0.00	Supported
H4	ATT→BI	0.92	14.09	0.00	Supported
H5	COM→PEOU	0.45	6.17	0.00	Supported
H6	PP→PU	0.95	11.66	0.00	Supported

H1. *Switch user's perceived ease of use will have a positive effect on the perceived usefulness. [PEOU→PU]*

The relationship between PEOP and PU was not significant (β = 0.07, t = 1.55). The PEOU has no significant effect on PU. Hypothesis 1 was not supported. This result is inconsistent with the findings of previous research on using the Nike+ Running App by Hsu and Mou [21]. Nike+ Run Club is a useful app for runners who want to track their runs, monitor their running performance, and improve their times and distances over a period of time. Running is hard, whereas the Nike + Run Club emphasizes that the app offers intuitive features and is easy to use in order to obtain users' interests to join the club. Compared to the Nike+ Run app, Switch is designed more for leisure purposes. The possible explanation could be the users' belief that the ease of operation of switch will not affect Switch's benefits. It is fun enough to meet the needs of the players. Thus, players who have experienced fun from Switch may not think that PEOU will affect PU.

H2. *Switch user's perceived ease of use will have a positive effect on attitude. [PEOU→ATT]*

The results show the PEOU has a significant effect on ATT (β = 0.17, t = 3.30). Hypothesis 2 was not rejected. This result is consistent with the previous research by Chou and Lu [20]. It implied that the PEOU was an important reason for users having a positive attitude, and the attitude was largely explained by perceived ease of use. The use of technology systems should give priority to ease of use and simple operation; when the user thinks that the degree of ease of use is higher, it will also affect the attitude toward subsequent use [43]. It has been confirmed, in a study of students using online learning, that the more frequently they use the system, the more positive their attitude towards the use is [44]. Therefore, when users can use Switches with less effort, they tend to have a positive attitude toward the device.

H3. *Switch user's perceived usefulness will have a positive effect on attitude. [PU→ATT]*

PU (β = 0.84, t = 10.64) positively affected ATT. Hypothesis H3 was not rejected. This result is consistent with the previous research by Wu and Chang [23]. It implied that the users believe that the higher the benefits Switch has provided, the users have a higher and positive attitude toward playing Switch. As the novel intelligent technology meets the needs and interests of users, it will relatively increase the frequency of use of the product [45]. Students believe that online courses can improve learning efficiency and are easy to operate and use, which will generate a more positive attitude towards use [46].

When users consider Switch to be a useful product for themselves, they have a positive attitude. Therefore, perceived usefulness has a significant positive effect on attitude.

H4. *Switch user's attitude will have a positive effect on the behavior intention. [ATT→BI]*

ATT (β = 0.92, t =14.09) positively affected BI. Thus, Hypothesis 4 was not rejected. This result is consistent with the previous research by Chang, Chen, and Lin [22]. The more positive the user's attitude toward Nintendo Switch, the user has a higher level of intention to play Nintendo Switch. When a user has a positive feeling about Switch, it motivates the user to be willing to play or purchase Switch games. When consumers are more satisfied with and trust in the use of products, they tend to have higher product attachment, as well as stronger use intentions [47]. In the study of students' self-learning motivation and behavioral intentions, it is also confirmed that attitudes have a significant predictive power for behavioral intentions [48,49].

Therefore, attitude has a significant positive impact on the behavior intention.

H5. *Switch user's perceived compatibility will have a positive effect on Switch user's perceived ease of use. [COM→PEOU]*

COM significantly affects PEOU (β = 0.45, t =6.17). COM positively affects PEOU. Hypothesis 5 was supported. This result is consistent with the previous research by Sheu, Kao, and Chuang [50]. The frequency of using mobile banking will increase when the user realizes it is easy to use and it matches past lifestyle and habits [51]. Thus, when users consider Switch as compatible with their lifestyle, the more they think it is easy to operate with Switch. Consumers are usually attracted by the right product and will continue to use it. Therefore, compatibility will have a significant positive effect on perceived ease of use.

H6. *Switch user's perceived playfulness will have a positive effect on the perceived usefulness. [PP→PU]*

PP positively affected PU (β = 0.95, t =11.66). Therefore, Hypothesis 6 was supported. This result is consistent with the previous research by Chih, Lin, Wang, and Chang [52]. The more fun the user gains from using Switches, the more usefulness the user feels about the product. Research has pointed out that smartphones provide the entertainment function in daily life, therefore the time invested will also increase [53]. In the study of students

using VR, it was confirmed that perceived fun is an antecedent variable of perceived usefulness [54]. If students find the online learning platform interesting and can interact with others, they will have better acceptance with the platform [55]. When Switch games provide more fun for the user's leisure activities, helping players in reducing the pressure of life and gaining leisure relaxation, users tend to have more perceived usefulness. Therefore, perceived playfulness has a significant positive effect on the perceived usefulness.

5. Conclusions

This study expanded the technology acceptance model, adding the perceived playfulness and compatibility from the innovative diffusion theory to explore the factors that influence Nintendo Switch users' attitude. The results indicated that the extended technology acceptance model had higher predictive power in determining the Switch user's behavior intention. COM significantly affects PEOU, and besides COM, it was found to be highly associated with playfulness. Compatibility can be seen to fit their own products and will allow users to improve the acceptance of Switch. Moreover, compatibility of the product makes Switch use easier and increases the level of fun. This study found that perceived playfulness has a positive and significant effect on perceived usefulness. However, the perceived ease of use has no significant effect on the perceived usefulness. Compared to Switch's ease of use, playfulness and enjoyment can have a competitive advantage over the ease of use and help users to achieve the effect of relaxation. Being in a pleasant atmosphere with pleasant experience could increase satisfaction, and thus enhance continuous intention. The usefulness represents a more important factor regarding the influence of perceived ease of use on attitude. It indicates that the user's attitude depends on the leisure benefits that Switches provide, and the perceived usefulness is the key factor in determining user attitudes.

6. Suggestions

6.1. Practical Implications

Based on the findings and limitations of the study, the following recommendations are made in this study. While perceived ease of use has no significant effect on perceived usefulness. Most Nintendo Switch users agree that Switch is easy to operate, and with wireless Joy-Con controllers, the player can create more game experience and tactile feedback. It is recommended that the game developer to design more varieties of games based on the Joy-Con controller to attract a full range of players. Consumer preferences are changing, and besides the usefulness and ease of use of the game console, it is suggested that the Switch console game developers create more innovative games that provide pleasure and unique gaming experience for consumers by playing with Joy-Con. For example, some advanced gaming consoles are equipped with sophisticated features that allow players to record and share and cross-platform game play in order to enhance the level of fun.

A recent study by data.ai and IDC has reported that mobile gaming is fast growing and represents about 61 percent of the global market share in 2022 [56]. Compared to game consoles, mobile gaming has become a popular activity because of its convenience, portability, and affordable cost and which have made mobile games a popular leisure activity choice [57]. At the same time, social media provides a virtual platform for online video games. Most online video games are free and individuals can easily find the video game of their choice via social media by using mobile devices or PCs. The increasing penetration rate of smartphones and the growing preference for cloud gaming are offering opportunities for the growth of the online gaming. As such, we suggest that game developers put a strong emphasis on developing innovative video game consoles to capture the opportunities offered through online gaming and increasing innovative creations.

6.2. Limitations and Future Researches

This research, however, is subject to several limitations.

Firstly, the study was constructed in 2018 and the survey was conducted from 15 December 2018 to 15 January 2019. This study is incapable of describing the differences in usage behavior caused by the changes in the COVID-19 pandemic in recent years.

Secondly, this research survey adopts online snowball sampling and targets users who have used Switch within the past three months. The study survey questionnaire was distributed for data collection from 15 December 2018 to 15 January 2019. Since the Nintendo Switch console was launched in 1 December 2017 in Taiwan, there were still not so many users at that time. Therefore, the number of samples collected was limited.

Thirdly, due to the limits of the research sample size, the study did not include the usage behaviors pattern in different ages, genders or other ethnic groups. The increasingly variety of games have launched in the market, some of them are designed and focus on children, and some of them are designed for sports training. It is suggested that future researchers compare differences in behavior patterns and game preferences of different ethnic groups. In addition to solving the factors that affect the use of Switch by each ethnic group, they can further develop more attractive games to cater to the needs of the individual groups.

Finally, this study did not consider the differences in user behavior of different game platforms. Since Sony PlayStation, Nintendo Switch, Microsoft Xbox are the leading brands of the gaming market, each represents its own market share and its own loyal users. For future work, it is suggested that researchers can compare the players' behavior patterns among different brands of gaming consoles.

Author Contributions: Conceptualization, C.-W.L. and Y.-S.L.; methodology, C.-W.L.; writing—original draft preparation, Y.-S.X., J.-H.C. and Y.-S.L.; writing—review and editing, J.-H.C. and Y.-S.L. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data of this study was used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest: The authors declare no conflict of interest.

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