

# Consumers' intention to use mobile health applications from the consumer acceptance technology (CAT) perspectives

Khairul Nazlin Kamaruzaman<sup>1\*</sup>, Amily Fikry<sup>2\*</sup>, Zuhail Hussein<sup>3</sup>

<sup>1,2</sup>Faculty of Business and Management, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia

<sup>3</sup>Faculty of Business and Management, Universiti Teknologi MARA, Kota Bharu, Kelantan, Malaysia

\*Corresponding author E-mail: [khairulnazlin88@gmail.com](mailto:khairulnazlin88@gmail.com); [amilyfikry@salam.edu.my](mailto:amilyfikry@salam.edu.my)

## Abstract

In this millennium era, people are easily infected with the disease. Noting that the advancement of technology and the high user of the smartphone, people may use the applications provided in smartphone specifically for healthcare management as a step to avoid infected disease. This study attempts to investigate the relationship between perceived cognition, perceived affect and behavioral intention to use mobile health applications from the consumer acceptance technology (CAT) perspectives. This is a non-experimental study, whereby data was collected from non-probability sampling using purposive sampling. The individual recruited to be the sample are those who are owned at least a smartphone ( $n=30$ ). The result indicates that the overall relationships between antecedences tested in this study perceived cognition (perceived ease of use, perceived usefulness, and relative advantage), perceived affect (pleasure, arousal, and dominance) are significant towards the behavioral intention to use mobile health applications.

**Keywords:** Behavioral intention to use, mobile health applications, perceived affect, perceived cognition

## 1. Introduction

The rapid extending of the technology acceptance model (TAM) [1] has been discussed widely such as by Alia, Patrick, Deniz and Rob [2] in their study of cross-culture. The technology acceptance model which was originated by Davis [1] has been designed to test the broad field of management information systems (MIS). Thus, in his study, some limitations need to be argued. These limitations made the researcher run this study accordingly. This study has encouraged the researcher to investigate the technology acceptance in the consumer field as well.

However, some scholars claimed that the TAM model could be modified in the perspective of consumers. For instance, a study was done by Gao and Bai [3] that extends the TAM model from the consumer perspective.

It is undeniable that some scholars also tested TAM in the healthcare perspective that can be parallel to the study [4-7]. However, there are established a model that specifically focused on consumer acceptance technology introduced by Kulviwat et al. [8]. Commonly in the TAM model, prior researchers study on cognition perspective, but rarely researchers examine on affect perspective. This gap is the reason why researcher chosen CAT model [8] to adapt in the healthcare perspective. Whereby, the CAT model highlighted the perceived affect (pleasure, arousal and dominance) of consumer context.

## 2. Literature review

Mobile health applications can be defined as "mobile computing, medical sensor and communications technologies" used to encourage the healthy lifestyle, self-management, and minimize

risk infected by the disease [9]. In this study, the researcher focused on the smartphone applications due to increasing number of smartphone ownership in Malaysia [10]. 75.9% are the smartphone users in Malaysia and 20-34 years old are the highest of ownership in year the 2017 [10].

### 2.1. Consumer behavioral intention to use

In trend several theories and models that are commonly used to study the health behavior for instance are health belief model [11], social cognitive theory [12], the theory of planned behavior [13], diffusion of innovation [14] and others. Those theories focused almost the same objectives which are to promote and influence to adopt the healthy lifestyle [15].

### 2.2. Antecedences of behavioral intention to use mobile health applications

In most developing countries, studies that have been carried out are the cognitive factors that may influence behavioral intention to use mobile health applications. However, the perceived affect factors (example: pleasure, arousal and dominance) least in the study [16]. In this study, the researcher adapted the CAT model introduced by Kulviwat et al. [8]. The primary variables enhanced in CAT model are perceived cognition, perceived affect and behavioral intention to use. These variables are used in this study but in different types of medium. Whereby, this study focused on behavioral intention to use mobile health applications.

### 2.3. Relationships among variables

#### 2.3.1. The relationship between perceived cognition and behavioral intention to use mobile health applications

Perceived cognitions are well discussed in many extensions of the technology acceptance model (TAM) [1]. Originally, cognition can be defined as a status or process of human thought that create the information [17] of own individual judgements [18]. Prior studies, show there are a significant relationship between perceived cognition and behavioral intention to use mobile health applications in some cases, especially those involved with the profession such as doctors, nurses, and other clinical members [19–21].

#### 2.3.2. The relationship between perceived affect and behavioral intention to use mobile health applications

Meanwhile, the perceived affect opposing the definition of perceived cognition. Perceived affect more toward the internal feeling that influence individual toward their behavior [22]. The main reference model for this study is consumer acceptance technology (CAT) by Kulviwat et al. [8]. Therefore, researcher chose to remain the dimension due to least of study on healthcare field. The perceived affect dimension tested in this study are pleasure, arousal and dominance. There were more studies discussed on the cognitive part [23] but the least empirical research on the feeling or consumer affect context.

### 2.4. Conceptual framework

In this study, the independent variables are perceived cognition (with elements: perceived ease of use, perceived usefulness and relative advantage) and perceived affect (with elements: pleasure, arousal and dominance). Meanwhile, the dependent variable in this study is the behavioral intention to use mobile health applications. Those elements were used to indicate the relationship between perceived cognition, perceived affect and behavioral intention to use mobile health applications. In order to enhance the elements, researcher adapt the consumers’ acceptance technology model [8]. Fig. 1 describes the conceptual framework tested in this study.

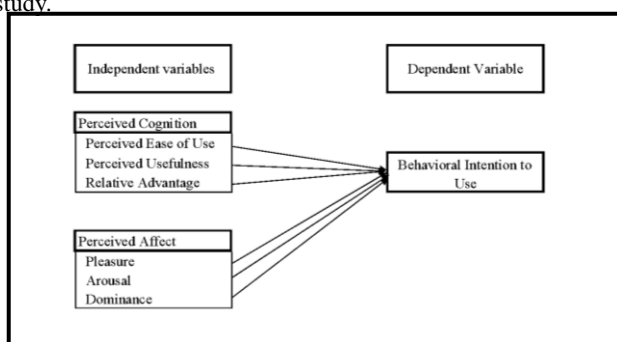


Fig. 1: A conceptual framework depicting the relationship between perceived cognition, perceived affect and behavioral intention to use mobile health applications.

### 3. Methodology

This study was conducted to investigate the relationship between perceived cognition, perceived affect and behavioral intention to use mobile health applications in Shah Alam, Selangor. The population of this study were the consumers who are the smartphone users. The sampling technique used in selecting the respondents was non-probability sampling which is purposive sampling.

Data were collected using a set of questionnaires that consists of four parts. Those parts are demographic, perceived cognition, perceived affect, and behavioral intention which close-ended

questions using a 5-point Likert scale (with 1= strongly disagree to 5 = strongly agree).

The individual that eligible to answer the questionnaire must at least have a smartphone of their own. Some screening questions have been done in the first part of the study to ensure the individual, or in this case, the sample chosen is the right person to answer the questionnaire.

### 4. Results and analysis

#### 4.1. Respondents profile

This study only recruited 30 respondents as it is a preliminary study that tests the understanding of questions among the respondents. Majority of the respondents are female (70%). Most of the respondents are university or college holder (93.3%) while 6.7% only completed secondary level. In this study, most respondent are at the age of 20 -29 years old (60%) and followed by 30 – 39 years old respondents. In Table 1, the sample of the respondent’s profile is summarized.

Table 1: Respondent’s profile

Demographic Variables	Categories	Frequencies	Percentage (%)
Gender	Male	9	30
	Female	21	70
Age	20 - 29	18	60
	30 - 39	12	40
Academic Qualification	Non-schooling	-	-
	Secondary	2	6.7
	Tertiary	28	93.3

#### 4.2. Correlation analysis

##### 4.2.1. The relationship between perceived cognition and behavioral intention to use mobile health applications

The purpose of correlation analysis is to describe the strength and direction of the linear relations between variables [24]. Table 2 indicates the strength relationship perceived cognition (dimensions; perceived ease of use, perceived usefulness and relative advantages) and behavioral intention to use mobile health applications according to the Pearson correlation value ( $r$ ). The scale of the Pearson correlation coefficient shows the strength of the correlation between the variables. One of the solid guidelines to determine the correlation are provided by Cohen [25]. Details represented in Table 2.

Table 2: Pearson correlation coefficient value of strength

Coefficient Value	Strength of Association
$0.1 <  r  < 0.3$	Small correlation
$0.3 <  r  < 0.5$	Medium or moderate correlation
$ r  > .5$	Large or strong correlation

In this study, the lowest  $r$ -value shows by perceived usefulness, small positive correlation. Whereas, the highest  $r$ -value represented by the arousal dimension with  $r$ -value 0.71 demonstrated the strong correlation. Even though, some of the dimension  $r$ -values show a small correlation, but the magnitude is in the positive value. Overall it indicated the appearance of positive correlations among the perceived cognition, perceived affect and behavioral intention to use mobile health applications. The matric of the relationship value represented in Table 3 for the relationship between the perceived cognition and behavior intention to use mobile health applications. While Table 4, shows the relationship between the perceived affect and behavior intention to use mobile health applications.

**Table 3:** Mean scores, standard deviations and Pearson correlation matrix for study perceived cognition and behavioral intention

No.	Variables	Mean (M)	Std. Dev. (SD)	PEOU	PU	RA	BI
1.	Perceived Ease of Use	4.11	0.48	-			
2.	Perceived Usefulness	4.22	0.37	0.60**	-		
3.	Relative Advantages	4.24	0.33	0.77**	0.70**	-	
4.	Behavioral intention	4.23	0.38	0.28	0.19	0.35	-

Note : \*\* Correlation is significant at the 0.01 level (2-tailed)

PEOU = Perceived ease of use, PU = perceived usefulness, RA= relative advantage, and BI = behavioral intention

The overall correlation value of the variables is below 0.50, which indicates a weak association between the variables. The mean score perceived ease of use inclined towards "agree" (M = 4.11, SD = 0.48), perceived usefulness *r*-value 0.19 (M=4.22, SD = 0.37) shows small correlation, and relative advantage *r*-value 0.35 (M=4.24, SD=0.33) with medium or moderate correlation.

#### 4.3.2. The relationship between perceived affect and behavioral intention to use mobile health applications

Table 4 describes the mean score, standard deviations and Pearson correlation matrix for perceived affect and behavioral intention to use mobile health applications. In Table 3, the element of pleasure strong uphill positive relationship with *r*-value 0.71 which more than 0.50 with (M=4.21, SD=0.41). Meanwhile, arousal and dominance element shows a weak relationship slightly positive uphill.

**Table 4:** Mean scores, standard deviations and Pearson correlation matrix for study perceived affect and behavioral intention

No.	Variables	Mean (M)	Std. Dev. (SD)	PL	AR	DO	BI
1.	Pleasure	4.21	0.41	-			
2.	Arousal	4.15	0.47	0.38*	-		
3.	Dominance	3.91	0.79	0.31	0.57**	-	
4.	Behavioral intention	4.23	0.38	0.71**	0.17	0.12	-

Note : \*\*Correlation is significant at the 0.01 level (2-tailed)

PL =Pleasure, AR = arousal, DO = dominance, and BI = behavioral intention

The purpose of this study is to investigate the relationship between perceived cognition (perceived ease of use, perceived usefulness and relative advantage), perceived affect (pleasure, arousal and dominance) towards behavioral intention to use mobile health applications among consumers of the smartphone. In general, the findings delivered that support the perceived cognition and perceived affect the character in the proposed conceptual framework. Specifically, the perceived affect was found a strong relationship towards behavioral intention to use mobile health applications. In other words, the more you feel positive emotion such as happy, pleased, hopeful, excited and others the more your intention to use the high technology like the mobile health applications. These findings were supported by the study Kulviwat et al. [16] that mindset plays a vital role for consumers to react towards the technology innovation.

Furthermore, the subjects of this study are amongst the younger consumers. Whereby, their technology savvy is part of their characteristics, and the majority of them are at the tertiary level of educations. It is not the unusual situation for the participant because most of the matter they communicate via the technology devices like smartphone [26].

## 5. Conclusion

In conclusion, there is a positive and significant relationship between perceived cognition, perceived affect and behavioral intention to use mobile health applications among smartphone users in Shah Alam, Selangor. The findings indicate that all the elements inclined to agree with the highest *r*-value 0.71 between pleasure and behavioral intention to use mobile health applications. The other elements are weak but slightly inclined to agree.

Indicator from this study, it is suggested that the future research expand the scope of research. Since this study held in Shah Alam, Selangor the findings derived from one of the largest city but not reflect towards the population of the country. To get a better view of the behavior intention to use mobile health applications of the country, perhaps study can be explored widely using quantitative and qualitative methods.

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