

# **A Study on Adoption Factors of Korean Smartphone Users: A Focus on TAM (Technology Acceptance Model) and UTAUT (Unified Theory of Acceptance and Use of Technology)**

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**Abstract.** The purpose of this study is to evaluate TAM and UTAUT's applicability in Korean smartphone users. To accomplish this objective, this study reviews various literatures and is developed a research model based on TAM(Technology Acceptance Model) and UTAUT(Unified Theory of Acceptance and Use of Technology). To examine the research model, we collected data at Jinju area in Korea. We used a structural equation model analysis known as PLS to verify the research hypotheses. The results indicate that TAM and UTAUT are valuable tool for predicting intentions to smartphone usage.

**Keywords:** Smartphone, Korea, TAM (Technology Acceptance Model), UTAUT(Unified Theory of Acceptance and Use of Technology ), Adoption

## **1 Introduction**

Past information technology environment was PC-based computers. But mobile devices represented smartphone have led the present information technology environment. The first iPhone launched on 2007. Then Korean smartphone manufacturers like Samsung and LG followed Apple's iPhone to catch up and overcome it and Samsung has been No.1 smartphone maker as market share. Korea smartphone penetration rate has been the highest in the world. Thus smartphones and related parts are very critical export products in Korea and they have contributed to Korea economic growth and development. Smartphone and its parts manufacturing are strategically and economically important industries in Korea. Recently research studies have empirically examined the adoption factors of smartphone and followed related studies.

This study attempts to examine the relationship of smartphone user adoption factors, attitude, and intention to use through TAM and UTAUT. To accomplish them, I introduce literature review and hypotheses in Section 2 and provide the research methodology and empirical analysis in Section 3 and 4. In Section 5, I present conclusion and discussion of this study

## 2 Literature Review and Hypothesis

### 2.1 Literature Reviews

TAM was developed for explaining and predicting user acceptance of IT. TAM was based on Theory of Reasoned Action suggested by Fishbein and Ajzen(1975). But TAM was suggested for explaining user acceptance of organizational contexts and task-oriented information technology. If TAM is to examine applicability in non-organizational and non-task-oriented circumstances, it is questionable. To solve this defect of TAM, Vankatesh et al.(2003) were suggested for new research model to unify the various models of IT acceptance. They called this model as UTAUT(Unified Theory of Acceptance and Use of Technology). But many researchers have conducted to test research model as TAM. So this study decided to develop mixing up TAM and UTAUT for testing smartphone user acceptance.

### 2.2 Hypothesis

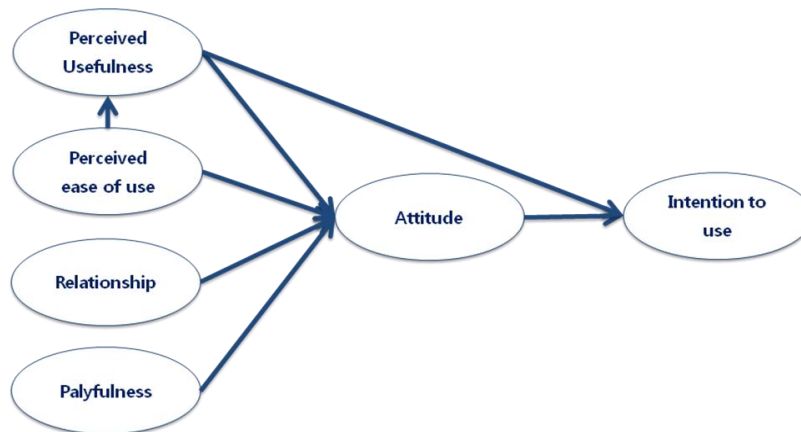


Fig. 1. The Research Model

Fig. 1 shows the research framework of this study. I will suggest research hypotheses based on previous literatures like TAM and UTAUT. I suggest the following hypotheses.

<H 1> Perceived usefulness has a positive relationship with attitude of smartphone adoption.

<H 2> Perceived ease of use has a positive relationship with attitude of smartphone adoption.

<H 3> Relationship has a positive relationship with attitude of smartphone adoption.

<H 4> Palyfulness has a positive relationship with attitude of smartphone adoption.

<H 5> Perceived ease of use has a positive relationship with perceived usefulness in smartphone use

<H 6> Attitude has a positive relationship with intention to use smartphone.

<H 7> Perceived usefulness has a positive relationship with intention to use smartphone.

### 3 Data Collection and Measurements

To test the research model, a survey was conducted smartphone users at Jinju-Si in Korea. The questionnaires were distributed to smartphone users selected as convenience sampling. Research period was between September 10 and October 12, 2013. A total of 153 responses were obtained in the final.

The demographic features of the respondents are presented in Appendix Table A1. Female smartphone users were most respondents and the majority was 20-30 in age and current college student in education.

The survey questionnaires are developed each of the constructs in the study and the items were adopted from previously suggested in many research. The source and abbreviated survey items are shown in Appendix Table A2. The items of this study were measured a 7-point likert scale (1=strongly disagree, 7=strongly agree). Appendix Table A2 is suggested a summary of each construct (definitions and supporting literature) and the items of each construct.

To test reliability and validity, we were first using cronbach's alpha and exploratory factor of the items of each constructs. Appendix Table A3 and A4 show results. Thus the reliability of research constructs was considered to be fair. Next, to ensure content validity, exploratory factor analysis was conducted. Factors were extracted that this study was suggested constructs. The results of factor analysis were shown in Appendix Table A3. In addition to we assessed internal consistency and reliability by using composite reliability and AVE (Average Variance Extracted). We can calculate them using Smart PLS 2.0. All constructs had a higher composite reliability and AVE than the benchmark of 0.5 suggested by Baggozi and Yi(1988). Appendix Table A4 was shown the results of composite reliability and AVE. Next, this study was tested discriminant validity using the square root of AVE and correlations of constructs. The result was shown in Appendix Table A5.

### 4 Results

To test the hypotheses in this study, this study accepted PLS (Partial Least Squares) The PLS method does not provide significance tests and confidence interval estimate of path coefficients. To estimate the significance of path coefficients, a bootstrapping technique was used. Results of the analysis were presented in Table 1. The results provided support for the research model.

**Table 1.** Results of Path Analysis

Path	Path Coefficient	Standard Error	T-value	Result
useful -> att	0.315	0.059	5.273***	<H 1> supported
ease -> att	0.219	0.060	3.622***	<H 2> supported
relate->att	0.129	0.058	2.198***	<H 3> supported
play->att	0.293	0.055	5.297***	<H 4> supported
ease->useful	0.349	0.062	5.633***	<H 5> supported
att->int	0.436	0.064	6.777***	<H 6> supported
useful->int	0.345	0.061	5.600***	<H 7> supported

Note: \*\*\* denote significance at  $p < 0.001$

## 5 Conclusion

This study has extended our understanding of TAM and UTAU for smartphone users. Results from the empirical analysis of the research hypotheses are as follows. This study suggested that ease of use, usefulness, playfulness, and relationship have a positive effect on attitude of smartphone users adoption. Hypotheses 1, 2, 3, and 4 are supported. Attitude has a positive relationship with intent to use the smartphone. Hypothesis 6 is supported. Lastly Hypotheses 5 and 6 are also supported. These mean that ease of use has a positive effect on usefulness and usefulness also has a positive effect on intention to use.

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