


# Explicating Consumer Adoption of Wearable Technologies: A Case of Smartwatches From the ASEAN Perspective

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## ABSTRACT

This research aims to determine the key antecedent factors in consumers' adoption of and their intention to recommend smartwatch wearable technology. The proposed research model combines the current technology acceptance and innovation diffusion theories with perceived aesthetic and perceived privacy risk to explain individuals' smartwatch adoption and subsequent recommendation to other people. Based on a sample of 299 completed individual online surveys, the research employed partial least squares (a variance-based analysis method) for the model and hypotheses testing. The results showed some similarities as well as differences from the previous literature. The study found that performance expectancy, habit, and perceived aesthetic were the main predictors of smartwatch adoption. Compatibility was the antecedent factor of performance expectancy, and innovativeness directly influenced user adoption and effort expectancy. Consequently, user smartwatch adoption usually led to recommendation.

## KEYWORDS

Diffusion of Innovation, Intention to Recommend, Smartwatch, UTAUT2, Wearable Technology

## 1. INTRODUCTION

Scholars define the term “wearable technology” in different ways. Nascimento et al. (2018) defined it as electrical devices that can be worn on people's bodies. Buenaflor and Kim (2013) defined wearable technology as an electronic device that functions as a computer and can be worn, carried, or attached to the body. Typical wearable devices are eyewear, clothes, and wristwear; of the latter, a smartwatch is a portable intelligent accessory that significantly improves people's way of life and well-being (Kim & Shin, 2015). A smartwatch is an electronic device that has a shape similar to a watch, is worn on the wrist, is able to tell time, and is wirelessly connected to the internet on its own or through a smartphone (Rawassizadeh et al., 2015). This new technological device was launched slightly less than 5 years ago, but it has garnered a megatrend of acceptance and adoption (Shin, 2019). Worldwide smartwatch sales have exponentially increased, reportedly reaching 48 million units last year, of which 22.5 million units were Apple alone (Statista.com). The most well-known global players in the smartwatch market are Apple, Samsung, Huawei, Xiaomi, and Pebble. According to an IDC report (2019), the smartwatch's market share grew 54% in 2018 and accounted for almost

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30% of all wearable devices shipped in that year. Apple is the leader in the smartwatch category, controlling 28% of the total worldwide market share.

Leading manufacturers and device designers have continuously upgraded smartwatches to incorporate multiple functions in order to improve their performance. Some smartwatch brands recently added extra features for health monitoring and fitness functions; examples of the latter are step counters, exercise trackers, heart and calorie monitors, sleep monitors, goal setting software, exercise alerts, as well as data reporting by the day, week, or month via smartphone connectivity (Gao, 2015). As each smartwatch brand has continued to deliver new functions for users, the recent industry trend emphasizes developing and designing smartwatches to be more stand-alone and powerful (Visuri et al., 2017). The Association of Southeast Asian Nations (ASEAN) market has responded positively to the advancement of new smartwatches; Thailand, Vietnam, and Malaysia have the highest smartwatch adoption rates. According to a September, 2018 Rakuten Insight survey on wearables in Asia, the top smartwatch functions that are used most frequently are workout tracking, heart rate monitoring, message/schedule notifications, and playing music. Asian males prefer heart rate monitoring, whereas females desire the workout tracking mode.

Several previous studies have addressed how to determine consumer attitudes and behavior intention (Kim & Shin, 2015; Wu et al., 2016; Hsiao & Chen, 2018), and some studies have attempted to predict the antecedent factors of technology acceptance (Chu & Park, 2016; Choi & Kim, 2016; Dutot et al., 2019). Although there have been few empirical researches to extend the findings beyond smartwatch adoption intention, recent work on smartwatches has focused on technology adoption, purchase intention, and continuance intention (Chuah et al., 2016; Chu & Park, 2016; Dehgani et al., 2018; Nascimento et al., 2018). However, most manufacturers are interested in whether smartwatch users react positively and are willing to recommend their devices. Therefore, the significant of this study is twofold, first it extends the original empirical research model from adoption to intention to recommend, thereby validating post-acceptance behavior. Secondly, due to the unique and varying characteristics of wearable devices, the study conceptualized and added additional constructs to better measure specific devices like the smartwatch. The construct of “perceived aesthetic,” studied by Choi and Kim (2016); Jeong et al. (2016a); Hsiao & Chen, 2018, was found to have a significant influence on purchase intention and adoption. The “perceived privacy risk construct,” which deals with the possibility of data leakage (such as personal health records) when it is transferred and recorded in another application, was studied by Nasir and Yurder (2015) and was added to the model.

## **2. LITERATURE REVIEW**

### **2.1 Growth Potential of the Smartwatch Market**

The ASEAN population represents the third-largest smartwatch market, following China and India. Southeast Asia alone has more than 400 million internet users, and the trend continues to rise. Thailand is one of the six largest economies in the region, with a total population close to 70 million, of whom 57 million are internet users who have 92.33 million mobile subscriptions (aseanup.com, 2019). The country continues to invest in technological infrastructure to support its recent surge of urbanization, and the expansion of digitalization has opened a gateway for new wireless devices to assist modern lifestyles. The smartwatch supports the growing demands of consumers’ health awareness in the ASEAN countries, especially Thailand. According to research data provided by Statista.com (2019), in Thailand the total sales in the wearable segment are forecast to reach US\$36 million by year-end 2019. Even though the Thai smartwatch market is relatively small within the global market, average sales during 2019-2023 are expected to grow at a steady pace of 4.8% per year. This cumulative growth will consequently generate a future annual sales volume of US\$44 million by year-end 2023.

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