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## Conference Paper

# Why do Taiwanese young adults not jump on the bandwagon of Pokémon Go? Exploring barriers of innovation resistance

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**Why do Taiwanese young adults not jump on the bandwagon of Pokémon Go?**  
**Exploring barriers of innovation resistance**

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## **Abstract**

Despite the unprecedented global diffusion of Pokémon Go, some refuse to jump on the bandwagon of this augmented reality (AR) mobile gaming. This exploratory study conducts in-depth interviews with 30 non-adopters (discontinuers and resisters), after the gaming experienced setbacks, in order to identify the factors affecting young Taiwanese smartphone users and gamers' innovation resistance. The results show physical and time risk concerned both groups of non-adopters when they got addicted to Pokémon Go, pinpointing the significance of physical danger and temporal issues in relation to innovation resistance. Discontinuers and resisters had further distinct reasons for resisting the game. Usage barrier had a strong impact on discontinuers. Playing the game is not compatible with their schedule, leading them to stop playing Pokémon Go. While image barrier was the prominent factor for resisters. Even without playing the game, they perceived the game negatively leading them to refuse to play the game.

Keyword: Pokémon Go, innovation resistance, usage barrier, value barrier, risk barrier, tradition barrier, image barrier, social barrier, resistor, discontinuer

## **1. Introduction**

In mid 2016, Pokémon Go quickly surged and became the mobile app that caught a swarm of users rapidly and engaged them sensationally to hunt for virtual monsters in 56 countries (Dogtiev, 2016). To play this augmented reality (AR) mobile video game, Pokémon Go users need to download the application to their smartphones, then use the location-based and AR functions to search and hunt the Pokémon (McCartney, 2016). The players visited public landmarks or other places in order to seek virtual and collectible characters (Wingfield & Isaac, 2016).

Many attempted to figure out why Pokémon Go could become the fast diffusing and highly engaged app that swept people of different cultures away. Pokémon Go is free and easy to access (Lopez, 2016). Fitzpatrick (2016) pinpointed the merge of AR and reality is the interesting twist over other games which allows players to set off and move around in the offline world. The game also brings nostalgia and dream fulfillment for many people who have played Nintendo's Pokémon game and anime series (Westaway, 2016). Pokémon Go brings back the sense of community and engages a wide range of audience of different ages and backgrounds (Prederio, 2016).

According to ComScore report (cited in Siegal, 2017), Pokémon Go peaked with 28.5 million American users after one week of its launch on July 13<sup>th</sup> 2016, but by December its daily active users has dropped to under 5 million, and shrunk further in 2017. The game was on the list of top 10 most downloaded game in 2016; however, in May 2017, Pokémon Go landed on 68<sup>th</sup> rank for top free games, showing the decline of users' interests (Leswing, 2017; Think Gaming, 2017). In Taiwan,

Pokémon Go was officially released in August 2016. It created an instant craze and attracted 7.9 million Taiwanese users (Hsiao, 2016). Only a month after its release several incidents occurred. For example, a massive stampede by thousands of Poketrainers occurred in Taipei and at least 350 people were fined for playing Pokémon Go while riding their motorbikes (Bellware, 2016). However, a survey showed that the remaining loyal Pokémon Go players has dropped to two million since last December (Hsiao, 2016).

Pokémon Go itself is a huge phenomenon in the world, but there are still many individuals who resist adopting or decide to quit playing this AR mobile game. However, there is scant research discussing the reasons why people refuse or stop playing this game. To fill the research gap, the study aims to provide an in-depth understanding of why people refuse to adopt or stop playing Pokémon Go. Theoretically, this study employs Innovation Resistance Factors (Hong & Chang, 2013; Kuisma et al., 2007) to analyze the non-adoption of AR mobile games. The findings will advance the knowledge of innovation resistance of emerging ICT and user responses to mobile gaming with AR. Practically, this study provides beneficial insights for the Pokémon Go creator, as well as mobile gaming and mobile app developers, to avoid factors influencing non-adoption and create attractive and innovative products.

## **2. Gaming Adoption and Non-adoption**

### **2.1. Mobile Gaming**

Due to the increasing penetration rate and the quality improvement of mobile

devices, mobile gaming spread out fast in many countries (Soh& Tan, 2008) and gained popularity around 2002 (Feijoo, et al., 2012). The combination between sophisticated device and access to internet created another innovation, location-based gaming. This service had location awareness feature that made a player able to locate other players in physical space (Silva, 2009). This type of game relies on localization application to recognize an object in real environment (Matyas, 2007).

Many scholars have investigated the factors influencing the adoption of mobile gaming. Liu and Li (2011) argued that usage factor (how the innovation is going to be utilized) is a prominent factor in influencing users to adopt the mobile gaming. Okazaki et al. (2008) suggested that among the youth in the US, Spain, and Czech Republic, convenience affected positive attitude toward mobile gaming, indicating that its flexibility to be used anywhere and anytime propels the adoption. Perceived enjoyment was identified by Merikivi et al. (2017) as the factor influencing adoption and continuation of playing mobile gaming. However, Bouwman et al. (2007) found several barriers in adopting mobile services, including physical accessibility, cognitive barrier (understanding technical work), and economic barrier (cost).

## **2.2. Augmented Reality (AR)**

Augmented reality (AR) first appeared back in 1960s. Sutherland, the creator of the technology, utilized a transparent HMD to show the 3D graphics. However, researchers started to explore this technology during 1990s (Azuma, et al, 2001). AR was defined as an interactive technology that combines the real world and the artificial world (Höllerer&Feiner, 2004). Creating AR experiences relies on a reality-based

interface (Van Krevelen & Poelman, 2010) and computer generated content supplements specific locations or activities in the real world (Yuen, et al, 2011).

Initially, AR limited the user's movements as they ought to wear certain hardware. The collaboration between cellular and wireless internet connection makes AR mobile and easy to experience with portable devices (Billinghurst & Thomas, 2011). When developers incorporate smartphones' location based functions to estimate geographic spots by GPS (Junglas & Watson, 2008) with AR's artificial layer (Alappanavar, et al, 2013), such mobile AR technology allows gamers to view virtual content at chosen locations (Billinghurst& Thomas, 2011).

Most studies that discussed the factors influencing users to adopt AR were in the educational areas. Balog and Bribeanu (2010) found that perceived usefulness and perceived enjoyment are significant predictors of intention to use AR. According to Majid, et al. (2015), AR is attractive, useful, original, flexible, and portable which can increase students' motivations to adopt it for learning purposes. There are also challenges in using AR systems, such as technical challenges and privacy concerns (Van Krevelen&Poelman, 2010).

### **2.3. Pokémon Go**

Pokémon Go, the innovative gaming application, is a joint creation by Nintendo, Niantic (a gaming developer), and Google. Not long after Pokémon Go's release, this game became a global phenomenon since the downloading rate were skyrocketing and reached nearly 45 million users by mid July 2016 (Macdonald, 2016). This game requires the player to walk around to catch the pokémon monster

through their phone (Clark & Clark, 2016). Pokémon Go utilizes mobile AR technology which allows gamers to view virtual monsters in predetermined areas. It also uses Google Map and location-based functions, as well as features AR to enhance gaming experiences (Mac, 2016b). Pokémon Go's groundbreaking characteristics is to let players catch these superimposing AR monsters and post results on social media to share or compete with their friends (Anderton, 2016).

There are several reasons why Pokémon Go could result in a widespread global phenomenon. Yang and Liu (2017) identified five motives for playing Pokémon Go, such as for fun, nostalgia, friendship maintenance, relationship initiation, and achievement. This game is exciting because it allows players to walk outside and catch the virtual characters (Kerr-Dineen, 2016). Pokémon Go also brings back the memory of players who ever dreamt to catch the pokémon when the cartoon was first released back in 1990s (Villeneuve, 2016). This game can be utilized to strengthen existing friendships by walking and playing together to catch pokémon (Garis, 2016). Moreover, as the players move around to play the game, they are able to meet other players and make friends with them (Alexander, 2016). Lastly, achievement is also an influential factor for the players to keep playing the game as they feel like getting rewards when they manage to complete activities, for instance catching a new pokémon character or leveling up their monster (Rossignol, 2016).

Soon after the peak of Pokémon Go's diffusion, this mobile AR app, based on Apptopia's statistics, experienced setbacks in global markets, including drastic decrease of engagement, sizes of active users, and daily time spent on this app (cited in Kawa & Katz, 2016). After 71 days of its release, Pokémon Go also lost the title as



the top grossing app (Mount, 2016). The daily downloads also plummeted from 27 million to 700,000 in October 2016 (Humphery-Jenner, 2016). In Taiwan, Value Penguin estimated that this game had a decline in app download since August 2016 (cited in Kang, 2016).

This situation might occur because there were still some missing features, such as the pokémon tracking did not function as well as expected and even the game developers deleted this important element (Humphery-Jenner, 2016). There were no updated components of the game which led to boredom (De Santos, 2016). Mattheiss et al. (2017) also found that although the game could be played together with friends the lack of social aspect and interaction led the players to stop playing the game. Tong et al., (2017) investigated the motivation of playing Pokémon Go and suggested that the main motivation of adopting this game was to catch the Pokémon, besides the peer influence and nostalgia. They also found out that users might discontinue playing because of the boring mechanism or features of the game, loss of time, as well as peer influence.

### **3. Innovation Resistance of Emerging Technologies**

#### **3.1 . Non-adoption in Innovation Diffusion research**

Rogers' (2003) innovation diffusion theory categorized five types of adopters in relation to time and size of users: innovators, early adopters, early majority, late majority, and laggards. Past studies, like Eckhardt et al. (2009), investigated factors affecting adoption, including utilitarian, hedonic and social reasons. However, Rogers (2003) clarified that not all people would adopt an innovation over time and some

would discontinue the usage. Prior research classifies non-adopters into discontinuers and resisters (Kim, et al., 2008; Lin et al., 2011). Discontinuers are the users who previously adopted an innovation, but did not maintain the usage, while resisters refer to those who did not adopt the innovation and did not have intention to try it (Lin et al., 2011). Non-adoption behaviors include active resistance, which is characterized by delay or rejection, and passive inertia relating to lack of perceived need for the service, which may also be associated with delay or rejection (Patsiotis et al., 2013). This study also analyzed non-adopters (discontinuers and resisters) to understand Pokémon Go's adoption resistance. It will further analyze and compare the innovative resistance factors influencing the non-adoption among the two groups of people.

Hong, Lin, and Ang (2015) identified factors affecting the innovation resistance of political websites and blogs among Internet users in Singapore, including perceived usefulness/image barrier, perceived ease of use, peer influence and habitual conflict. Except perceived ease of use, the rest are found to affect users' intention for future adoption. Lin, Chiu and Lim (2011) found innovation characteristics of social network sites (SNS) (i.e., relative advantage, compatibility, and complexity) and perceived popularity as factors influencing its non-adoption. They also stated that SNS adopters were more concerned about image than discontinuers and resisters. Later, a location-based advertising (LBA) research shows that Singaporean mobile consumers are more likely to avoid this emerging mobile advertisement when they perceive it to impede goals, cause sacrifice, and lack utility (Shin & Lin, 2016). Additionally, Lin and Bautista (2017) found that observability of mHealth apps is the factor positively related to trialability, the prior step of adoption. Social norm is identified as a key

predictor for mobile video consumption in Singapore (Lin, Jung, & Sim, 2015). In sum, aforementioned factors affecting the non-adoption of new technologies include relative advantage (perceived utility or perceived usefulness), complexity (perceived ease of use), compatibility (habitual conflict), image, perceived popularity, and peer influence.

### **3.2 . Innovation Resistance Research**

Resistance is a normal consumer feedback to an innovation (Ram & Sheth, 1989). After the adoption happens, resistance and ultimate rejection may also arise at any phase of the process (Kuisma et al, 2007). The concept of innovation resistance proposed by Ram (1987) is when people refuse to change old habits because of adopting an innovation. Gatignon and Robertson (1989) attempted to conduct research that investigated consumer resistance to innovation from the behavioral perspective, conceptually distinct from innovation adoption. Risk awareness and habit conflict are two major reasons why people reject changes (Sheth, 1981). The former includes awareness of economic risk and functional risk, while the later is a form of cognitive resistance (Ram, 1989). Functional and psychological barriers constrain users from adopting technological innovations (Hong, et al. 2015). Functional barriers include product usage patterns, product value, and risk barrier, while psychological barriers refer to traditions/norms and perceived product image (Hong & Chang, 2013).

This study adapted the innovation resistance framework of Kuisma et al. (2007) as the theoretical model. However, some minor changes were made to fit into the context of mobile AR gaming app. The functional barrier was removed because it is similar to the functional risk barrier. Additionally, social risk was modified to social

barrier and considered as a type of physiological barrier. Social interaction and engagement is an important part of Pokémon Go that may inhibit its adoption as social barrier, not necessarily as a risk.

### **3.2.1. Usage Barrier**

Usage barrier exists when the product or service is not suitable to the user's practices, habits, past experiences, and acceptance requirements (Lian & Yen, 2013). They are incompatible with individual's workflow. The main requirement for adopting the innovation will be the abandonment of consumers' comfort zone. If consumers cannot overcome usage barriers and abandon the comfort zone, it will result in the triggering of the consumer's resistance.

### **3.2.2. Value Barrier**

Value barrier appears when users evaluate the innovation and compare its characteristics to existing products in the same category (Ram and Sheth, 1989). So, if the innovation does not present any benefits or good performance over existing alternatives, people will not adopt it (Talke & Heidenreich, 2013; Lian & Yen, 2013).

### **3.2.3. Risk Barriers**

Risk barrier represents the uncertainty and posed potential unanticipated side effects (Ram & Sheth, 1989). This barrier can be further broken down into three categories: physical risk, economic/ financial risk, and functional/ performance risk. Jacoby and Kaplan (1972) defined the perceived risk dimensions as follows:

- *Physical risk* is the consumer's perception of the potential damage (i.e. bodily or material harm) caused by an innovation, which is an inherent concern to all

innovations (Ram and Sheth, 1989; Hirunyawipada, 2006; Klerck & Sweeney, 2007; Kleijnen et al., 2009).

- *Economic or financial risk* is related to the cost (in a general sense) of an innovation (Kleijnen et al., 2009).
- *Functional or performance risk* is the concern of the consumer with the uncertainty about the performance of the innovation—i.e. the product will not perform reliably or correctly or it is defective (Ram and Sheth, 1989; Hirunyawipada, 2006; Kleijnen et al., 2009).

#### **3.3.4. Psychological Barriers**

The psychological barriers cause non-adoption due to the conflicts with people's prior beliefs (Ram & Sheth, 1989). Psychological barriers include social barrier, tradition barrier and image barrier are described below:

- **Social Barrier**

Social barrier has to do with negative responses from people's social networks (Hirunyawipada, 2006). It refers to whether or not individuals feel that their social environment (e.g., social circles) will accept or support their adoption (Kleijnen et al., 2009).

- **Tradition Barrier**

Technology innovation poses changes to people's established traditions. Tradition barrier is hard to overcome, particularly when the adoption is contrary to people's important values (Iddris, 2013).

- **Image Barrier**

Image barrier occurs when people embrace negative images concerning

technological innovation and hence hinder the adoption (Iddris, 2013). Image barrier is produced when people have unfavorable impression of the innovation's originating country, product category, brand, industry, or side effects (Khan & Hyunwoo, 2009; Lian & Yen, 2014).

## **4. Methods**

### **4.1. Data Collection**

According to Emarketer (2016), Taiwan has the highest smartphone penetration in the world, 73.4% of the population use this device. Taiwan's National Communication Commission also stated that 64.4% of the population had 4G speed connection by June 2016 (cited in Emarketer, 2016). Taiwan is the biggest gaming country with 66% of the population playing at least 30 minutes of games per day (Test Bird, 2016). When Pokémon Go was released on August 6<sup>th</sup> 2016, the adoption of this game soared and attracted 7.9 million users right away (Hsiao, 2016), but caused a lot of hype and incidents, such as a massive stampede and 350 motorbikers who violated regulation in August 2016 (Bellware, 2016). Value Penguin estimated that this game had a decline in app download since August 2016; however, more than two million people are still playing it (cited in Kang, 2016). Considering these facts, Taiwan is a suitable research context to understand users' resistance toward adopting Pokémon Go.

In order to get detailed insights about innovation resistance toward adopting Pokémon Go, we employed a qualitative exploratory approach and conducted in-depth interviews with 30 smartphone users and gamers who have basic knowledge or

information about Pokémon Go (Appendix 1). This study also aims to compare similarities and differences of innovation resistance factors between the two types of non-adopters, resistors who never used it previously and discontinuers who stopped playing the game after some time. The target respondents were Taiwanese individuals aged 18-29 because 46% of Pokémon Go users are in this age range (Mac, 2016a).

The participants were recruited after the screening process by the above criteria. To gain insight about the resistance of Pokémon Go, the qualified respondents were contacted to be scheduled for a semi-structured interview from December 2016 to April 2017. The interviews were conducted in English. Before the interview process started, all respondents signed the consent form. They were allowed to terminate the interviews if they did not feel comfortable. Moreover, the interview data is kept as confidential information as this research only uses unidentified personal data and is only used for research purposes. The interview process took 30 to 45 minutes and the data was audio recorded for transcription and later analysis.

#### **4.2. Data Analysis**

To analyze the data from the interviews, this study used data thematic analysis (Braun & Clarke, 2006). This analysis technique is able to find, analyze, and describe the patterns within the data and is suitable for interpretation (Vaismoradi et al., 2013). Braun and Clarke (2006, pp. 16-23) also suggest six phases in analyzing the data, 1) “familiarizing with the data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the report.” As what has been described on the phases, thematic analysis often focuses on codes and themes (Marks & Yardley, 2004). This study itself already has 8 codes based on the

literature review and one new code, which emerged from the constant re-examining of the data. This new code is Time Risk, which is a subcode of Risk Barrier (Lee, 2009).

***Table 1. Coding Scheme***

<b>Codes</b>	<b>Sub-Codes</b>	<b>Definition</b>	<b>Sources</b>
Usage Barrier		The case in which the technology is unsuitable to consumer's practices or habits.	(Kuisma, Tuire, Laukkanen, and Hiltunen; 2007)
Value Barrier		Someone believes that the innovation is useless and will not bring any advantage.	(Hong & Chang, 2013)
Risk Barrier	Physical Risk	The probability that an adoption of innovation results in a threat to human life.	(Lee, 2009)
	Economic Risk	The probability that an adoption of innovation results in loss of money, as well as the subsequent maintenance cost of the product.	(Lee, 2009)
	Functional Risk	The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits.	(Lee, 2009)
	Time Risk	Consumers may lose time when making a bad purchasing decision by wasting time researching and making the purchase, learning how to use a product or service	(Lee, 2009)



		only to have to replace it if it does not perform to expectations	
Psychological Barriers	Social Barrier	Possibility of adopting innovation may result in disapproval of one's friend/family/work.	(Lee, 2009)
	Tradition Barrier	Cultural change created for a customer by an innovation.	(Ram & Sheth, 1989)
	Image Barrier	Common stereotype; innovations acquired a certain identity from their origin, such as the product class or the country they are manufactured.	(Ram & Sheth, 1989)

Through a purposive sampling method, we recruited 16 discontinuers and 14 resistors of Pokémon Go. The mean age for discontinuers (later referred as D) is 24 years old—ranging from 19 to 29 years old. As for the resistors (later referred as R), the mean age is 22 years old—ranging from 18 to 28 years old. Sixty percent (60%) of the respondents are college students and 40% are working adults. Discontinuers used their smartphone on an average of five hours per day and resistors on an average of seven daily hours. There are slightly more females (55%) in the sampling than males (45%).

## 5. Findings and Analysis

The resistors and discontinuers have variative responses concerning their reasons why they did not want to play Pokémon Go. Furthermore, we also identified

several recurring themes through our research and categorized them based on the barriers: usage barrier, value barrier, risk barrier (physical risk, economic risk, functional risk, time risk), and psychological barriers (social barrier, tradition barrier, image barrier).

### **5.1. Usage Barrier**

All resistors and almost all of the discontinuers (94%) mentioned that they did not want to adopt or wanted to stop playing Pokémon Go because by playing the game they were becoming addicted and it would increase their smartphone usage excessively. Players would keep checking their phone to see whether there were pokémon monsters around them or use their phone more often to play the game. Consequently, it hindered and disturbed their daily routine. R8 stated:

Playing Pokémon Go can distract people. Because if you are with your smartphone, you will keep checking your smartphone because there might be some monsters near you. So maybe you will get distracted and the game will bother you when you are doing your job or you are doing your homework. (Respondent R8, December 20<sup>th</sup> 2016)

Aside from the addiction, when Pokémon Go was first launched in Taiwan, it happened during the summer break, so most of the students had plenty of free time to play the game. However, once school started their schedule could not accommodate the gaming time anymore that was why they needed to stop playing. Furthermore, all the respondents were concerned about the changes entailed by playing Pokémon Go, especially in terms of restrictions— serving as further justification to quitting or not adopting the game. They mentioned during the interviews that the game required them to be in movement and travel distances, but they personally preferred to stay at home and sometimes play alone. In addition, both groups felt that being connected online

while playing made them feel under pressure because the game requires for the player to travel sometimes with no Wi-Fi options, thus they felt forced to increase their data usage. The game addiction, increased smartphone usage, and time consumption influenced the resisters and discontinuers belief that the game would change their daily routine. Lastly, all discontinuers agreed that they quit the game because they did not want it to interrupt their routine.

## **5.2. Value Barrier**

Pokémon Go was perceived as a meaningless activity by 57% of the resisters and 56% of the discontinuers. When they were asked about their perception of the game's value some of the respondents said they did not find any benefit that motivates them to start or continue playing Pokémon Go. On the contrary, they perceived more disadvantages and useless aspects of playing this game. A resistor stated:

I think it's useless because I don't catch a real Pokémon, it's on smartphone only. So it just waste the time so, maybe I will think I can catch many Pokémon, but so why? Will I become more rich? or better? or more healthy? I don't think so. There is nothing to do with my real life. (Respondent R8, December 20<sup>th</sup> 2016)

While a discontinuer expressed: "I just feel this game cannot help me to reach any important experience because this game [is not interesting enough] for me, so I [stopped] play[ing] it" (Respondent D5, January 9<sup>th</sup> 2017).

An outstanding finding related to discontinuers' behavior was that they seemed to be satisfied with Pokémon Go during the first period of usage, but later on they perceived the game as repetitive and boring. Respondent D9 stated as much: "Because it is boring. It does not like... the games I love more are those that stimulate your brain, but it [Pokémon Go] does not really provide anything other than catching those

monsters—I do not know what is so fun about that” (Respondent D9, December 28<sup>th</sup> 2016).

### **5.3. Risk Barrier**

#### **5.3.1. Physical Risk**

During the interview, almost all of the discontinuers (94%) and all resisters expressed that they encountered several problems related to Pokémon Go. The respondents mentioned many aspects and requirements of the game which caused the players to become so involved and engrossed in the game that they became unaware of their surroundings. This in turn had effects not only on the player, but on the people around them. The respondents mentioned multiple times the dangers people were exposed to when Pokémon Go was involved. Some of the dangers were: people walking or driving while playing the game, getting lost in unknown areas because of only following the game’s map, bumping into people, and getting assaulted by robbers at Poke Stops. Respondent D6 stated that he worried about people playing the game while walking or driving, because they were not aware of their surroundings since they “keep their eyes on the screen” and so they “can cause or be part of [an] accident” (Respondent D6, December 18<sup>th</sup> 2016). Similarly, respondent R1 said that he “think[s] [it] is not convenient because one day you can die for a game. If they want to play, [it] is okay, but [the players should] try to concentrate in one activity at the time” (Respondent R1, December 14<sup>th</sup> 2016). Essentially, their worries—which echoed all of the respondents fears—are that when the players focus on the virtual reality of the game, they missed many important cues around them. These cues were the ones that alerted them to potential threats, e.g. getting hit by a car, running someone over,

crashing with another vehicle, getting lost in a dangerous neighborhood, or being a potential mark for a mugging. Respondent R9 makes further mention of these threats:

[The game] might lead them to an area they totally don't know because they are only following the directions on the map of their phone. Actually, there is like some potential danger, like maybe there [are] some crazy dogs or some people like thieves and robbers that usually show up there [at Poke Stops to mug the players]. (Respondent R9, December 14<sup>th</sup> 2016)

Furthermore, according to some of the respondents the constant daily use of smartphones while playing the game also had effects on the player's health. Respondents D2 and R2 stressed the unhealthy side effects to the player's eyes and neck because of the constant need to look at the screen to check on their pokémon and the constant downward movement of the head and neck to look at the screen of the smartphone. Moreover, respondent R3 expanded in the unhealthy aspects of the game for the players in terms of rest deprivation:

In my opinion, it is dangerous for their [the players'] health because they will wake up at 1 pm and have regular class and they will start playing the game after class until midnight again, but they can't stop because there are many players also play[ing] the game. (Respondent R3, December 16<sup>th</sup> 2016)

The respondents' strong concern in regards to health risk sheds light on what could be the biggest issue of the game and of why so many individuals decided to discontinue the use of the game, or indeed, why so many decided to not even download it and give it a try.

### **5.3.2. Economic Risk**

Issues related to economic risk were discussed amongst the respondents, specifically the game's worthlessness. On the one hand, 38% of the discontinuers agreed that these issues affected their decision to discontinue the use of the game. Thirty-six percent of the resisters, on the other hand, agreed that these issues

reinforced and made it even more unlikely that they would ever want to try out the game. They spoke of how spending money to buy things in a game was not worth it, since it is all in a virtual reality. Respondent D2 spoke of how it is not worth it to spend money “to make your pokémon stronger” since “the stuff in Pokémon Go take[s] a lot of money to buy it” (Respondent D2, December 14<sup>th</sup> 2016). Similarly, respondent R2 thinks buying virtual things is useless since “there is no advantage at all. It’s better not to waste your money for games” (Respondent R2, December 16<sup>th</sup> 2016). Overall, the interviewees do not see any positive aspect to the spending of money to acquire products in a virtual world.

Moreover, a few respondents also discussed the problem of extra the expense due to the game. The respondents spoke of their desire to not spend extra money. Due to the game’s structure, internet was a big component for its effective use. However, a respondent declared that the extra money needed to buy more internet to play the game was a big issue.

It needs a lot of data, so if you need to go out you don’t have Wi-Fi. I only get 4GB to use per month—[the game] will waste all my internet. I don’t want to spend more money buying internet. (Respondent D3, December 14<sup>th</sup> 2016)

Another respondent also stated that the need to pay for certain aspects of the game was an extra factor that strengthened their resolve to never want to try out the game: “I think, now Pokémon Go is for free and I don’t want to play it. So, if, we need to pay for Pokémon Go, I definitely will not want to play it” (Respondent R6, December 14<sup>th</sup> 2016). The respondents’ concern in regards to financial considerations elucidates on what could be a small issue for the game. It explains why some players decided to discontinue the use of the game or why some did not even give it a try.

### 5.3.3. Functional Risk

Many of the interviewees—57% resistors and 81% discontinuers—thought that Pokémon Go had boring features because it was only about catching pokémon monsters and there was nothing new in the game. Pokémon Go was also perceived to be restrictive to the players due to the fact that most pokémon monsters and the Poke Stops were too centralized in big cities, e.g. Taipei. People residing in other areas of the country, e.g. Chiayi, Kaohsiung, or Yunlin, would not enjoy the game that much because they did not have many interesting pokémon monsters to catch or there were only a few Poke Stops around them. Poke Stops not only acted as a place for the players to collect items, but it was also a location to gather Pokeballs to capture the monsters.

Another problem stated by the resistors and discontinuers about Pokémon Go was the slow internet connection and incompatible smartphone which in turn created a bad gaming experience. A few discontinuers explained that they had a slow internet connection which made the game lag or the GPS did not work well, resulting in inconvenience while playing the game. Besides that, some smartphone's software could not support the game or if it was compatible with the game, the phone's system ran slowly making it tiresome to play the game. Respondent R11 reinforced this point during the interview:

This game demands its player to use GPS, so some players may experience the game lagging due their slow internet connection or another problem is their phone is not compatible with the game, mobile phone RAM could be a problem too. (Respondent R11, January 9<sup>th</sup> 2017)

There were further technical problems that the respondents reported. First, it drained the battery of the smartphone quite fast, so they needed to charge their phone

more often. Second, the augmented reality did not aid in appealing the game to the players since it even made it harder for them to capture the monsters. This resulted in the players turning off the AR function when they played the game. Lastly, Pokémon Go had some issues with the delivery of the rules of the game, which in addition sometimes confused the players.

#### **5.3.4. Time Risk**

Playing Pokémon Go was considered an activity that required and wasted too much time by most of the resistors and discontinuers. The resistors thought that playing the game was a waste of time and they preferred to allocate the time to more important activities rather than playing the game. They also learned that playing the game would consume much time and they did not want that to happen. Similarly, discontinuers believed during the period when they were still playing the game that they spent too much time, not only playing, but also looking for information related to the game and sometimes forgot other activities that they were supposed to do. Respondent D6 stated during the interview, “I stop[ped] using it because it required so much time, a lot of time consumption and I realized, I cannot play this game anymore” (Respondent D9, December 28<sup>th</sup> 2016).

Furthermore, resistors and discontinuers also considered insufficiency of time as one of the reasons to not adopt or stop playing Pokémon Go. They realized that they did not have time to play the game and stated that they were too busy or had many other activities to do, so they could not afford the time to play the game. Respondent D1 reiterated this statement, “Another reason is I do not have time since I am busy with my activity because the semester begins now and I don’t have much



time” (Respondent D1, December 13<sup>th</sup> 2016).

## **5.4. Psychological Barrier**

### **5.4.1. Social Barrier**

Eighty-one percent of the discontinuers and 79% of the resistors discussed the negative impact of playing Pokémon Go in their social life. Essentially the game would make the players too immersed within the game resulting in them forgetting or paying less attention to their surroundings—including their friends and/or family. So, when it was time to socialize, the players would focus on the game instead. Similarly, when they did have interactions with others it would only be a short conversation because they would like to play the game more than having a chat:

We hang out, everyone is doing that [playing the game] all the time and I feel like we were here to promote our relationships and to talk and chat about our lives because we do not get that much time. But then everyone is doing that [playing the game] and I just feel it is a waste of time. So I stopped playing it and I asked them to stop playing it. (Respondent D9, December 28<sup>th</sup> 2016)

Furthermore, when having a conversation, the topic was always about Pokémon Go. For discontinuers, it was fine, but after a while it was boring to only talk about Pokémon Go. For resistors, they could not really get involved and engage in the conversation because they did not know much about Pokémon since they were not players, so they sometimes felt left out.

Lastly, playing Pokémon Go actually could create an environment for the players to make friends, even with strangers, because they have common interests and it makes them share information about Pokémon Go. For example, on the street, some

strangers might inform the location of pokémon monsters nearby, which could result in the players becoming friends. However, for discontinuers, they were not comfortable to be friends with the strangers: “I do not make any friends in this game because I just feel not really comfortable and confident to have some friends from this game” (Respondent D5, January 9<sup>th</sup> 2017).

#### **5.4.2. Tradition Barrier**

In this study belief disparity, which is associated with tradition barrier, was mentioned by 14% of the resisters and 6% of the discontinuers. One resistor felt worried about playing this game because it might cause conflicts with their personal beliefs: “Well ... if it does not clash with my religion or my cultural beliefs, but for my own life belief I will think I would never spend so much time on just playing games. Yeah” (Respondent R7, December 14<sup>th</sup> 2016). Respondent D4 was the only interviewee who believed that if they were playing this game, it might go against her own beliefs: “I think that not so many confrontations, maybe only my personal beliefs that says “*Why are you always playing with your cell phone?*” Something like that ...” (Respondent D4, December 15<sup>th</sup> 2016). Essentially, interviewees were more concerned about their own beliefs and how the game challenged their views rather than an impact against their culture or religion.

#### **5.4.3. Image Barrier**

Social perception shows a strong link and association to negative images. All resisters and 63% of the discontinuers think that Pokémon Go has such a negative image due to the opinions found on the news and social media, as well as the the opinions of friends and family members of those who played this game. The resisters

state Pokémon Go has a bad image in the majority of society, but it is still able to attract public attention. Respondent R11 reinforces the statement: “to be honest I have seen more negative than the positive [image] from mainstream society, but that's normal, something negative always can attract someone's interest” (Respondent R11, January 9<sup>th</sup> 2017). A discontinuer also mentioned the negative images of Pokémon Go regarding the fact that the game might be able to give bad and negative stereotypes indirectly, which are sourced from the news. D7 gave the statement as follows:

Maybe yes it can indirectly affect the social image, I am not sure, Because sometimes when people asked me, “Oh do you play Pokemon Go?” I will say, “yes but I only downloaded it to see, to try.” I never said “yes, I play or I have played” haha, now I think about it, [it] is maybe because of the stereotypes. So I think the media has a lot of influence, negative stuff and news maybe. (Respondent D7, December 20<sup>th</sup> 2016)

Resistors and discontinuers alike, briefly mentioned addiction as a reason related to image barrier. The majority of interviewees felt worried about becoming or being *addicted* to the game, which in their opinion is linked to the amount of usage they gave the game. Resistors made statements that Pokémon Go could adversely affect and change them by becoming addicted to it from using it too much or it was the perception they had of other Pokémon Go users around them. Respondent R6 reiterates this point, “Yeah, yes and I think the players are very crazy because they, because they want to... just like addicted to this game. They even went out to play this game in the midnight, like 2 or 3 am, I think is really crazy. It will influence your healthy ... your health- yes” (Respondent R6, December 14<sup>th</sup> 2016). Mainly resistors were afraid to become addicted to the game and their perception about other players influenced their final decision to resist the Pokémon Go phenomena.

Discontinuers also shared similar reflections:

I mean like, I think if you are so easily to be addicted to that game it means you do not really have your ... You are easily to be influenced by others. For me, if you tell me that you are addicted to Pokémon Go, I will think you are easily influenced and manipulated. (Respondent D9, December 28<sup>th</sup> 2016)

From the above statement, we can deduce that some discontinuers understand and know Pokémon Go can easily make the users addicted, as well as easily influenced and manipulated—while other players might not realize it and be unaware of the situation.

Another response offered by the resisters and discontinuers is that the game is often considered to pose a problem for the players and others around them, meaning that it is disturbing. The resisters mentioned that they heard and saw on the news and social media that Pokémon Go could lead to many problems. As shared by R3, “I think I know it more from news [and] notes from my friends, because only a few of my friends play Pokémon Go. I think it's an app that will cause a lot of problems” (Respondent R3, December 16<sup>th</sup> 2016). Whereas for the discontinuers, they had first-hand experience. When Pokémon Go became so popular that the game made the players crazy, the users were running and screaming while they tried to catch the monsters. Respondent D3 shared his point of view:

In my opinion, this game was well accepted in Taiwan and if you think about it, during the first days were crazy people running and screaming for the pokémon, etc. so somehow I did not want to be in that way, so I waited to download it, the image I have of them is not so good. (Respondent D3, December 14<sup>th</sup> 2016)

From his experience, we can see the disturbance this crazed frenzy of catching pokémon caused around Taiwan. This crazed atmosphere and the disturbance it caused then relates to the image that is created about how unsafe the game can

become to the players and the people around them. Many of the interviewees assume that Pokémon Go should be included into the segment of games that can bring harmful effects to the players and the individuals around them. The resisters also support the statement that the players are too focused on staring at their phone's screen and ignore their surroundings, completely disregarding their own safety and that of others:

I think [people] think Pokémon Go [is] negative because so many people, when they play Pokémon Go, they just focus on the screen and they do not care about the other things. They don't care about their safety or friends or family. So, it brings negative side. (Respondent R8, December 20<sup>th</sup> 2016)

While resisters had a stronger stand related to this issue, discontinuers did not have a specific statement. Respondent D9 said, "The mainstream media, at first they followed the trend and promoted the game. But there were accidents, after they turned to criticize it" (Respondent D9, December 28<sup>th</sup> 2016). With this statement, respondent D9 shared the view mainstream media has of the game. Therefore, we can say that resisters are more objective to the game and have more accurate observations from first-hand experience, while discontinuers focus more on the news and other sources to gather information. It seems, since they played the game, they could be a little less objective to its dangers compared to the resisters.

## **6. Discussion and Conclusion**

This study attempts to explore various reasons why discontinuers stop playing Pokémon Go and why resisters decide not to adopt the game. Our findings are consistent with our modified and enhanced past Innovation Resistance Model (Hong & Chang, 2013; Kuisma et al., 2007). There are six main barriers that cause an individual to resist an innovation, which are usage barrier, value barrier, risk barrier,

social barrier, tradition barrier, and image barrier. However, the findings also suggest that time-related issue is something crucial in inhibiting someone not to adopt an innovation. Lee (2009) suggested that time was one of the perceived risks and should be an extension factor under risk barrier. Time risk can be defined as a loss of time, started when someone prepares to make the decision to adopt an innovation, use the product, until he or she needs to replace the product if it does not function well (Lee, 2009). Time risk might be similar to usage barrier, but both of them have distinctive conceptualizations. Usage barrier appears when someone feels that the consumption of an innovation will distract the daily routine, practices, or workflow of the consumer, thus they resist to adopt or discontinue the usage of the innovation (Laukkanen, et al., 2007). Meanwhile, time risk is the consumer's awareness in regards to time and the possible risk of wasting time in using, learning to use or maintaining the innovation, which leads them to resist the product (Featherman & Pavlou, 2003). Time risk was mainly an important concern for resisters, becoming a reason for not adopting Pokémon Go. All resisters believe that playing this game or researching information related to the game will take too much time and they do not want to lose their time for this activity.

Based on the findings, resisters had more negative perceptions to both the Pokémon Go game and the players. The interviewees were influenced by the media and their observations on their daily life environment. Resisters see Pokémon Go as a troublemaking application. It caused several accidents because it made people lose awareness and focus of their surroundings resulting in car accidents where the individual could be the perpetrator or the victim. Additionally, it also creates public

disturbances since people will gather at a particular location to find pokémon, which could be a public property or any area restricted to visitors. As aforementioned, respondents had a negative image in regards to Pokémon Go players. Resisters associated players with laziness and individuals who want to escape reality. They also consider the players as selfish individuals because they only care about playing the game, but they are not being thoughtful about their surroundings since they often create public disturbance, e.g. making noise even at midnight, causing accidents, and so on.

For the discontinuers, usage barrier is a prominent factor to stop playing the game. Playing the game does not fit with their daily routine. Moreover, when the game was launched in Taiwan, it was during the summer break, so most of the students had plenty of time to use and play the game. However, once school started, there was no time in their schedule to play the game. Another important factor is functional risk. Previous articles found out that there were some issues occurring during the gaming experience, for instance the disability to connect with the server and GPS, the application would not open, and so on (Hanson, 2016). An interesting finding is how AR became a drawback for this game. One of the key features of Pokémon Go is location-based AR. Through this technology experience people can catch the pokémon monsters in the real world environment using their phone or tablet (Anderton, 2016). However, this element could not complement the content effectively. Several discontinuers admitted they turned off the AR while playing because AR kept monsters running on the screen making it harder to catch them; however, when the AR was turned off, the monster will stay still making it easier for

the players to catch them. It is very unfortunate that the main attraction of the game does not work properly. The game developers should look for alternatives to overcome this issue, so it will not irritate the players and make them discontinue using the game.

Furthermore, both resistors and discontinuers think Pokémon Go will influence them socially. Pokémon Go might affect the social life of someone since the players might immerse themselves within the game and ignore the interactions in the real world because they could not stop staring at their phones (Project of Public Spaces, 2016). Several discontinuers feel the positive impact of playing the game on their social life, for instance they have a topic to talk about with others. They can also make friends with strangers since they share the same interest. Additionally, it can strengthen relationships with family members or friends who are Pokémon Go players because they can play it together. However, even though they have a positive view of the game, they cannot deny that the game also brings a somewhat negative effect to their social life, resulting in their resistance to further play the game. They believe that playing the game can limit their socialization and isolate them from their friends because the players will be too immersed in the game. The resistors also complained that the game changes the interaction between them and their friends who are players because the conversation will always be about Pokémon Go. Since they are not players they could not relate because they have limited knowledge about the topic. This separation gap is pushed further apart because the resistors' friends will keep playing the game and have no time to spend with them.

Physical risk is also the aspect of most concern for resistance for both, resistors



and discontinuers. Physical risk can be described as a “concern that the innovation might be harmful, unhealthy or cause injury” (Kleijnen, 2009, pp. 348). Although playing Pokémon Go might have benefits to an individual’s health, there are also some potential physical risks that can occur because the players are not aware of their surroundings (Serhan, 2016). Physical risk becomes the major reason for resisting or discontinuing playing Pokémon Go since it can be dangerous once the players become engrossed in the game and pay less attention to their surroundings. Consequently, it can place the players in a danger situation because they can stumble upon something or hit another person on the street when they are playing while walking. It does not only endanger the players, but also non-players, especially if the users play it while driving—they can hit someone or there could be a car accident because they lost their focus on driving. Additionally, playing the game can damage the eyes and neck because the users will stare at the screen for long periods of time.

In contrast with the past literature review, tradition barrier is of the least concern and actually is not really crucial for this context. Tradition barrier can be defined as “inherited body of customs and beliefs within a relevant social context” (Kleijnen, 2009, pp. 348). Most of the resisters and discontinuers believe that playing the game has no relation with their culture and customs, so it will not clash with their traditions or beliefs. However, there are still some statements related to this barrier, especially talking about how playing the game is actually contradictory with their personal principles.

Lastly, we acknowledge that a limitation of our study is that the samples are not representative because they are all Taiwanese and most of them are students.

Thus, the results cannot be generalized and applied to other demographic groups since location and occupation probably will influence the reasons of resistance or discontinuation of the innovation. Nonetheless, future studies can investigate whether the demographic of the sample affects the resistance of Pokémon Go. Lastly, by analyzing the results, we can also conclude that the game developers need to overcome the issues related to several features of the game, especially the malfunction of the game, in order to leverage the gaming experience.

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## Appendix 1

*Table 2. Profile of the Respondents*

No	Gender	Age	Occupation	Group
D1	Male	23	Student	Discontinuer
D2	Female	22	Student	Discontinuer
D3	Male	19	Student	Discontinuer
D4	Female	22	College Student	Discontinuer
D5	Male	21	Student	Discontinuer
D6	Male	24	Dance Teacher	Discontinuer
D7	Female	27	Textile Engineer	Discontinuer
D8	Male	19	College Student	Discontinuer
D9	Female	22	College Student	Discontinuer
D10	Male	29	Photographer	Discontinuer
D11	Female	26	Officer	Discontinuer
D12	Female	29	Researcher	Discontinuer
D13	Male	23	Research Assistant	Discontinuer
D14	Male	24	Student	Discontinuer
D15	Female	23	Waitress	Discontinuer
D16	Female	26	Tour Guide	Discontinuer
R1	Male	18	Student	Resistor
R2	Female	24	Student	Resistor
R3	Female	22	Student	Resistor
R4	Female	20	Student	Resistor
R5	Female	20	Student	Resistor

R6	Female	22	College Student	Resistor
R7	Female	23	College Student	Resistor
R8	Male	23	Student	Resistor
R9	Male	20	College Student	Resistor
R10	Female	28	Researcher	Resistor
R11	Female	20	College student	Resistor
R12	Male	29	Quality Control Staff	Resistor
R13	Male	21	Tutor	Resistor
R14	Male	24	Photographer	Resistor