

# Mobile Internet and User Happiness

Ge Zhan

**Abstract**—Does technology adoption make user happier? Answers to this question are important to user well-being, but existing literature does not provide useful guidelines and conclusions in response. This study aims to fill the knowledge gap by investigating the drivers of user happiness. The study was conducted in a context of mobile-internet adoption by Hong Kong consumers. Quantitative data were collected with a survey method in 2013. Data were analyzed with multiple regression models. The findings indicate that usage variety, task type and satisfaction significantly influence user happiness.

**Index Terms**—User happiness, mobile internet, technology adoption.

## I. INTRODUCTION

Numerous resources have been spent every year on the development or purchase of high-tech products. The assumption is that users are better off after technology adoption. An important question then is that does technology adoption make user happier? Existing consumer research on happiness has focused on the impact of consumption experience [1], marketing communication [2], brands [3], types of purchase [4], and money [5], [6]. Technology, which is powerful enough to influence all marketing and consumption processes, has received little research attention on its possible impact on consumer happiness.

The aims of this research are to 1) develop a conceptual framework which explains mobile-internet user happiness; and 2) identify and verify potential drivers of user happiness. This study will make several contributions to e-business literature. First, the study is among the first to identify and examine an important predictor of happiness, namely, post adoption of technology. Second, this study sheds light on user happiness which is an under-studied aspect of mobile internet research.

## II. POST-ADOPTION BEHAVIOR

In this study post-adoption behavior is defined as the actual use of technology after purchasing, users may vary in the extent to which they are involved in technology. The extent of technology adoption has been typically approached in literature as usage frequency and variety [7]. While usage frequency reflects how often the technology is used, usage variety refers to the different applications of the

technology or the different situations in which the technology is used.

In their survey of 183 e-business users, reference [8] investigated a variety of situations for the use of e-business such as communications, product-catalog delivery, ordering and order tracking. By drawing from the database of a national survey of 910 U.S households, reference [9] analyzed both the rate (the number of hours of computer use in a typical week) and the variety (a checklist of 17 different uses) of the use of computers. In another survey of 101 working adults using mobile internet, reference [10] classifies all on-line tasks performed into three categories including gaming, transactions, and general tasks that do not involve transactions and gaming. In a more recent survey of 276 Wi-Fi users in Hong Kong, reference [11] found that half of the respondents have used mobile internet for more than two years and used it over four hours a day; over one third of them use mobile internet for e-mail checking and information search, and other online activities include gaming (39%), transactions (32%), shopping (30%) and investment (21%).

As the users, usage, and number of Smartphone applications grow rapidly, the security and privacy become serious issues to users, such as leaking of personal information or insufficient protection of the transmission of information to support financial transactions [12], [13]. Even users could find iPhone apps to crack the password of WEP (Wired Equivalent Privacy) or WPA (Wi-Fi Protected Access), which created significant threat to the iPhone users. In order to bring the attention to the users, significant amount of efforts have also been made in education and promotion of the Wi-Fi security technologies. However, such efforts seemed not very effective based on our observations and a study that been conducted in Hong Kong [11]. The results indicated that average iPhone users did not have sufficient information and knowledge about how to select and use such Wi-Fi security technologies.

## III. USER HAPPINESS

Happiness, sometimes labeled subjective well-being (SWB), has been defined as an overall sense that life is good [14], [15]. Typically happiness is measured by asking people a single question “how do you feel about your life as a whole?” with a 7-point delighted-terrible (D-T) scale [14]. Several national happiness indexes have been composed by using similar measures. One widely used version in marketing and psychology research was compiled by [16] with the mean standardized value of four surveys. According to the findings of the surveys, Iceland (scored 1.11), Sweden (scored 1.03) and Australia (scored 1.02) are the happiest countries. However, large developing economies, such as China (-1.92) and India (-1.13), are

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among the unhappiest.

The tradition view of happiness in user satisfaction research [17] and life satisfaction research [14] suggests that happiness is achieved when all of life's domains and sub-domains are satisfied. In other words, the greater the satisfaction with personal health, work, family and leisure, the greater the happiness in general. More recent research shows that consumers are happier with consumption experience shared with others for both pleasant and unpleasant experiences [1], and happier with normative information provided in marketing messages [2]. Consumers also become happier with a branded product that is perceived as signaling high status because it indicates success and social achievement [3]. It is evident that experiential purchases (e.g., theater, concerts, and vacations) make consumers happier than material purchases (e.g., fancy cars, bigger houses, and gadgets) [4]. People often hold the assumption that money is for being happy. A recent research note challenges this assumption, and suggests that money enables people to solve problems and avert suffering rather than improves happiness directly [6].

Given that technology is a likely a major force in shaping our life domains, consumption experience, product design and promotion, and the way we earn and spend money, it is surprisingly to see that the link between technology adoption and user happiness is almost missing in existing literature. To fill in the knowledge gap, this study suggests that post-adoption behavior may have an impact on user happiness with mobile internet.

#### IV. CONCEPTUAL FRAMEWORK

Performing multiple tasks with mobile internet will enrich user experience, and therefore lead to a feeling of excitement. If the use of mobile internet provides positive feeling, the more frequently users use it, the greater the excitement they will probably obtain. Thus, usage variety and frequency are expected to have a positive impact on user happiness.

A distinctive feature of communication among web users is that this task involves less functional activities than other mobile-internet tasks. While financial transactions, online purchasing and investment function as important online exchange activities, online game, video and music serve as entertaining tools. Communication via Facebook, Skype, Whatsapp or Wechat etc. brings less functional value compared with other online tasks. Mobile services with more functionality have been found leading to greater customer satisfaction [18]. This study extends this line of reasoning to propose that using mobile internet for communication tasks has a negative impact on user happiness.

A basic argument of bottom-up spillover theory is that satisfaction with a specific life domain affects overall life satisfaction or happiness [19]. In their study of bloggers, Reference [20] found that blogging enhances social interactions, and this effect spills over into general life satisfaction. In another study of mobile computing, Reference [21] found that user satisfaction of mobile data service contributes to overall quality of life. The implication of spillover theory to study will be that the satisfaction of

mobile internet positively influences user happiness.

#### V. METHOD

A self-administrated survey was conducted in Hong Kong. Hong Kong is one of the highest-ranked regions in terms of per capita consumption of mobile internet and Smartphone. It is therefore the logical choice of a research context for the study of user adoption of mobile internet. Questionnaires were prepared in both English and Chinese. The questionnaire was translated with the consultation of bilingual industrial experts. Questionnaires were distributed to college students in 2013 autumn.

TABLE I (A): DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

	Mean	1	2	3	4	5
1 User happiness	4.78	1.00				
2 Usage variety	4.51	0.25	1.00			
3 Usage frequency	1.72	-0.16	-0.10	1.00		
4 Communication	0.91	-0.05	0.31	-0.26	1.00	
5 Satisfaction	4.46	0.46	0.15	-0.23	0.11	1.00
6 iOS vs. others	0.31	0.08	-0.02	-0.01	-0.04	0.18
7 User experience	4.27	0.08	0.01	-0.23	0.12	0.09
8 Gender	0.60	-0.04	-0.15	-0.26	0.13	0.04
9 Age	1.55	0.07	0.15	0.15	-0.11	0.19
10 Education	2.93	-0.08	-0.23	0.00	-0.07	-0.03

TABLE I (B): DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

	Mean	6	7	8	9
6 iOS vs. others	0.31	1.00			
7 User experience	4.27	0.09	1.00		
8 Gender	0.60	-0.10	-0.07	1.00	
9 Age	1.55	0.04	0.11	-0.31	1.00
10 Education	2.93	0.08	-0.13	0.01	0.05

TABLE II: REGRESSION RESULTS FOR USER HAPPINESS

	Model 1	Model 2
Constant	5.09*** (1.06)	3.03* (1.19)
iOS vs. others	0.15 (0.21)	-0.02 (0.19)
User experience	0.05 (0.10)	0.05 (0.09)
Gender	-0.01 (0.21)	-0.06 (0.19)
Age	0.11 (0.19)	-0.14 (0.18)
Education	-0.25 (0.30)	-0.05 (0.27)
Usage variety		0.14* (0.06)
Usage frequency		-0.08 (0.11)
Communication		-0.72* (0.34)
Satisfaction		0.47*** (0.10)
R <sup>2</sup>	0.02	0.29
Adjusted R <sup>2</sup>	-0.03	0.22
F	0.41	3.96***
N	98	98

\*\*\*  $P < 0.001$ , \*\*  $P < 0.01$ , \*  $P < 0.05$

User happiness was assessed by asking "when you think about mobile internet, how happy does it make you?", and "how much does mobile internet contribute to your happiness in life?" [4], [22] Usage frequency ranges from "very often" (scored 1, over five hours a day) to "never used it" (scored 6). Usage variety was measured following the same approach as the Wi-Fi Adoption and Security Survey 2012 Hong Kong [11]. Ten different mobile-internet tasks were used to capture variety, including financial transaction, online purchasing, investment, communication, email,

information search, iBook, online game, video and music, and gambling. Performing all of the ten tasks was coded as 10, while performing one task was coded as 1. *Communication* was assessed as communication-related tasks (scored 1) such as Facebook, Skype, Whatsapp, Wechat. Other tasks were code as 0. This study adapts multi-item scales to measure and *satisfaction* [23], [24]. A typical question asked was “I am completely satisfied with the mobile internet experience.”

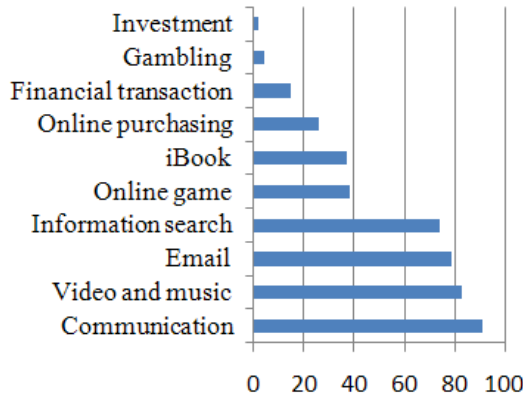


Fig. 1. Types of mobile-internet tasks and usage frequency

A number of control variables were included in the model. Respondents were asked to indicate their system used for mobile devices. iOS was coded as 1, and other systems were coded as 0. User experience captured their number of years using mobile devices. Three demographic variables were included in the model. *Gender* was assessed as male (scored 0) and female (scored 1). *Age* was assessed by asking respondents to select their age range from 1 (15-18) to 6 (56 or above). *Education* was measured by asking respondents to indicate their education level ranging from 1 (Secondary School from 1 to 3) to 5 (Master or Doctoral Degree).

The validity of user happiness and satisfaction has been tested with Cronbach's alpha. Both constructs achieved good alpha values: 0.75 for user happiness and 0.83 for satisfaction.

## VI. FINDINGS

Summary statistics including means and correlations are presented in Table I. The proposed relationships in the conceptual framework were tested using multiple regression models. Online tasks are classified into ten categories. Fig. 1 shows the ten tasks and their usage frequency. Communication is most frequently used by survey respondents. Other popular ones include video and music, email and information search.

Table II presents the regression results for the effect of usage variety, frequency, task (communication) and satisfaction on user happiness. Model 1 specifies only control variables, and model 2 includes both control variables and proposed predictors. Overall, model 2 shows a large  $R^2$  square improvement. The model is strongly significant at  $p < 0.001$  level. Usage variety, communication and satisfaction significantly influence user happiness in proposed directions. Therefore, the conceptual model is strongly supported by the findings.

## VII. CONCLUSION

In summary, this study develops a conceptual model which identifies four drivers of mobile-internet user happiness. Empirical results indicate that usage variety, task type and satisfaction are effective drivers of user happiness. The implication is that developers should try to seek variety in providing mobile service. Interacting with users via communication tools such as Facebook and Skype is not enough in terms of accumulating user happiness. Frequent contact does not pay off either if the goal is to improve happiness or excitement. Future research could extend this study by exploring overall life happiness and happiness-related online activities. The effect of user happiness on loyalty would also worth research attention.

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