

## PROPOSED FRAMEWORK FOR BRAND LOYALTY IN WEARABLE DEVICES IN MALAYSIA

Yung-Kang Ong ; Yen-Nee Goh 

*Graduate School of Business, Universiti Sains Malaysia, Malaysia*

*E-mails: [ong\\_yk@yahoo.com](mailto:ong_yk@yahoo.com), [yngoh@usm.my](mailto:yngoh@usm.my)*

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### Abstract

Wearable devices are electronic devices designed to be worn on the human body and equipped with sensors, connectivity features, and other technologies. The rapid growth of technology enhances the functions of wearable devices, and it could be a new trend or fashion. Therefore, the purpose of this study is to develop a conceptual framework to investigate factors that influence consumer brand loyalty in wearable devices in Malaysia. This study explores the relationship between consumers and brand loyalty through the lens of the theory of Stimulus Organism Response (SOR), the development of a brand loyalty conceptual framework based on the interaction between internal cognitive and affective processes and the organism. A quantitative analysis method is proposed as a data collection process by questionnaire survey. This study makes significant theoretical contributions by integrating customer satisfaction and brand trust as mediating roles in this conceptual framework. The proposed conceptual framework also highlights the importance of applying the SOR theory to analyze and enhance brand loyalty in wearable devices, offering valuable insights such as future research direction including user experiences, personalized features, and marketing strategies in shaping brand loyalty for the wearable devices industry.

### Conceptual Paper

**Keywords:** Wearable devices; Stimulus Organism Response; Brand loyalty

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## **Introduction**

Wearable technologies have been increasingly common and quickly growing in chronic illness treatment, uncovering valuable knowledge about health and the potential to develop how consumers treat healthcare and chronic diseases (Kamei et al., 2020; Greiwe & Nyenhuis, 2020; Hosseini et al., 2022). Wearable devices include devices designed specifically for fitness, such as those used to track information in real-time, and motion sensors that record daily activity and sync it with mobile devices or computers. According to Vooris et al (2019), wearable technology is an electronic device or computer integrated into clothes or accessories worn on the body. Wearable devices can be classified into three categories: notifies to provide information to consumers, glasses that augment virtual reality using eyeglass wear, and trackers that use sensory information to provide real-time data to consumers (Liao et al., 2021).

With the continuing advancements in technology, accessories, and clothing incorporating computer and advanced electronic technologies such as fitness trackers, fitness bands, smart glasses, smartwatches, and smart clothing are used to track one's steps, heart rate, and various other biomarkers to monitor health and wellness conditions (K, 2019). This study will focus on fitness-specific wearable devices with health monitors and fitness trackers. Fitness wearable devices, in particular, must be integrated with sensors and activity trackers that measure and analyze the wearer's physical activity and body functions. These trackers feature a three-axis accelerometer as its inertial positioning sensor to detect movement (Pinto & Yagnik., 2016).

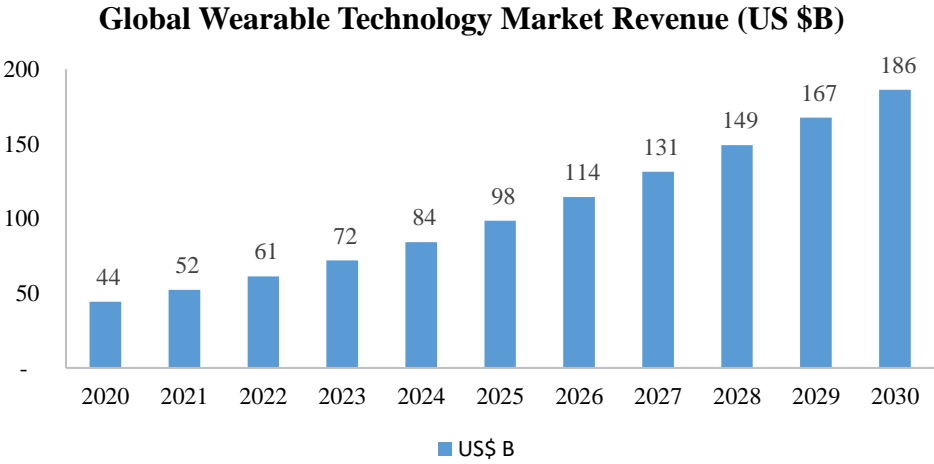
The future of wearable devices such as smartwatches, sports bands, and fitness trackers will be a popular consumer device in Malaysia. Market Research Company Gartner projected that the global end-user spending on

wearable devices was around USD 52 billion in 2020, an increase of 27% compared to 2019, when spending was USD 41 billion. The growth rate of the wearable devices market is high in the Asia Pacific in the global market. Wearable devices are conveniently displayed on the user's wrist and provide access to physical activity tracking such as heart rate, step count, workout intensity, emails, and texting. Hence, wearable technology may reduce consumers' attention to other devices, such as smartphones (Chuah et al., 2016). The growing demand for wearable devices has created a thriving business and has become the next significant technological innovation. Wearable technologies are becoming increasingly popular, especially among individuals with health problems. As a result, the number of wearable device users in Malaysia is estimated to increase from 0.98 million in 2017 to 1.23 million by 2024, with revenue rising from 24.1 million in 2017 to 42.7 million by 2024 (Vailshery, 2021).

Although the demand for wearable devices is growing (Zhang et al., 2019; Wan & Zhang, 2020), only 25% of wearable devices and fitness APPs in China match consumers' requirements, and the remaining 75% do not match consumers' expectations (Shen., 2019). The wearable device's short product life cycle will reflect the company's sales performance without repeated sales from loyal consumers. According to Vernon (2009), the product life cycle is the process a product goes through from when it is first introduced into the market until it declines or rationalizes from the market. There are four phases of the product life cycle: introduction, growth, maturity, and decline. Hence, a short product life cycle requires a high level of marketing and competence to stay competitive. Declining loyalty among consumers may have negative impacts on the company, such as decreased market share, increased

advertisement costs, and the company suffering losses (Ramachandran & Balasubramanian, 2020).

This research attempts to fill the gap from previous research that only focused on purchase intention without investigating brand loyalty (Ometov et al., 2021; Wu et al., 2020; Liu & Guo, 2016; Soleimani et al., 2023). By examining these relationships, wearable device marketers can improve their understanding of factors that lead to brand loyalty towards wearable devices. It will also provide guidelines for wearable device manufacturers to improve their relationship with consumers. Therefore, an integrated and well-developed relationship model is present for wearable device marketers to develop and maintain a long-term relationship with consumers and brand loyalty among consumers.



**Figure 1.** Global Wearable Technology Market Revenue from Year 2020 to 2030 (Source: Grand View Research, 2024)

Figure 1 shows the global wearable technology market revenue from 2020 to 2030. The total revenue steadily increased yearly from USD 44 billion in 2020 to USD 72 billion in 2023. Forecasts show the revenue will keep booming to USD 186 billion in 2030. Wearable device manufacturers were thus faced with the challenge of offering consumers a favorable impression of the company to maintain their customer base and eventually develop brand loyalty for long-term success in the marketplace.

Considering the current issues, it is essential to investigate the factors that affect consumers' brand loyalty. Firstly, the Literature Review, Underlying Theory, and Proposed Conceptual Framework define the influencing factors in this study. Secondly, Methodology explains research processes and results. Thirdly, Theoretical and Practical Implications provide wearable device manufacturers with an extensive understanding of consumer preferences. Finally, the Limitations and Future Research conclude for future study.

## **Literature Review**

### *Wearable Devices*

Wearable devices is new trend in viewing its recent revenue and user from US\$ 24.1 million in 2017 to US\$42.7 million in 2024 (Vailshery, 2021). Table 1 shows factors influence brand loyalty, brand trust is the most popular factor utilized by researcher (N=16), followed by brand identification (N=10), customer satisfaction (N=7) and brand experience (N=6).

**Table 1.** Summary of prior studies of determining factors that influencing consumer’s brand loyalty toward wearable devices

Previous Study	Brand Experience	Brand Identification	Customer Satisfaction	Brand Trust
Altukar (2020)				✓
Ebrahim (2019)				✓
Fernandes & Moreira (2019)			✓	
He et al. (2012)		✓		
Huang (2017)	✓			✓
Hwang et al. (2021)			✓	
Jamshidi & Rousta (2020)	✓			✓
Kamboj et al. (2018)				✓
Kang et al. (2016)	✓			
Kwon et al. (2020)				✓
Laroche et al. (2012)				✓
Laroche et al. (2013)				✓
Lee & Lee (2018)				✓
Lee at al. (2015)			✓	✓
Liu et al. (2019)		✓		
Mazodier et al. (2011)				✓
Nam et al. (2011)		✓	✓	
Naqvi et al. (2020)			✓	
Popp & Waratshek (2017b)		✓		
Pratiwi (2021)	✓			
Rather (2018)		✓		✓
Rather et al. (2018)		✓		
Sahin et al. (2011)	✓		✓	✓
So et al. (2013)		✓		✓
So et al. (2014)				✓
Song et al. (2019)				✓
Stokburger et al. (2012)		✓		
Uzir et al. (2021)	✓		✓	
Yeh et al. (2016)		✓		
Total	6	9	7	16

### *Brand loyalty*

Brand loyalty is a critical concept in marketing research and the extent to which consumers repeatedly purchase products or services from a specific brand over time. According to Kaur et al. (2020), brand loyalty is defined as the determination to regularly purchase a favored product or service consistently in the future, regardless of any situational or marketing considerations that would encourage switching behavior. In the meantime, brand loyalty is the conditioned reaction of a consumer to a product. Consumers may repeat the purchase of a brand because of the beneficial partnership with that firm if they have a positive brand perception (Shanahan et al., 2019). According to Lee & Lee (2018), a loyal consumer is highly engaged in using the same brand over time due to consumer engagement attributes related to brand loyalty and purchase behavior through consumers' psychological connection with the specific brand based on their characteristics. Similarly, brand loyalty can be judged based on the degree of a consumer's emotional engagement with a brand consistently and repetitive purchases of the same brand, and consumers will also recommend the brand to others (Lin et al., 2019; Popp & Woratscheck., 2017a). Additionally, being loyal to a brand includes the intention to purchase products and purchase new products offered by the company (Noh & Johnson., 2019).

Brand loyalty is an important criterion for organizations to maintain consistent revenue, as loyal customers have a significant effect on the constant current and future flow of sales revenues (Leckie et al., 2016). Meantime, brand loyalty reflects the long-term relationship between consumers and brands (Zhang et al., 2016). Brand loyalty is more than repeated purchases, and a company may provide a customer loyalty program to retain customers

and enjoy the rewards and benefits of being loyal customers simultaneously. In addition, early interpretations of brand loyalty concentrate on the importance of behavioral perspective, repurchasing probability, and the purchasing pattern (Ebrahim, 2019). In this study, we apply the stimulus organism response theory to investigate factors such as brand experience, brand identification, customer satisfaction, and brand trust that may influence consumer brand loyalty in wearable devices. Numerous studies have treated brand loyalty as the dependent variable in various industries (Castro & Fernandes., 2019; Liu et al., 2019; Islam & Rahman., 2017; Bashir et al., 2023). The research focused on consumer brand loyalty in wearable devices is limited. Hence, this study will examine brand loyalty as the dependent variable for wearable devices.

### *Brand Experience*

Brand experience describes the experience as the consumers' insights shaped while interacting with the whole brand. The brand experience is recognized as a stimulus with variable power and intensity that consists of sensory, cognitive, emotional, and behavioral components (Jamshidi & Rousta, 2020). Brand experience seizes the actual responses from consumers, specifically when shopping for products, exploring production information, and assessing the product after utilization (Mostafa & Kasamani, 2020). Brand experiences are a multifaceted construct that should be reviewed holistically, including hedonic and utilitarian aspects (Kang & Oh, 2021). Hedonic refers to the product's color, appearance, and softness. In the meantime, utilitarianism involves characteristics such as battery life, software, and sound systems.



Prior studies have investigated whether hedonic value triggers brand experience more than utilitarian value because of the intimate relationship between consumers and their mobiles when they access their mobiles frequently daily.

Brand experience is a consumer's belief that their experience is consistent across marketing channels. Previous brand experience research has focused on consumers' real sensations, feelings, cognitions, and behavioral responses to the brand. The brand experience manifests in subjective internal reactions such as perceptions, emotions, and cognition. Consumer exposure to brand-related stimuli that include brand recognition, packaging, and design communication will generate behavioral responses (Yu et al., 2020). Brand loyalty tends to be greater among consumers who encounter positive brand experiences, and the results revealed a significant association between consumer experience, brand image, and brand loyalty (Jamshidi & Rousta, 2020). Examining the structural associations among the consequences of brand experience will deliver an improved understanding of investments in producing the constructive brand experience that causes the preferential treatment of consumers toward a brand (Jamshidi & Rousta, 2020).

Brand experience occurs when a customer meets with the brand and will contribute effectively to determining customer-brand interaction and building a solid and long-lasting customer-brand relationship. Brand experience is considered a crucial concept in brand and marketing research. It is an essential component of consumers' decision-making and is associated with the object or preferred brand (Singh et al., 2020). Brand experience encompasses the combination of consumers' buying choices, retail interactions, and utilization of the favored product or service associated with a brand. Brand

experience plays a significant role in shaping customer-brand interaction and developing a solid and long-lasting relationship.

### *Brand Identification*

Brand identification is one of the essential theoretical foundations for marketing research (Kaur et al., 2020; Noh & Johnson., 2019; Lin et al., 2019). According to Kaur et al. (2020), brand identification is predicated on the belief that consumers are encouraged to enhance their self-identity by interacting with various social groups, including online brand communities. Brand identification can be distinct when a consumer is recognized with a group; he or she will put more effort into accomplishing the group's objectives because he or she is considered part of the group (Lin et al., 2019). Popp & Woratschek (2017a) suggested that brand identification is developed when a consumer's psychological state of feeling, perceiving, and self-belongingness to an organization.

According to prior studies, there is a strong connection between brand identification and consumers' brand loyalty (Lin et al., 2019; Rather et al., 2018; Rather, 2018). According to Yeh et al. (2016), two mechanisms that motivate consumer-brand identification are the need for consistency and the need for self-esteem. The need for consistency is a situation where consumers may search for a brand with a salient identity that matches their actual selves; meanwhile, the need for self-esteem refers to consumers forming their ideal identity by purchasing a preferred brand (He et al., 2012).

### *Customer satisfaction*

Customer satisfaction is a dominant research field in service marketing and is crucial to determining customer loyalty. A customer's overall assessment of a company's product or service is known as satisfaction (Fernandes & Moreira, 2019). According to Popp & Woraschek (2017a), the dominant model for conceptualizing and measuring customer satisfaction is the expectancy disconfirmation paradigm, where customer satisfaction occurs when the performance of a product or service provided meets or exceeds the customer's expectations without taking in price as part of the satisfaction judgment. Subsequently, Popp & Worachek (2017a) also emphasize that a cumulative perspective from customer satisfaction is subjected to repeat purchases instead of a single transaction.

Based on the social exchange theory, customer satisfaction reveals their overall evaluation of a company's or brand's performance (Rather & Hollebeek., 2019). Customer satisfaction is anticipated to result when customer expectations are exceeded. Besides that, Popp & Woratschek (2017b) also proposed that customer satisfaction, as a mediator between brand identification and brand loyalty, these findings help to overcome the insufficient consideration of both variables and extend previous findings on their relationship.

Customer satisfaction has been recognized as one of the most significant constructs and one of the main goals in marketing research because it is a predictor of purchase behavior (Lee et al., 2015). Previous research also perceived customer satisfaction has a significant impact relative to brand loyalty (Rather & Hollebeek., 2019; He et al., 2012; Rather, 2018). In addition, customer satisfaction also mediates the relationship between brand experi-

ence and brand loyalty (Uzir et al., 2021; Jamshidi & Rousta, 2020). Satisfaction is a good predictor of intentions to repurchase a specific brand in the future and provide positive recommendations and referrals (Rather, 2018). If satisfaction with the service or product rises, customer trust and loyalty towards the brand increase. Prior research findings help to overcome the insufficient consideration of both variables and extend previous findings on their relationship.

### *Brand trust*

Brand trust is defined as the willingness of the customer to rely on a brand's performance. Hence, it is incumbent upon the company's goodwill to prioritize the welfare of its consumers, thereby bolstering essential aspects of trust such as safety and reliability (Ebrahim, 2019). A positive relationship between consumers and the brands and services of a company over time can create brand trust. The positive interaction of consumers with preferred brands allows them to feel more assured that a particular brand can fulfill or exceed their expectations (Kamboj et al., 2018). Brand trust is considered a key element in building relationships in marketing strategy. In addition, brand trust among consumers can lead to better decisions when more perceived risks are associated with products purchased, eventually forming brand loyalty (Rather, 2018). Considering the risks associated with the consumers' health data collection to the company server, customer trust is a critical factor in the success of a wearable device brand in continuous new development. Therefore, brand trust is the perception that a company can be trusted or relied on to fulfill promises, thus demonstrating a company's capability, worthiness, and integrity (Al-Dmour et al., 2019).

Moreover, brand trust can be defined as a condition when consumers feel secure, and believe that these brands provide the consumers' best interest (Veloutsou, 2015). Similarly, brand trust can be built among consumers when a company commits to providing quality products to consumers and consistently fulfills that pledge (Mabkhot et al., 2017). The results of the prior study confirm that brand trust plays an important role in brand loyalty as it relates to the consumers' behavioral response such as intention to continue using the specific brand in the future and recommend it to others.

## **Underlying Theory**

### *Stimulus Organism Response (SOR)*

In 1928, Woodworth introduced the stimulus organism response (SOR) theory to explain the relationships between stimulus triggers and various impacts or responses contingent on the organism's state, as well as the organism's role in mediating the relationships between the stimulus and the response (Wu & Li., 2018). The SOR framework consists of three elements, stimulus, organism, and response. SOR theory explains that various environmental aspects can react as a stimulus (S) that influences an individual's internal state, which is represented by the organism (O) and eventually derives the individual's behavioral response (R). According to the (SOR) framework, stimulus (S) are environmental factors that influence an individual's affective and cognitive reactions (Rajput & Gahfoor, 2020; Yu et al., 2021), whereas organism (O) are internal processes and structures mediating between stimuli external to an individual and the final actions, reactions or responses emitted (Mostafa & Kasamani, 2020; Pilirimiene et al., 2020). Finally, the response

(R) represents individuals’ ultimate choices and responses based (Yu et al., 2021).

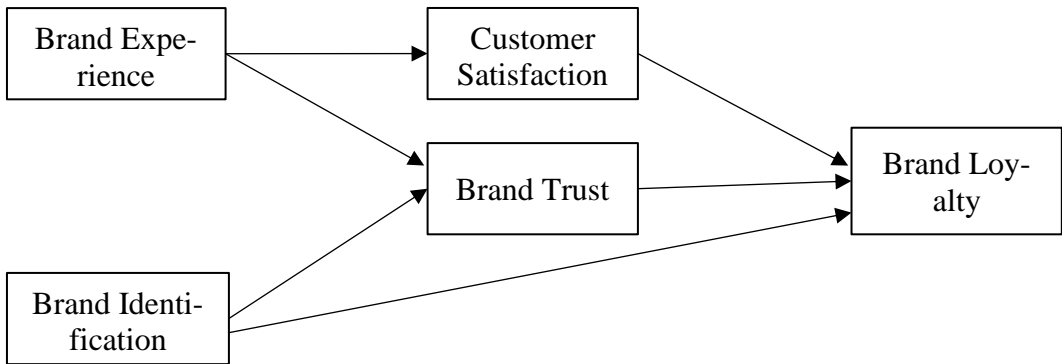
Several studies have acknowledged the importance of building loyalty toward the brand in various industries, such as the mobile phone industry (Yu et al., 2021; Wang et al., 2020; Mostafa & Kasamani., 2020), the food and beverage industry (Rajput & Gahfoor., 2020; Piligrimiene et al., 2020), and the online brand community (Palmet & Ghasemi., 2019; Kamboj et al., 2018; Islam & Rahman., 2017). According to the SOR model, an organism is determined by a consumer's internal processes and triggered by stimuli, and these processes ultimately result in an action or behavior. It highlights how crucial it is to comprehend how internal cognitive and affective act as organisms processes interact with external stimuli to shape consumer behavior. Based on the above discussions, in this study, brand experience serves as a stimulus, while customer satisfaction, and brand trust act as organism between the stimulus and brand loyalty as a response. Furthermore, previous studies have shown that brand identification acts as a stimulus in relationship marketing and eventually influences consumers’ brand loyalty (Rather et al., 2018; Popp & Woratshek, 2017b). Hence, brand identification is added as a stimulus in this study to investigate the statement and bridge the gap. Figure 1 displays the SOR model examined in this study.



**Figure 1.** Stimulus Organism Response (SOR) model examine in this study

## **Proposed Conceptual Framework**

The proposed conceptual framework is based on the gaps identified in the literature. The proposed conceptual framework is shown in Figure 2. The proposed conceptual framework examines the relationship between independent values and brand loyalty toward wearable devices. The independent variables are brand experience, brand identification, customer satisfaction, and brand trust.



**Figure 2.** Research Conceptual Framework

## **Methodology**

The purpose of this study is to develop a conceptual framework to explore factors that influence consumer brand loyalty to wearable devices in Malaysia. Therefore, a quantitative approach via a Google Form questionnaire survey is proposed as a data collection process. According to Bougie and Sekaran (2020), the use of online surveys is considered suitable as it allows for swift communication with a large audience group at minimal expense. Richards (2015) asserts that the quantitative approach can describe a

large number of data points, making it possible to present data to others in an understandable manner.

According to Sekaran and Bougie (2016), the quantitative approach is a measurement strategy that is crucial for descriptive research. It involves analyzing data in terms of frequency, mean, and standard deviations. The quantitative method has the advantage of using a questionnaire to assess a large number of respondents' perceptions, reactions, and attitudes (Moghadamzadeh et al., 2020; Yakubu et al., 2022). Quantitative analysis will help to increase objectivity by measuring data validity and reliability.

The main objective of this study is to assess theoretical hypotheses; hence, selecting appropriate measuring objects and a research context that permits a thorough investigation of these conjectures is crucial (Hulland et al., 2018; Salamzadeh et al., 2016, 2023). Therefore, participants were asked to answer screening questions to ensure that only qualified respondents participated in the survey. These screening questions included “Are you Malaysian?” and “Have you bought a wearable device before?” The survey can only continue with respondents who selected "Yes" in their responses. When conducting surveys through Google Forms, it is possible to ensure that participants complete all questions before sending in their answers.

Partial Least Squares-Structural Equation Modelling (PLS-SEM) could be used to process and analyze the questionnaire input in order to test the conceptual model's overall construct.



## **Theoretical Implications**

This study makes significant theoretical contributions to the field. First, it innovatively integrates the unique context-specific attributes associated with the consumption values of wearable devices, highlighting the novelty of this conceptual framework. While previous studies have shown that different industries have different factors that influence brand loyalty (Kaur et al., 2020; Rather & Hollebeek., 2019), this study went one step ahead to test consumption values with context-specific attributes of wearable devices.

Second, this study is particularly relevant considering the importance of consumer brand loyalty on wearable devices. A considerably growing literature investigates the function of wearable devices (Wan and Zhang, 2020; Josephine et al., 2020; Kashevnik et al., 2020). However, most of the studies focus on consumers' purchase intention (Ometov et al., 2021; Wu et al., 2020; Liu & Guo, 2016) or technology acceptance (Almarzouqi et al., 2022; Park, 2020; Yildirim & Ali-Eldin, 2019) toward wearable devices. Hence this study will contribute to the existing literature to understand consumers' brand loyalty towards the wearable devices market in Malaysia.

## **Practical Implications**

This study provides wearable device manufacturers and marketers with several helpful recommendations to improve their brand identities, product designs, loyalty programs, and marketing strategies. A company could decrease marketing expenses while growing sales and profit margins by implementing effective marketing techniques, which need an extensive understanding of customer demands. Based on the data collected from the questionnaire, this study will provide an overview of the most significant factors

influencing customers' brand loyalty. Provide valuable information to wearable device manufacturers through practical contributions, such as developing appropriate and effective research and development strategies based on wearable device specifications such as battery life, design, performance, and function to meet consumer satisfaction and requirements.

Second, this study could provide recommendations for wearable device manufacturers. Wearable device manufacturers may plan more cautiously and effectively to promote their products, including focusing on a specific group of consumers and developing strategies for targeting Malaysia's expanding market. According to Zhang et al. (2020), the market expectation for wearable devices is more than just a supplement to smartphones, with the advancement of networking, miniaturization, and intelligence in various electronic gadgets. Wearable gadgets are likely to develop new functionalities in response to consumer demand.

### **Limitations and Future Research**

Despite several limitations, this study contributes significantly to the literature on both consumer brand loyalty and wearable devices literature. These limitations suggest potential guidelines for future research.

This study investigates consumers' brand loyalty toward wearable devices rather than their purchase intention in wearable device products. It is important to consider brand loyalty as this is the repeated actions of consumers. Considering new technologies, models, and brands are constantly entering the wearable devices market, it is challenging to establish long-term brand loyalty (Benson et al., 2018). The cross-sectional nature of many studies on wearable device brand loyalty makes it difficult to determine causality and

monitor changes in brand loyalty over time. However, one significant limitation of this study is the possible lack of diversity in the sample population. The results may not apply to the larger population if the sample consists mainly of people from a specific demographic. For instance, focus solely on young adults, tech-savvy consumers, or individuals from a particular region.

On the other hand, future studies should look into how cultural variations affect consumer brand loyalty to wearable technology. Examining this element may help understand the cultural influences that determine consumer brand loyalty and how brand loyalty differs in different cultural environments. It could involve comparative research amongst consumers in other nations or areas to explore how cultural norms affect brand loyalty. Moreover, investigating the role of user experience research, including design, functionality, and customer support can help in shaping brand loyalty for wearable devices (Arikumar et al., 2022). These investigations can assist wearable device producers in customizing their strategies for diverse markets and shaping global marketing strategies.

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**Yung-Kang Ong** is a PhD candidate at the Graduate School of Business, Universiti Sains Malaysia (USM), Malaysia. His research interests include consumer behavior, sales, and marketing.

**Yen-Nee Goh** is an Assoc. Prof. Dr. at the Graduate School of Business, Universiti Sains Malaysia (USM), Malaysia. She teaches International Marketing, Seminar in Marketing and Global Business at the institution. Currently, she is the Cluster Head of Marketing Research for the Graduate School of Business.