LI-CHIOU CHEN
Yuan Ze University, Taiwan

SO UGLY! USER EXPERIENCE OF LINE'S UGLY E-STICKERS

Abstract:

LINE is the most popular and frequently used communication software in Taiwan, and its e-sticker function is a user favorite. In early 2016, a trend of "ugly e-stickers" suddenly developed on LINE and the Internet. These e-stickers are drawn in the style of children's graffiti, consisting of simple lines, and present a "childlike" appearance without any particular design. This particular form resulted in a new style of e-sticker. This kind of e-sticker is different from the commonly pleasing impression of e-stickers and even reaches the point of being considered "ugly" in traditional visual perception. It has also overturned the idea of "needing a skillset to submit e-stickers." To understand this particular phenomenon, this study explored user experience and conducted a questionnaire survey based on the Technology Acceptance Model to understand the users' experience in using ugly e-stickers and explore their motivation and intention behind using ugly e-stickers. The study found that ugly e-stickers are more popular among young and outgoing users, as well as those who frequently use communication software. Factors that affect the attitude of users toward using ugly e-stickers include the general view of ugly e-stickers and whether these e-stickers are user-friendly and practical. Comments made by others about ugly e-stickers and the popularity of such e-stickers are factors that affect the motivations of users to use e-stickers.

Keywords:

LINE, ugly e-stickers, user experience, Technology Acceptance Model (TAM)

JEL Classification: Z00

1   Introduction

In recent years, the proportion of people using communication software on mobile devices has been observed to increase year by year, and using social networking communication software is the most popular reason for connecting to the Internet on cell phones in Taiwan (Focus, 2016). In the first half of 2014, five out of the top ten phone applications ("apps") were social communication software, with LINE being the most frequently used app (Institute for Information Industry, 2014). Today, the number of LINE users remains very high and its e-sticker function is highly popular. Recently, however, a trend of "ugly e-stickers" suddenly developed on LINE and the Internet. These e-stickers are drawn in the style of children's graffiti, consisting of simple lines, and present a "childlike" appearance without any complex design. Although these e-stickers are not visually appealing drawings and even reach the point of being considered "ugly," their ugliness has attracted user interest and increased the fun of communication.

The ugly e-stickers gained a lot of exposure within a short period of time because, in addition to their interesting style, the text was interesting and practical, a potential factor in user preferences. The use of general e-stickers is often affected by context, functionality, entertainment, and perceived value, but the popularity of ugly e-stickers is clearly different from general e-stickers as their usability and functionality are more significant factors than the aesthetic standards of users. Therefore, to explore the reasons behind this phenomenon, this study discusses the user experience of ugly e-stickers to understand their popularity and the intention of users who use them. Based on the Technology Acceptance Model (TAM) proposed by Davis (Davis, Bagozzi, & Warshaw, 1989), this study conducted online questionnaires and quantitatively analyzed data by SPSS. Analyzing the causes of this phenomenon and user motivations through empirical research renders it possible to suggest future directions for creators of e-stickers, or in other fields of design, and provides a relevant basis for marketing and research in related industries.

2   Literature Review

2.1 The phenomenon of LINE's ugly e-stickers

In 2015, LINE released its annual list of best-selling e-stickers in Taiwan. The favorite category of e-stickers among 15% of users was "interesting/funny," and these "unique/ugly" e-stickers brought friends closer in their chatting interactions (Kan, 2016). The majority of ugly e-stickers are similar to the style of young children's graffiti,

consisting of simple lines. They look as if there was no complex design and present a "childlike" appearance in an overly simplified form. Such e-stickers have also overturned the general impression of "needing a skillset to submit e-stickers." At first, many users wondered why such works could even be released. What kind of aesthetic sense did buyers have? Some users then expressed their preference for this type of children's graffiti-like e-sticker, as it represents a practical online buzzword, recovers simplicity, and is simply amusing because of its ugliness.

Around April 2015, a set of "invisible person" e-stickers appeared and were widely discussed on Taiwan's largest online bulletin board system, PTT. The main comments were: "How can such ugly drawings be released?" "They are simply children's drawings," "I could probably draw better than them," and so on. However, as the discussion became heated, comments of different opinions gradually appeared, for example: "Maybe they were really drawn by children, why laugh at them?" "I think they're cute!" and so on. This discussion attracted attention and the e-stickers made sixteenth place in LINE charts. In an interview with LINE in July the same year, Japanese e-sticker artist UAR said that there were almost no sales in the first three weeks and that the sudden popularity in Taiwan was unexpected (T. T., 2016). Another example is the "Ghost in the Fog" e-sticker, which started as a bet between two friends, as they did not believe such an ugly drawing would pass LINE's official checks. Thus, they bet that if the e-sticker obtained approval, the creator's friend must purchase 20 sets of e-stickers and send them out. These e-stickers not only got approved but became a best-selling e-sticker on LINE. The betting process also led to an intense discussion (see Figure 1). Since the discussion over the beauty and ugliness of these e-stickers aroused the interest of users, similar ugly e-stickers were also brought into the discussion (Hanrock, 2016).

Figure 1: Screenshot of the betting process between the creator of "Ghost in the Fog" e-stickers and his friend on LINE

The reason that ugly e-stickers have attracted buyers in Taiwan may be related to the national context of Taiwan. According to the observations of LINE, countries have different purchase preferences for e-stickers depending upon the national context. For example, Taiwanese enjoy humorous and funny appearances, Japanese like white and sleek appearances, Thais love two-dimensional female characters, while Indonesians prefer European and American styles. Humorous and funny e-stickers are the most popular among the Taiwanese people (LINE, 2016). Therefore, as we can see from LINE's own observations, the Taiwanese love the funny Kuso e-stickers, and this preference may help explain why the Japanese e-sticker artist UAR's "Invisible Man" series became such a popular hit in Taiwan. Since ugly e-stickers have garnered interest, this style has flourished on the market. Examples include the "White Stuff" series, which was one of the more well-known e-stickers on LINE's top charts, the "I have nothing to say to you so I'll draw a picture!" series, and "Ghost in the Fog," which was featured by the official LINE fan club (see Table 1). However, the biggest difference separating these e-sticker series from the "Invisible Person" e-stickers is that they include narrations, of which most are buzzwords. This also shows that most of the ugly e-stickers also make good use of buzzwords to intensify humor, in addition to expressing a "childlike" appearance. Nowadays, even selling "ugliness" can achieve high sales so, whether one is a professional illustrator or an amateur artist, everyone has the opportunity to become a creator of LINE e-stickers.

Table 1: Works with ugly-sticker characteristics featured on LINE's top charts

Name of e-Sticker	Creator	Main Figure of e-Sticker	Figures of e-Sticker		
Invisible Man	UAR				
Three Generations of White Stuff	Kimi Bro				
I Have Nothing to Say to You so I'll Draw a Picture!	Yusha Club				
Ghost in the Fog	Lance Yang				

Source: Summarized from data collected for this study

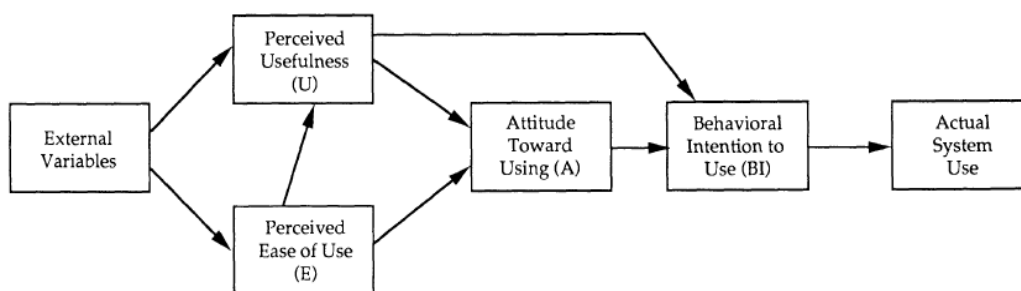## 2.2 User experience and the Technology Acceptance Model

The definition of user experience varies widely and covers an extensive range of factors, including system design, interface design, visual design, performance, usability, and functionality. User experience has so far focused on fields such as human-system interaction, product development and design, service quality, and artistic design (Hassenzahl, Diefenbach, & Göritz, 2010; Park, Han, Kim, Cho, & Park, 2013). The international standard on the ergonomics of human system interaction, ISO 9241-210:2010, defines user experience as "a person's perceptions and responses that result from the use or anticipated use of a product, system or service." The users' feelings, beliefs, preferences, perceptions, psychological reactions, behaviors, and achievements all affect user experience after using the product (DIS, 2009). Previously, user experience was mostly applied in the interaction between products and human beings, and the functional orientations in user experience were emphasized. Improvements since then have led researchers of user experience to focus on the users' subjective feelings, inner feelings, needs, satisfaction, etc., and to believe that user experience must include emotional factors to be considered complete (Hassenzahl et al., 2010; Wan, Zhu, & Hou, 2013).

With the passage of time and rapid advancement of new technologies, the idea of user

experience must be updated or revised given changes in the modern social environment and the progress of new technologies. According to Park et al.'s (2013) research statistics on user experience in North America and Europe, user experience in North America is mostly oriented toward traditional usability, user-centered design (UCD), TAM, or brand equity; however, in European studies, it is oriented toward the TAM on the psychological level. While exploring the many aspects and definitions of user experience, the TAM, which was derived from behavioral theory, has been studied and discussed by many researchers and commonly been used as a method to study user experience. The model was often used in the past to explore and verify individual behaviors or intentions and to analyze the various factors that affect user acceptance of new technologies or systems (Chu, 2012).

Davis developed the Technology Acceptance Model (TAM) in 1986 based on the Theory of Reasoned Action (TRA), and it was revised and validated as a research model that effectively explains the process of users accepting information technology systems. The model suggests that "perceived usefulness" and "perceived ease of use" are two important factors that affect user intentions. Davis et al. proposed amendments to TAM in 1989 (see Figure 2 below), adding external variables, as they believed that external variables affect the internal variables of the user ("perceived usefulness" and "perceived ease of use") (Davis et al., 1989). For many years, the TAM has been considered a comprehensive model for user acceptance of new technologies and widely used in many fields, such as social media, e-commerce, software applications, and system quality (Lorenzo-Romero, Alarcón-del-Amo, & Constantinides, 2014; Pavlou, 2003; Zhang, Zhao, & Tan, 2008).

Figure 2: The Technology Acceptance Model according to Davis (1989)

As the external factors in user behaviors and intentions may become increasingly diverse over time, Venkatesh and Davis developed a new model for technology acceptance (TAM2) in 2000. This model explains that the variables "social influence processes" and "cognitive instrumental processes" both affect perceived usefulness. "Social influence processes" include subjective norms, voluntariness, image, and
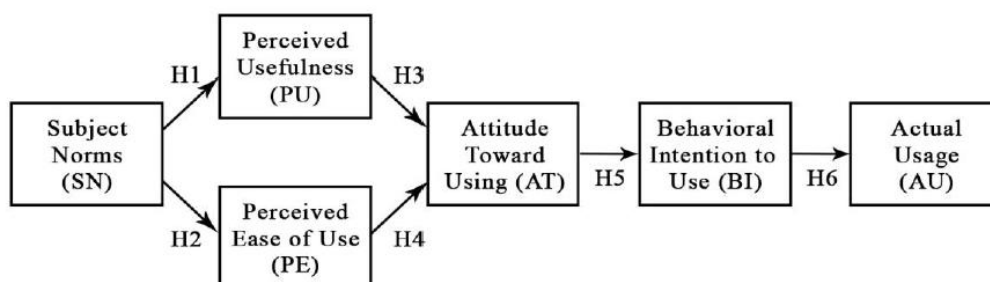
experience (Venkatesh & Davis, 2000). "Social influence" is an essential factor in human behavior and decision-making. TAM2 confirms that the social influence process of "subjective norms" has a significant effect on "user intentions." In general, people often respond to the influence of social norms, hoping to establish or maintain a good image within a group. Venkatesh and Davis (2000) found that subjective norms have a more significant impact under coercive circumstances and that subjective norms impact user behavior and intentions when users are introduced to new things or new systems. Many studies in recent years have the TAM to explore phenomena associated with the use of LINE (Battarbee & Koskinen, 2005; Narkwilai, Funilkul, & Supasitthimethee, 2015; Lin, 2016; Chung, 2016). Hence, this model is generally recognized for verifying social acceptance of new technologies.

3   Research Methods

3.1 Research framework and hypothesis

The theoretical framework of this study is based on TAM as proposed by Davis et al. (1989), which consists of six major aspects: external variables, perceived usefulness, perceived ease of use, attitude toward using, behavioral intentions to use, and actual usage (see Figure 3 below). According to TAM, researchers can increase the number of external variables in the model depending on the research context and the need to achieve a better prediction and analysis. This study is based on the considerations above and the element of "subjective norms" as a social influence process (Venkatesh & Davis, 2000). Through the expansion of TAM to include external variables, this study aims to determine users' motivations and intentions in using ugly e-stickers, in order to further explore the effects of LINE's ugly e-stickers on users. Using this framework, it also examines the relationships between the variables and suggests hypotheses for these relationships.

Figure 3: Research Model Hypothesis

3.2 Questionnaire Design

The participants of this study were experienced LINE users who have used "ugly e-stickers." Data were collected by distributing online questionnaires using convenient sampling of the users to facilitate sampling of online questionnaires for data collection. Regarding the questionnaire design, each item adopted a Likert five-point measurement scale. The contents of the questionnaire were divided into two parts. The first part was to survey the demographic information and usage behavior of participants, including their age, gender, personality traits, prior experience using LINE, number of LINE friends, frequency of using LINE, and whether they have used ugly e-stickers, in order to summarize the characteristics of the user group of LINE's e-stickers. The second part was to explore the motivations and intentions of participants when using LINE's ugly e-stickers. The variables were defined and operationalized under the six aspects of the research framework and revised to meet the objective of this study, in order to understand user acceptance of LINE's ugly e-stickers. The reliability of the questionnaire was based on Cronbach's α, where reliability was considered high if Cronbach's α was between 0.7 and 0.9 (Nunnally, 1978). The Cronbach's α values under all six aspects in this study were greater than 0.7, indicating that each item showed internal consistency with the corresponding aspect.

4   Data Analysis

4.1 Analysis of basic descriptive data

The questionnaire survey was sent to users of LINE's ugly e-stickers, and a total of 307 valid questionnaires were collected. Regarding demographic variables, 74.9% of participants were females and 25.1% were males. Among the users, the largest age groups were 20 years or below (52.8%) and 21-30 years (42.7%), the users were thus mainly young people. The distribution of personality traits tended to be consistent. Regarding usage (years of experience), 31.6% of participants had used LINE for 5 years or above (31.6%) and 23.8% for 3-4 years (23.8%). Regarding daily time spent on LINE, 40.1% reported spending 1-3 hours, while 25.1% reported daily usage of 5 hours or more. Among the users, the largest group purchased e-stickers every 4-6 months (29.6%), followed by those who purchased them once a year (24.1%). The group that purchased e-stickers every 2-3 months accounted for 22.1%, and the remaining groups were those who never made purchases (14.7%) and those who made purchases every month (9.4%) (see Table 2).

Table 2: Analysis of demographic variables of participants

Item	Option	Number	Percentage
Gender	Male	77	25.1
	Female	230	74.9
Age	Under 20 years	162	52.8
	21-30 years	131	42.7
	31-40 years	13	4.2
	41-50 years	1	0.3
Personality trait	Relatively extroverted	159	51.8
	Relatively introverted	148	48.2
Years of usage (years of experience)	Less than 1 year	49	16.0
	1 year or above but less than 2 years	44	14.3
	2 years or above but less than 3 years	44	14.3
	3 years or above but less than 4 years	73	23.8
	5 years or above	97	31.6
Average time spent on LINE daily	Less than 1 hour	43	14.0
	1-3 hours	123	40.1
	3-5 hours	64	20.8
	5 hours or more	77	25.1
Frequency of purchasing e-stickers	Never (0)	45	14.7
	Rarely (every year)	74	24.1
	Sometimes (every 4-6 months)	91	29.6
	Often (every 2-3 months)	68	22.1
	Frequently (every month)	29	9.4

Considering the demographic characteristics of the participants, we compared differences in the averages of TAM's six aspects, and individually conducted an analysis of variance (ANOVA) as shown in Table 3. Examining the demographic characteristics under TAM's six aspects, we observed higher averages in all aspects when the gender is female, the age is under 20, the personality is relatively extroverted, the years of experience is over five years, and the daily time spent is over three hours. Our observations show that ugly e-stickers may be more popular or commonly used among these groups. Hence, it is inferred that the user attitude toward ugly e-stickers may be more positive, and that there is also a tendency to use ugly e-stickers. In addition, the ANOVA found significant variances in age, personality traits, daily time spent, and frequency of purchase under some aspects of TAM. The above aspects also had a significant variance with usage behavior (AU). The findings show that certain user characteristics have a substantive impact on behaviors such as purchasing and using ugly e-stickers. The typical characteristics are being under 20 years of age, having a relatively extroverted personality, spending more than three hours daily on LINE, and frequently purchasing e-stickers.

Table 3: ANOVA of Demographic characteristics and TAM variables

Attribute	Category	SN	PU	PE	AT	BI	AU
	All participants	3.63	4.04	4.41	4.29	4.17	3.99
Gender	Male	3.51	3.99	4.29	4.24	4.09	3.98
	Female	3.67	4.05	4.45	4.31	4.20	4.00
Age	Under 20	3.72*	4.13*	4.50*	4.34	4.29**	4.14**
	20 years or above	3.52*	3.93*	4.30*	4.23	4.04**	3.83**
Personality trait	Relatively extroverted	3.72*	4.08	4.45	4.37*	4.24	4.10*
	Relatively introverted	3.52*	4.00	4.36	4.20*	4.09	3.88*
Years of usage	Less than five years	3.61	4.02	4.39	4.28	4.15	3.97
	Five years or more	3.66	4.08	4.43	4.32	4.21	4.05
Daily time spent	Less than three hours	3.53*	3.98	4.32*	4.23	4.10	3.89*
	Three hours or more	3.74*	4.11	4.51*	4.36	4.25	4.11*
Frequency of purchasing	Less than every half-year (Infrequent purchases)	3.63	4.01	4.40	4.33	4.22	4.11**

Every half-year or more (Frequent purchases)	3.62	4.09	4.41	4.23	4.09	3.81**

**p < 0.01.

4.2 Correlation and regression analyses

To avoid having multi-collinearity, this study performed a Pearson correlation coefficient analysis before the regression analysis. Next, the causal relationship was explored using a regression model. Finally, the proposed hypotheses were verified. Where the absolute value of the Pearson correlation coefficient is 0.7 or above, a strong correlation is observed, whereas a value between 0.4 and 0.7 shows a moderate correlation, and a value of under 0.4 shows a weak correlation. The results of the Pearson correlation analysis shown in Table 4 below illustrates that there is a significant moderate or strong positive correlation between all six aspects, but the issue of multi-collinearity must be considered as having strong correlations. The variance inflation factor (VIF) was used to detect multi-collinearity. According to the suggestions by Chatterjee and Price, when the VIF value is greater than 10, multi-collinearity exists between independent variables (Chatterjee & Price, 1991). The test results for the coefficients in this study showed that the VIF coefficient did not exceed the threshold, indicating that there was no multi-collinearity.

Table 4: Table of correlation analyses

	SN	PU	PE	AT	BI	AU
SN						
PU	.540**					
PE	.510**	.686**				
AT	.661**	.691**	.737**			
BI	.553**	.684**	.660**	.766**		
AU	.563**	.647**	.632**	.758**	.773**	

**p< 0.01 (two-tailed).

To understand the relationships and influences between the variables, we considered perceived usefulness (PU), perceived ease of use (PE), attitude toward using (AT), behavioral intention to use (BI), and actual usage (AU) as dependent variables to examine whether independent variables had a significant impact on and contribution to corresponding dependent variables. Five regression line analyses were conducted in sequence, as shown in Table 5. The results of the regression analyses verified Hypotheses 1 through 6 in this study, which all displayed significant explanatory power

and positive influential relationships. The study also found that SN had significant explanatory power on AT, as did PU on BI and AT on AU. In the analysis where AT was a dependent variable, SN, PU, and PE were observed to have a significant impact on AT. The value of $\triangle$R2 was 0.67, the highest among all $\triangle$R2 values, indicating that social norms, ease of use, and usefulness all affect the attitude of users.

From the table, we can also observe the extent of influence of subjective norms (SN) in the model. When comparing the effects of SN on both PU and PE, SN was demonstrated to have strong explanatory power over PU, as well as a significant influence on AT. This result shows that subjective norms play an important role in the model. They not only affect the perceived usefulness and perceived ease of use but also user attitudes, and they possibly even indirectly affect ultimate user behavior.

Table 5: Model regression analysis

Independent variable	Dependent variable				
	PU	PE	AT	BI	AU
SN	0.54***	0.51***	0.32***	0.04	0.06
PU			0.23***	0.25***	0.09
PE			0.41***	0.10	0.03
AT				0.48***	0.30***
BI					0.41***
$\triangle$R2	0.29	0.25	0.67	0.63	0.66
F	125.86***	107.48***	213.56***	133.50***	123.43***

**p < 0.01 ***p < 0.001. The values in the table are β values.

5   Conclusions and Suggestions

This study explored the popularity and user motivation of LINE's ugly e-stickers from a technology acceptance viewpoint. The results show that ugly e-stickers were more easily accepted by groups with certain demographic characteristics, such as females, people under 20 years of age, those with relatively extroverted personalities, and who spend more time daily on LINE. This demonstrates that ugly e-stickers are more popular among young, extroverted individuals who frequently use communication software. The results also show that there is a significant difference between the user's purchase frequency and usage behavior, indicating that users who purchase the ugly e-stickers more often display more usage behavior.

The study also found that a user's social norms, perceived ease of use, and perceived

usefulness have a significant impact on "usage attitude," indicating that users' general view of ugly e-stickers, whether they are user-friendly, and their practicality all affect the usage attitude of users. Additionally, the results also suggest that "subjective norms" (SN) also have a significant effect on perceived ease of use, perceived usefulness and, particularly, usage attitude. This indicates that subjective norms play an important role in the model, not only affecting the perceived usefulness and perceived ease of use but also the usage attitude of users, and possibly even that they indirectly affect ultimate user behavior. Therefore, comments made by others about ugly e-stickers and the popularity of such e-stickers are factors in the motivations of users to use them. In other words, the factors influencing usage attitude today are not only perceived usefulness and perceived ease of use. Social norms have become another important factor influencing the motivation of users, and users are more deeply concerned about the perceptions and level of acceptance of others, which in turn affect their willingness to use the e-stickers.

Reference

BATTARBEE, K. and KOSKINEN, I. (2005). Co-experience: User Experience as Interaction. *CoDesign*. 2005, Vol. 1, No. 1, s. 5-18.

CHATTERJEE, S. and PRICE, B. (1991). *Regression Analysis by Example*. 2nd ed. New York: Wiley, 1991.

CHU, P. (2012). The Technology Acceptance Model, TAM (Ke ji jie shou mo xing). Retrieved Nov. 11, 2016, from http://terms.naer.edu.tw/detail/1678678/.

CHUNG, Y. (2016). Exploring the Use of LINE and Willingness to Repurchase Using the Technology Acceptance Model. National University of Kaohsiung, Kaohsiung (Yun yong ke ji jie shou mo shi tan tao LINE zhi shi yong yu zai gou yi yuan). (Unpublished Master's thesis). Guo li Gaoxiong da xue, Kaohsiung.

DAVIS, F. D. (1986). *A Technology Acceptance Model for Empirically Testing New End-user Information Systems: Theory and Results.* (Doctoral dissertation), Massachusetts Institute of Technology, Sloan School of Management. Retrieved from http://dspace.mit.edu/handle/1721.1/15192

DAVIS, F. D.; BAGOZZI, R. P. and WARSHAW, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*. 1989, Vol. 35, No. 8, s. 982-1003.

DIS, I. (2009). 9241-210: 2010. Ergonomics of Human System Interaction-Part 210: Human-centred Design for Interactive Systems. *International Standardization Organization (ISO).* Switzerland.

FOCUS (2016). Taiwanese Love Swiping their Phones and Top the World at 3 Hours Per Day (Tai wan ren ai hua shou ji mei tian yu san xiao shi quan qiu di yi). Retrieved July 21, 2016, from http://a.udn.com/focus/2016/07/21/23379/index.html.

HANROCK (2016). There are No Limits to LINE E-stickers (LINE tie tu mei you ji xian). Retrieved Feb 4, 2016, from https://www.ptt.cc/bbs/joke/M.1454517302.A.84C.html.

HASSENZAHL, M.; DIEFENBACH, S. and GÖRITZ, A. (2010). Needs, Affect, and Interactive Products–Facets of User Experience. *Interacting with Computers.* 2010, Vol. 22, No. 5, s. 353-362.

INSTITUTE FOR INFORMATION INDUSTRY (2014). A First! Cross-channel Analysis of User Behavior by the Institute for Information Industry: Selecting the "Top 100 apps in Taiwan in the First Half of 2014" (Shou chuang! Zi ce hui kua tong lu fen xi shi yong zhe xing wei ping xuan 2014 nian shang ban nian Tai wan feng yun APP bai qiang). Retrieved June 25, 2014, from http://www.find.org.tw/market_info.aspx?n_ID=7201.

KAN, W. (2016). LINE Announces Annual Best-selling Rankings (LINE gong bu nian du tie tu chang xiao pai xing bang). Retrieved Nov. 22, 2016, from http://www.nownews.com/n/2016/01/21/1969976.

LIN, T. (2016). A Behavioral Study of LINE Circle Users Using the Technology Acceptance Model. National Taipei University of Technology, Taipei.   (Yi ke ji jie shou mo shi tan tao LINE sheng huo quan de shi yong zhe xing wei yan jiu). (Unpublished Master's thesis), Guo li Taibei ke ji da xue, Taipei.

LINE (2016). Exclusive from LINE Headquarters - The Three Golden Elements of E-stickers: Practicality, Style, Position (LINE zong bu du jia, huang jin tie tu san yuan su: shi yong, feng ge, wei zhi). Retrieved Nov. 15, 2016, from http://www.brain.com.tw/news/articlecontent?sort=&ID=22127.

LORENZO-ROMERO, C.; ALARCÓN-DEL-AMO, M.-D.-C. and CONSTANTINIDES, E. (2014). Determinants of Use of Social Media Tools in Retailing Sector. *Journal of Theoretical and Applied Electronic Commerce Research.* 2014, Vol. 9, No. 1, s. 9-10. doi:10.4067/s0718-18762014000100005.

NARKWILAI, M.; FUNILKUL, S. and SUPASITTHIMETHEE, U. (2015). Factors Influencing the Thai Elderly's Intention to use Social Network for Quality of Life: A Case Study of LINE Application. Paper presented at the 2015 7th International Conference on Information Technology and Electrical Engineering (ICITEE).

NUNNALLY, J. C. (1978). *Psychometric Theory*: New York: McGraw-Hill, 1978.

PARK, J.; HAN, S. H.; KIM, H. K.; CHO, Y. and PARK, W. (2013). Developing Elements of User Experience for Mobile Phones and Services: Survey, Interview, and Observation Approaches.

Human Factors and Ergonomics in Manufacturing & Service Industries. 2013, Vol. 23, No. 4, s. 279-293.

PAVLOU, P. A. (2003). Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce*. 2003, Vol. 7. No. 3, s. 101-134.

T. T., MEGAN (2016). Does the Beauty of LINE E-stickers Impact Sales? (LINE tie tu hua de mei bu mei jiu jing dui xiao shou liang ying xiang da bu da). Retrieved April 7, 2016, from http://www.tpintrts.tpin.idv.tw/index.php?blog_id=214&blogex_id=12.

VENKATESH, V. and DAVIS, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*. 2000, Vol. 46, No. 2, s. 186-204.

WAN, J.; ZHU, Y. and HOU, J. (2013). Research on User Experience Quality Assessment Model of Smart Mobile Phone. *Technology and Investment*. 2013, Vol. 4, No. 2, s. 107.

ZHANG, S.; ZHAO, J. and TAN, W. (2008). Extending TAM for Online Learning Systems: An Intrinsic Motivation Perspective. *Tsinghua Science & Technology*. 2008, Vol. 13, No. 3, s. 312-317.