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Non-adopters of Social Media: Comparing their Lifestyles, Perceived Innovation Attributes, and Sociodemographic Attributes with All-adopters, Partial-adopters, and Minimum-adopters

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**Non-adopters of Social Media: Comparing their Lifestyles, Perceived  
Innovation Attributes, and Sociodemographic Attributes with All-adopters,  
Partial-adopters, and Minimum-adopters**

**Abstract**

This study adopted Rogers' diffusion of innovation model to investigate the adoption of three social media with high penetration in Taiwan—Facebook, Line, and email. Special attention was paid to identifying the factors that differentiated the non-adopters (who did not adopt any of the three social media) from the all-adopters (who adopted all three social media), the partial-adopters (who adopted two social media), and the minimum-adopters (who adopted only one social medium). Two methods were adopted; one was to conduct 20 intensive interviews and the other was to administer a nationwide telephone survey with 1042 valid questionnaires. Two conclusions were obtained: (1) The characteristics of the non-adopters were congruent with those of the laggards in Rogers' model, demonstrating that the non-adopters were less educated, less affluent, older, and used mass media less frequently than the other types of adopters; (2) the lifestyles of the non-adopters differed greatly from those of all-adopters, partial-adopters, and minimum-adopters.

**Keywords**

Facebook, Line, email, Rogers' diffusion of innovation model, non-adopters, lifestyle.

## **Introduction**

Social media have evolved from the earliest forms of email through bulletin board systems, forums, and instant messaging systems. Now, the newest types of social media include Facebook, Line, and WeChat (Ku et al., 2013). With the prevalence of Internet connections, social media have become popular in many societies worldwide. Studies have identified several concrete social benefits that can be obtained through the use of social media. For example, the most notable benefit is that users can cumulate social capital that provides them with physical/emotional support, access to tangible financial assets, access to information and services, and relationship maintenance (Ellison et al., 2014; Quinn, 2016; Steinfield et al., 2012).

Past studies have shown that individuals use social media primarily for the purposes of socialization, relationship maintenance, information seeking/sharing, and entertainment (Ku et al., 2013; Lo and Leung, 2009; Park et al., 2009). Several studies (Quinn, 2016; Steinfield et al., 2012) have also indicated that social media can help individuals in their professional advancement by serving as channels for useful information and resources. Therefore, social media have played an important role in society because they not only allow individuals to gain social support for their needs but also help people obtain useful information for career advancement.

Several types of social media are available in Taiwan, among which Facebook (87.5%), Line (83%), and email (70%) have the highest penetration rates (Ku et al., 2013; Lo, 2015). The remaining types of social media have penetration rates below 30% in Taiwan; these include Twitter (5.1%), Skype (22.4%), and Facetime (25%) (Authors, 2016; Lo, 2015). Line, WeChat, and WhatsApp are all real-time communication media, but the first two are more similar to each other than to WhatsApp because, as real-time communication media, they have used free

text-messaging services to attract a large base of users, and they subsequently allowed corporate partners to use their platforms for the purpose of commercial transactions with their users. Currently, the Line and WeChat platforms provide various types of services including social interactions, gaming, advertising, payment, and shopping (Chen, 2016; Su et al., 2016). With 650 million monthly active users, WeChat has the largest in Asia, and most are in China. Line has 212 million monthly active users, which is the second largest share in Asia; most Line users are from Japan, Taiwan, and Thailand (Chen, 2016; Rose, 2016).

Facebook and Line are the most popular social media in Taiwan, with a penetration rate of more than 80%. Compared to Facebook and Line, email is the oldest social medium, but it also has a high penetration rate (70%) in Taiwan, and it is particularly popular in work settings. This study aimed to examine the factors that prevented individuals from adopting the three most dominant social media. More specifically, this study adopted Rogers' diffusion of innovation model to identify the factors that differentiated the non-adopters (who did not adopt any of the three social media) from the all-adopters (who adopted all three social media), the partial-adopters (who adopted two social media), and the minimum-adopters (who adopted only one social medium).

Rogers' diffusion of innovation theory has been demonstrated to be a useful model for predicting technology adoption (Atkin et al., 2003; Authors, 2016; Chan-Olmsted and Chang, 2006; Jung et al., 2012; Wei, 2001, 2006; Zhu and He, 2002). However, one limitation of this model is that Rogers does not give much attention to the laggards, who are the last 16% of a society to adopt a given technology (Rogers, 2003). Similarly, only a few empirical studies have investigated the phenomenon of non-adoption (Authors, 2016; Wei, 2001). As stated above, social

media allow individuals not only to satisfy their personal needs but also to advance their professional development. In particular, Facebook, Line, and email all have high penetration rates in Taiwan; thus, non-adoption will increase societal inequality and sharpen stratification, resulting in negative effects on society (Büchi et al., 2016). Therefore, it is important to investigate the factors that prevent individuals from adopting these social media in order to assist policy makers in determining how to balance the positive and negative effects of technology development.

## **Literature Review**

### ***Lifestyles and the Diffusion of Innovation Model***

Rogers (2003) defines the diffusion of innovations as “the process in which an innovation is communicated through certain channels over time among the members of a social system.” (p. 5). This model identifies three elements—perceived innovation attributes, communication channels, and time—as important in the diffusion of innovations. According to Rogers, among these three elements, perceived innovation attributes are the most important because they explain 49% to 87% of the variance in technology adoption. Perceived innovation attributes can be further classified into five dimensions—relative advantage, compatibility, complexity, observability, and trialability. Social rewards belong to the dimension of relative advantage. According to Rogers, people adopt technologies not only for their practical functions but also for their social rewards. When social rewards are the primary motivator that drives people to adopt technologies, then lifestyles become an important predictor of technology adoption.

Lifestyles are used by individuals to express their psychological preferences, and are a way to show social differentiation from others. Lifestyles are defined by scholars as “the manner in which people conduct their lives, including their activities, interests

and opinions" (Peter and Olson, 1994, p. 463). Marketing scholars consider the analysis of lifestyles to be more effective than the traditional method of demographics because lifestyles allow scholars to examine individuals' needs and desires, which have better predictive power for consumer behaviors (Lekakos, 2009; Lorenzo-Dus, 2006).

Recently, lifestyles have been used as predictors in studies examining the adoption of new technologies (Author, 2015; Authors, 2016; Chan and Leung, 2005; Lekakos, 2009; Wei, 2006). For example, Authors' study (2016) examined teachers' adoption of game-based learning and found that three types of lifestyles—being fashionable, life expansionists, and non-media skeptics—were able to differentiate non-adopters from adopters. Wei (2006) investigated people's willingness to adopt pagers and cell phones in China and discovered that a yuppie lifestyle, a tendency to have an exciting and westernized life, was associated with intentions to adopt the two technologies. Mazzoni, Castaldia, and Addeob (2007) found that individuals with a connected lifestyle adopted cell phones for their entertainment function, while individuals with a committed lifestyle adopted cell phones because of their desire for efficient communication and time management.

The most widely used method of classifying lifestyles is the A.I.O approach, which divides individuals into different lifestyles based on measures of their activities, interests, and opinions (Authors, 2016; Chan and Leung, 2005; Lekakos, 2009; Wei, 2006). This study used a lifestyle scale that contains 21 items, from which five distinct lifestyles have been consistently extracted in several studies. Furthermore, this lifestyle scale has been demonstrated as applicable to Chinese populations (Author, 2015; Authors, 2016; Leung, 1998; Wei, 2006).

The first type of lifestyle, being fashionable, is the tendency for an individual to

adopt portable symbols or technologies in order to demonstrate his or her social differentiation from others. These three social media have high penetration rates and are very popular in Taiwan. In particular, Facebook allows users to put themselves on display and is useful for impression management, while Line allows individuals to chat and obtain social information instantly. Given the prevalence of mobile devices, the three social media are easily transported, and thus, adopting the three social media should allow individuals to demonstrate their fashionable lifestyles. The second type of lifestyle, life expansionists, refers to the tendency for individuals to be achievement-oriented. People associated with this lifestyle are concerned about their work and try to use the most effective means to complete it. Past studies have shown that people with this lifestyle tended to adopt information-oriented technologies that allowed them to work efficiently (Author, 2015; Leung, 1998). As past studies have shown, social media allow individuals not only to accumulate social capital that is beneficial to their success in their work, but also to obtain useful information and resources for career advancement. Therefore, social media should be attractive for individuals with a life expansionist lifestyle because the use of the three social media will help them to work efficiently. Based on this reasoning, this study developed the following hypotheses:

**H1a:** Non-adopters of social media will differ significantly from all-adopters, partial-adopters and minimum-adopters in terms of their tendency to prefer a lifestyle of “being fashionable”.

**H1b:** Non-adopters of social media will differ significantly from all-adopters, partial-adopters and minimum-adopters in terms of their tendency to prefer a “life expansionist” lifestyle.

The third type of lifestyle, pleasure seeking, is the tendency for individuals to

prefer an easy and relaxed life. Individuals with this lifestyle prefer to avoid hardship in their life or work, and they also avoid things that require substantial efforts. Past studies have shown that people with this lifestyle adopted entertainment-oriented technologies that allowed them to enjoy life (Authors, 2016; Leung, 1998). Social media are Internet-related technologies, which are not compatible with this lifestyle; past studies have shown that people with a pleasure-seeking lifestyle preferred to adopt traditional rather than Internet-related entertainment media (Author, 2015). The fourth type of lifestyle, non-media skeptics, describes the tendency for individuals to believe in mass media. People with this lifestyle consider mass media credible and prefer to purchase things that have been advertised in mass media. Past studies have shown that this lifestyle is negatively associated with the adoption of information-oriented technologies and not correlated with the adoption of entertainment-oriented technologies (Author, 2015). Individuals with this lifestyle use social media to communicate with friends, relatives, or acquaintances, as opposed to using such media to consume news or advertising, the messages of which are commercially oriented. Therefore, this study expected that this lifestyle was not relevant to the adoption of social media. The last type of lifestyle, preference for foreign products, is the tendency for individuals to prefer things or products that are manufactured in foreign countries. The three social media are all from foreign countries: Facebook and email were developed in the U.S., while Line was developed in Japan by a Korean company. Hence, this study expected that this lifestyle would be positively associated with the adoption of the three social media. Based on the reasoning above, this study developed the following hypotheses:

**H1c:** Non-adopters of social media will not differ significantly from all-adopters, partial-adopters and minimum-adopters regarding their tendency to prefer a “pleasure

seeking” lifestyle.

**H1d:** Non-adopters of social media will not differ from all-adopters, partial-adopters and minimum-adopters regarding their tendency to prefer a “non-media skeptics” lifestyle.

**H1e:** Non-adopters of social media will differ significantly from all-adopters, partial-adopters and minimum-adopters regarding their tendency to prefer a “preference for foreign products” lifestyle.

### ***Perceived Attributes of Social Media***

According to Rogers (2003), perceived innovation attributes are the most powerful elements that predict technology adoption. Empirical studies have also confirmed that these elements have the most predictive power for technology adoption (Chang et al., 2006; Dupagne and Driscoll, 2010; Jung et al., 2012; Lee, 2013). For example, Dupagne and Driscoll (2010) examined the adoption of high-definition television in the U.S. and found that it was positively associated with respondents’ perceived relative advantage, compatibility, observability, and trialability. Jung et al. (2012) investigated the intention to adopt e-books in South Korea and discovered that perceived relative advantage, compatibility, and trialability were significant predictors of the intention to adopt e-books. Authors’ study (2016) showed that four perceived attributes of game-based learning--enhancing teaching, ease of use, popularity, and compatibility/interactivity--were able to discriminate non-adopters from adopters. Furthermore, Rogers’ model (2003) considers perceived innovation attributes to be a powerful predictor of technology adoption even after the diffusion has passed its early stages.

Past studies have shown that individuals used social media because they

perceived them to offer several attributes including socialization, relationship maintenance, information seeking/sharing, entertainment, and useful work-related communications (Ku et al., 2013; Lo and Leung, 2009; Park et al., 2009; Quinn, 2016). Furthermore, social media are used to interact with other individuals, and thus, the more people that use them, the more desirable it will be for other individuals to adopt social media. Some scholars also suggest that another attribute, popularity, should be added to Rogers' classification of innovation attributes (Zhu and He, 2002). Based on the literature review, this study developed the following hypothesis:

**H2:** Non-adopters will differ significantly from all-adopters, partial-adopters and minimum-adopters in terms of how advantageous they perceive the socialization, relationship maintenance, information seeking/sharing, entertainment, useful work-related communications, and popularity of social media to be.

### ***Mass Media Use and Demographics***

This study examined the differences between non-adopters and the other three types of adopters; its approach is therefore similar to that of studies that investigated the laggards of technology adoption. Depending on how early individuals adopt a given technology, Rogers' model (2003) classifies all members of a society into five types: Innovators, who are the first 2.2% in a society to adopt the technology; early adopters, who are the next 13.5% to adopt; the early majority, who are the next 34% to adopt; the late majority who are the next 34% to adopt; and laggards, who are the last 16% to adopt. Past studies discovered that laggards differed greatly from the other four types of adopters in terms of their mass media use, demographics, and personalities. For example, Wei (2001) examined the laggards of cell phone adoption in Hong Kong and found that they were more likely to be female, older in age, and less affluent.

Moreover, they read fewer newspapers and magazines compared to other respondents. Authors' study (2016) investigated the adoption of game-based learning and found that the laggards tended to be male teachers, more senior in their schools, and older than the other types of adopters. Büchi et al. (2016) examined the second-level digital divide in five countries with high Internet penetration and found that age and education were significant variables that differentiated high-use groups from low-use groups. In summary, past studies have indicated that age, education, and income were significant variables that differentiated the laggards from other types of adopters for technologies with high penetration. Furthermore, past studies have shown that the adoption of Internet-related technologies was positively associated with newspapers, magazines, and Internet use but negatively correlated with television viewing (Author, 2014, 2015). Therefore, this study developed the following hypotheses:

**H3:** Non-adopters of social media watch more television but use newspapers, magazines, and the Internet less frequently than all-adopters, partial-adopters and minimum-adopters do.

**H4:** Non-adopters of social media will be older, less educated and less affluent than all-adopters, partial-adopters and minimum-adopters are.

## **Research Methodology**

### ***Intensive Interviews on Perceived Attributes of Social Media***

To understand individuals' perceived attributes of the three social media, this study first referred to several previous studies (Cheng et al., 2015; Ku et al., 2013; Lo and Leung, 2009; Park et al., 2009) that examined the use of Facebook, Line, or email. These perceived attributes were also used for further probing in the intensive interviews. Then, this study adopted a snowballing method to recruit qualified

individuals for interviews, and ten females and ten males ultimately were interviewed. This study purposely interviewed people with different ages, genders, education levels, and jobs to diversify responses. All the interviewees had experience using the three social media, and their education levels ranged from high school to graduate school. The interviewees' ages varied from 17 to 55 years old. Their jobs also varied widely: they were housewives, students, sales people, marketing managers, secretaries, educators, engineers, and financial officers. The interview responses were analyzed, and those perceived attributes that were mentioned by at least three interviewees were selected as items for the telephone survey. This study yielded 20 items as perceived attributes of social media on a seven-point Likert scale.

### *Questionnaire and Telephone Survey*

The questionnaire included five sections, the first of which had three questions that asked the respondents whether they had adopted Facebook, Line, or email. The second section contained 60 items with 20 items for each social medium, which measured perceived attributes of Facebook, Line, or email. The third section had 21 items that measured the respondents' lifestyles. The fourth section covered mass media use, including television, newspapers, magazines, radio, movie, and Internet use. The last section contained questions on demographics, including age, education, personal income, family income, and gender.

A nationwide telephone survey was conducted using a computer-assisted telephone interview (CATI) system. Twenty interviewers who had passed a qualification test after receiving interview training were hired to administer the telephone interviews under the supervision of the researchers in a central location. The most recent telephone number database for each city and county in Taiwan was

used, and the survey was conducted in July of 2014. This study obtained 1,042 valid questionnaires, with a response rate of 60.3%. Among the 1042 respondents, 565 respondents (54.3%) were all-adopters who had adopted all three social media, 177 respondents (17%) were partial-adopters who had adopted two social media, 96 respondents (9.2%) were minimum-adopters who had adopted only one social medium, and 202 respondents (19.4%) were non-adopters who did not adopt any of the three social media.

### ***Confirmatory Factor Analysis on Perceived Attributes of Social Media***

This study needed to use the same set of perceived attributes for the three social media. Thus, confirmatory factor analyses (CFAs) were conducted to achieve this goal. The confirmatory factor analyses were performed using the following steps: (1) This study first conducted three exploratory factor analyses (EFAs) on the items of perceived attributes for Facebook, Line, and email. The results showed that the five-factor model of email had the best results in terms of percentage explained and factor loadings; (2) Using the five-factor model of email as the basis, this study conducted three CFAs with the LISREL package for Facebook, Line, and email, respectively; (3) This study used the following criteria suggested by statisticians to measure the CFAs' goodness of fit: RMSEA ( $< .10$ ), NFI ( $> .90$ ), IFI ( $> .90$ ), and CFI ( $> .90$ ) (Hair et al., 2006; Wu, 2007). The results showed that all the three CFAs met the requirements of goodness of fit; thus, this study retained all 20 items of the perceived attributes. The data on the CFAs are summarized in Table 1. (Insert Table 1 here)

The first factor, information seeking/sharing, contained four items that pertained to obtaining information or sharing information with others. The second factor,

compatibility/popularity, had four items that focused on two themes—compatibility with one’s lifestyle and use by many people. The third factor, sociability, contained six items that addressed the issue of how to socialize with others. The fourth factor, relationship maintenance, had three items that pertained to contacting or making friends. The last factor, safe/formal communications, contained two items that pertained to comfort level when talking to people and to the suitability of media for formal communication. To measure the perceived attributes of the three social media, this study combined Facebook’s, Line’s, and email’s information seeking/sharing into the perceived attribute of information seeking/sharing of all three social media. The same procedure was used for compatibility/popularity, sociability, relationship maintenance, and safe/formal communications.

### ***Exploratory Factor Analysis on Lifestyles***

With an SPSS package, this study conducted an exploratory factor analysis, using principal component and varimax rotation methods, on responses to the items pertaining to lifestyles. Five types of lifestyles were extracted, and the results are summarized in Table 2. (Insert Table 2 here)

The first lifestyle, being fashionable, contained six items that were concerned with how to dress or use symbols to demonstrate one’s distinctive lifestyle. The second lifestyle, life expansionists, had five items that concerned how to take on challenges or work hard to enrich oneself. The third lifestyle, pleasure seeking, contained four items that were concerned with making one’s life easy and enjoyable. The fourth lifestyle, non-media skeptics, had three items that captured an individual’s trust in news media or advertisements. The last lifestyle, preference for foreign products, contained two items that captured people’s satisfaction with products

manufactured in foreign countries. The results of the reliability analyses showed that the five lifestyles had Cronbach's alphas above .60, indicating good internal consistency.

## **Research Findings**

### ***The Sample Profile***

Among the 1042 respondents, 584 were females (56%). Regarding age, 22.6% of the respondents were older than 55 years, 10.5% were between 51-55, 20.6% were between 41-50, 15.2% were between 31-40, 17.4% were between 21-30, and 13.9% were younger than 20 years. Regarding education, 6.7% of the sample had received elementary education, 9.7% had received junior-high school education, 35.5% had received senior-high school education, 38.1% had received college education, and approximately 10% had received graduate school education. This sample profile was, in general, congruent with Taiwan's population, with the caveat that females were over-represented in the sample (Monthly Report from the Ministry of the Interior, 2014).

### ***Lifestyles and the Four Types of Adopters***

This study conducted five one-way ANOVAs, and the results showed that the four types of adopters differed significantly in four of the five types of lifestyles: being fashionable ( $F = 52.36, p = .000$ ), life expansionists ( $F = 54.42, p = .000$ ), non-media skeptics ( $F = 4.171, p = .006$ ), and preference for foreign products ( $F = 39.72, p = .000$ ). The results of post-hoc analyses, summarized in Table 3, show that all-adopters had the highest score with regard to their preference for the lifestyle of being fashionable, followed by partial-adopters and then minimum-adopters, while non-adopters had the lowest score and preference for this lifestyle. Furthermore, the

four types of adopters differed significantly from one another with respect to this lifestyle. Therefore, H1a was supported. Similarly, this study found that the four types of adopters differed significantly regarding their tendency to prefer a “life expansionists” lifestyle and that all-adopters had the highest score, followed by partial-adopters and then minimum-adopters, while non-adopters had the lowest score on this lifestyle. Hence, H1b was supported. (Insert Table 3 here)

Regarding the lifestyle of pleasure-seeking, the results of the ANOVAs showed that the four types of adopters did not differ in their preference for this lifestyle ( $F = .354, p = .786$ ), and thus, H1c was supported. For the lifestyle of non-media skeptics, Table 3 shows that non-adopters had the lowest score; they did not differ from the minimum adopters, but they had a significantly lower score than partial-adopters and all-adopters. Therefore, H1d was partially supported. Similarly, non-adopters were found to have the lowest score on the preference for foreign products lifestyle; here, they did not differ from minimum-adopters but had a significantly lower score than partial-adopters and all-adopters. Hence, H1e was partially supported.

### ***Perceived Attributes and the Four Types of Adopters***

Five one-way ANOVAs were conducted, and the results showed that the four types of adopters differed significantly in the five perceived attributes—information seeking/sharing ( $F = 329.47, p = .000$ ), compatibility/popularity ( $F = 510.26, p = .000$ ), sociability ( $F = 484.24, p = .000$ ), relationship maintenance ( $F = 235.52, p = .000$ ), and safe/formal communications ( $F = 266.61, p = .000$ ). The results of post-hoc analyses, summarized in Table 3, showed that the four types of adopters differed significantly, with all-adopters having the highest scores, partial-adopters

having the second highest scores, minimum-adopters having the third highest scores, and non-adopters having the lowest scores on the five perceived attributes. Therefore, H2 was moderately supported.

### ***Media Use, Demographics, and the Four Types of Adopters***

Six one-way ANOVAs were conducted, and the results showed that the four types of adopters differed significantly in four types of media use—television viewing ( $F = 10.00, p = .000$ ), magazine reading ( $F = 6.44, p = .000$ ), movie going ( $F = 42.92, p = .000$ ), and Internet use ( $F = 386.72, p = .000$ ). The results of post-hoc analyses, summarized in Table 3, showed that for Internet use, all-adopters had a significantly higher mean than partial-adopters, who, in turn, had a significantly higher mean than minimum-adopters, while non-adopters had the lowest mean of Internet use. For movie going, this study found that non-adopters did not differ from minimum-adopters but had a significantly lower mean than partial-adopters and all-adopters. For magazine reading, Table 3 indicates that non-adopters had a significantly lower mean than minimum-adopters, partial-adopters, and all-adopters, while the latter three types of adopters did not differ in magazine reading. For television viewing, this study discovered that non-adopters did not differ from partial-adopters but had a significantly higher mean than minimum-adopters and all-adopters. Therefore, H3 was partially supported.

This study conducted four one-way ANOVAs for demographics, and the results showed that the four types of adopters differed significantly in four demographics—age ( $F = 110.53, p = .000$ ), education ( $F = 87.33, p = .000$ ), personal income ( $F = 11.48, p = .000$ ), and family income ( $F = 13.48, p = .000$ ). The results of post-hoc analyses, summarized in Table 3, showed that the four types of adopters

differed significantly from one another in age, with non-adopters being older than the other three types of adopters. Regarding education, this study found that non-adopters had a significantly lower mean than the other three types of adopters. For personal income and family, Table 3 shows that non-adopters had significantly lower means than the other three types of adopters. Therefore, the findings fully support H4.

## **Discussion**

### ***Lifestyles and the Four Types of Adopters***

As predicted in H1a and H1b, this study found that non-adopters had significantly lower scores than minimum-adopters, who, in turn, had lower scores than partial-adopters; all-adopters had the highest scores on two lifestyles: being fashionable and life expansionists. These findings indicate that (1) the three social media were perceived as fashionable products that allowed people to differentiate themselves from others, which is consistent with the findings of past studies. For example, Ku et al. (2013) investigated the use of SNS, IM, and email among college students in Taiwan and discovered that one primary motive for using these social media was to distinguish one's styles. Cheng, Liang, and Leung (2015) examined Chinese college students' use of social network services and found that fashion was one of the six gratifications these students sought from these services; (2) the three social media were regarded by the respondents not only as fashionable but also as efficient tools for accomplishing their work. Therefore, the life-expansionist lifestyle was able to differentiate the four types of adopters from one another. This finding is consistent with past studies, which showed that social media allowed people to obtain useful information and resources that were beneficial for their professional advancement (Quinn, 2016; Steinfield et al., 2012).

As predicted in H1c, this study found that the four types of adopters did not

differ in their preferences for the pleasure-seeking lifestyle, which is consistent with the findings of past studies (Author, 2015; Leung, 1998). Past studies (Author, 2015) have shown that the lifestyle of pleasure seeking was not able to predict the adoption of three Internet-related entertainment technologies, including Wii, Kinect, and digital videos, because these technologies required users to exert considerable effort, which served as a deterrent. The three social media are easy to use, but a great deal of effort is required to keep updating them and filling them with content. Therefore, this study found that the pleasure-seeking lifestyle was not associated with the adoption of the three social media, as their use was not compatible with the needs of people who choose this lifestyle.

As predicted, this study found that non-adopters did not differ from minimum adopters regarding their preference for the non-media skeptic lifestyle. However, this study unexpectedly discovered that non-adopters had a significantly lower mean than partial-adopters and all-adopters with respect to this lifestyle. That is, this study found that non-adopters tended to be media skeptics; they had a tendency to be suspicious of the messages in news media and regarded news media and advertising as not trustworthy. Past studies have shown that people with a media-skeptic lifestyle were more likely to adopt information-oriented technologies than people without this lifestyle (Author, 2015; Leung, 1998). A possible explanation for this unexpected finding is that although empirical studies have shown that social media possess both sociability-oriented and information-oriented functions, non-adopters and minimum-adopters tended to consider social media as sociability-oriented rather than information-oriented, and thus, as this study discovered, non-adopters and minimum-adopters are more media-skeptical than partial-adopters and all-adopters. This finding is consistent with past studies (Authors, 2016) that found that the

non-media skeptic lifestyle was able to differentiate non-adopters of game-based learning from other types of adopters, with non-adopters being more media skeptical.

As predicted by H1e, this study found that non-adopters had a significantly lower mean than partial-adopters and all-adopters with respect to the preference for foreign products lifestyle. That is, this study discovered that non-adopters were less likely than partial-adopters and all-adopters to lead this lifestyle, which is consistent with the findings of past studies. Past studies (Author, 2015) discovered that people with this lifestyle were more likely to adopt Wii, Kinect, and digital video, all of which were manufactured in the U.S. or Japan. However, this study unexpectedly found that non-adopters and minimum-adopters did not differ in their mean scores on the preference for foreign products lifestyle. That is, this study's data showed that non-adopters were more similar to minimum-adopters than to partial-adopters or all-adopters regarding their tendency to lead the preference for foreign products lifestyle.

### ***Perceived Attributes and the Four Types of Adopters***

As predicted in H2, this study found that non-adopters had significantly lower means than minimum-adopters, partial-adopters, and all-adopters in the five perceived attributes, including information seeking/sharing, compatibility/popularity, sociability, relationship maintenance, and safe/formal communications. Furthermore, the four types of adopters differed significantly from one another with all-adopters having the highest means, partial-adopters having the second highest means, minimum-adopters having the third highest means, and non-adopters having the lowest means for the five perceived attributes. These findings are congruent with Rogers' model, which predicts that perceived innovation attributes have the best predictive power for technology

adoption and that their predictive power is strong even after the diffusion has passed its critical mass (Rogers, 2003). However, this study unexpectedly discovered that the respondents did not see entertainment as a perceived attribute of the three social media, which is not consistent with the findings of past studies (Cheng et al., 2015; Ku et al., 2013). A possible explanation for this unexpected finding is that past studies examined college students' use of social media, while this study investigated the adoption of social media by the general public; thus, this study did not find entertainment to be a perceived attribute for the three social media because most of the general public had tighter schedules than did the students, and hence, they were not motivated to adopt social media because of their entertainment function.

### ***Media Use, Demographics, and the Four Types of Adopters***

As predicted in H3, this study found that three types of media use—television viewing, magazine reading, and Internet use—differentiated non-adopters from the other three types of adopters. More specifically, this study discovered that non-adopters watched more television but used magazines and the Internet less frequently than the other three types of adopters, which is generally consistent with the findings of past studies (Author, 2014, 2015; Wei, 2001). However, this study unexpectedly found that non-adopters also differed from partial-adopters and all-adopters in their moving-going habits, indicating that non-adopters went to movie theaters less frequently than partial-adopters and all-adopters. A possible explanation for this unexpected finding is that past studies usually examined four types of media use, including television, newspapers, magazines, and the Internet, and seldom examined the frequency of movie-going.

As expected, this study found that, compared to all-adopters, partial-adopters,

and minimum-adopters, non-adopters were older, less educated, and less affluent, which is consistent with the findings of past studies (Büchi et al., 2016; Wei, 2001).

## **Conclusions**

This study adopted Rogers' diffusion of innovation model to investigate the adoption of three social media with high penetration in Taiwan—Facebook, Line, and email. Special attention was paid to examining the non-adopters, who did not adopt any of the three social media, and their differences compared with all-adopters, partial-adopters and minimum-adopters. Two conclusions are drawn from the data analysis: (1) the non-adopters in this study constituted 19.4% of the sample; this is similar to the laggards, who are the last 16% of a society to adopt a given innovation in Rogers' model. According to Rogers (2003), laggards are traditional, and they primarily interact with those who are also traditional and conservative. Due to their limited resources, laggards take a long time to adopt a given technology, often waiting until most people in a society have adopted it. This study found that the characteristics of the non-adopters were congruent with those of the laggards in Rogers' model, demonstrating that the non-adopters were less educated, less affluent, older, and used mass media less frequently than the other types of adopters; (2) the lifestyles of the non-adopters differed greatly from those of all-adopters, partial-adopters, and minimum-adopters. The non-adopters had significantly lower means than the other three types of adopters in four of the five lifestyle—being fashionable, life expansionists, non-media skeptics, and preference for foreign products.

This study's significant contribution to the existing literature is twofold: (1) Very few studies have examined the phenomenon of non-adoption. The findings of this study allow policy makers to better understand the characteristics of non-adopters,

thus giving policy makers better knowledge of how to balance the positive and negative effects of technological development in society. (2) Most studies in the existing non-adoption research examined only one technology or one medium at a time, but this study investigated three social media simultaneously and specifically examined the non-adopters who did not adopt any of the three social media. Future studies should use the same approach to examine other types of technology adoption rather than the adoption of social media, to understand the differences between non-adopters of social media and non-adopters of other types of technologies.

## Reference

- Atkin DJ, Neuendorf K, Jeffres LW and Skalski P (2003) Predictors of audience interest in adopting digital television. *The Journal of Media Economics* 16(3): 159–173. DOI: 10.1207/S15327736ME1603\_2.
- Büchi M, Just N and Latzer M (2016) Modeling the second-level digital divide: A five-country study of social differences in Internet use. *New Media & Society* 18(11): 2703–2722. DOI: 10.1177/1461444815604154.
- Chan J and Leung L (2005) Lifestyles, reliance on traditional news media and online news adoption. *New Media & Society* 7(3): 357–382. DOI: 10.1177/1461444805052281.
- Chang BH, Lee SE and Kim BS (2006) Exploring factors affecting the adoption and continuance of online games among college students in South Korea: Integrating uses and gratification and diffusion of innovation approaches. *New Media & Society* 8(2): 295–319. DOI: 10.1177/1461444806059888.
- Chan-Olmsted SM and Chang BH (2006) Audience knowledge, perceptions and factors affecting the adoption intent of terrestrial digital television. *New Media & Society* 8(5): 773–800. DOI: 10.1177/1461444806067588.
- Chen HH (2016, June) Platform strategies perspective on the OTT messaging services: A case study of WeChat and Line. In: *2016 International Telecommunications Society Biennial Conference*, Taipei, Taiwan, 26–29 June 2016.
- Cheng Y, Liang J and Leung L (2015) Social network service use on mobile devices: An examination of gratifications, civic attitudes and civic engagement in China. *New Media & Society* 17(7): 1096–1116. DOI: 10.1177/1461444814521362.
- Dupagne M and Driscoll PD (2010) Comparison between early high-definition television owners and non-owners. *Journal of Media Economics* 23(4): 216–230.

DOI: 10.1080/08997764.2010.527226.

Ellison NB, Vitak J, Gray R and Lampe C (2014) Cultivating social resources on social network sites: Facebook relationship maintenance behaviors and their role in social capital processes. *Journal of Compute-Mediated Communication* 19(4): 855–870. DOI: 10.1111/jcc4.12078.

Hair JF, Black WC, Babin BJ, Anderson RE and Tatham RL (2006) *Multivariate data analysis* (6<sup>th</sup> ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Jung J, Chan-Olmsted S, Park B and Kim Y (2012) Factors affecting e-book reader awareness, interest, and intention to use. *New Media & Society* 14(2): 204–224. DOI: 10.1177/1461444811410407.

Ku YC, Chu TH and Tseng CH (2013) Gratifications for using CMC technologies: A comparison among SNS, IM, and e-mail. *Computers in Human Behavior* 29(1): 226–234. DOI: 10.1016/j.chb.2012.08.009.

Lee AM (2013) News audiences revisited: Theorizing the link between audience motivations and news consumption. *Journal of Broadcasting & Electronic Media* 57(3): 300–317. DOI: 10.1080/08838151.2013.816712.

Lekakos G (2009) It's personal extracting lifestyle indicators in digital television advertising. *Journal of Advertising Research* 49(4): 404–418. DOI: 10.2501/S0021849909091041.

Leung L (1998) Lifestyles and the use of new media technology in urban China. *Telecommunications Policy* 22(9): 781–790. DOI: 10.1016/S0308-5961(98)00055-X.

Lo CY (2015) A survey on digital life by Common Wealth Magazine. *Common Wealth Magazine*. Retrieved from <http://www.cw.com.tw/article/article.action?id=5070332> (accessed 10 June

- 2016).
- Lo OWY and Leung L (2009) Effects of gratification-opportunities and gratifications-obtained on preferences of instant messaging and e-mail among college students. *Telematics and Informatics* 26(2): 156–166. DOI: 10.1016/j.tele.2008.06.001.
- Lorenzo-Dus N (2006) Buying and selling: Mediating persuasion in British property shows. *Media, Culture & Society* 28(5): 740–761. DOI: 10.1177/0163443706067024.
- Mazzoni C, Castaldia L and Addeob F (2007) Consumer behavior in the Italia mobile telecommunication market. *Telecommunications Policy* 31(10): 632–647. DOI: 10.1016/j.telpol.2007.07.009.
- Ministry of the Interior (2014) Resident Population by Single Year of Age. Retrieved from <http://sowf.moi.gov.tw/stat/month/m1-11.xls> (accessed 3 February 2016).
- Park N, Kee KF and Valenzuela S (2009) Being immersed in social networking environment: Facebook groups, uses and gratifications, and social outcomes. *CyberPsychology & Behavior* 12(6): 729–733. DOI: 10.1089/cpb.2009.0003.
- Peter PJ and Olson JC (1994) *Understanding Consumer Behavior*. Burr Ridge, IL: Irwin.
- Quinn K (2016) Contextual social capital: Linking the contexts of social media use to its outcomes. *Information, Communication & Society* 19(5): 582–600. DOI: 10.1080/1369118X.2016.1139613.
- Rogers EM (2003) *Diffusion of innovations* (6<sup>th</sup> ed.). New York, NY: Free Press.
- Rose D (2016) The state of social media and messaging in Asia: How brands use messaging apps to engage users. Retrieved from <https://www.nexmo.com/blog/2016/03/15/state-of-social-media-and-messaging-i>

[n-asia/](#) (accessed 17 May 2016).

Steinfeld C, Ellison N, Lampe C and Vitak J (2012) Online social network sites and the concept of social capital. In: Lee FL, Leung L, Qui JS and Chu D (eds) *Frontiers in New Media Research*. New York, NY: Routledge, pp. 115–131.

Su CC, Lee FLF and Lin G (2016) Does site architecture matter? The political implications of public-versus private-oriented social network sites in China. *Asian Journal of Communication* 27(2): 1–20. DOI: 10.1080/01292986.2016.1235593

Wei R (2001) From luxury to utility: A longitudinal analysis of cell phone laggards. *Journalism & Mass Communication Quarterly* 78(4): 702–719. DOI: 10.1177/107769900107800406.

Wei R (2006) Wi-Fi powered WLAN: When built, who will use it? Exploring predictors of wireless Internet adoption in the workplace. *Journal of Computer-Mediated Communication* 12(1): 155–175. DOI: 10.1111/j.1083-6101.2006.00319.x.

Wu ML (2007) *Structural equation modeling: Amos operation and application*. (1st ed.). Taipei, Taiwan: Wu Nan Book Inc.

Zhu JH and He Z (2002) Perceived characteristics, perceived needs, and perceived popularity adoption and use of the Internet in China. *Communication Research* 29(4): 466–495. DOI: 10.1177/0093650202029004005.