

# The Rise of Consumer Wearables



WHITEPAPER

## Abstract

As the world grapples with the aftermath of the pandemic and scrambles to ensure that sufficient safeguards stay in place, health and wellness continues to be the single most powerful consumer force. In the last two years, COVID has caused dramatic changes in the way people view their health. Pressure on existing healthcare systems and a general lack of availability of health resources has also pushed the average person to be more mindful and take charge of their own health. There has been an increase in health awareness and a general tendency to want to monitor various health parameters in an easy and convenient manner.

## Key Takeaways

As a reaction to the unpredictable nature of the virus and the different variants that emerge with alarming regularity, consumers are using very deliberate choices as a bulwark against the situation. As consumers lean towards a tendency to take charge of their own health and wellness, our understanding of the current consumer trends in health and nutrition point towards:

### 01

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Prevention more than treatment

### 02

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Maintaining fitness  
through nutrition

### 03

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Seeking a balanced diet

### 04

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Seeking ways to battle a rise in  
stress and anxiety

### 05

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Growing focus on mental  
well being

## Introduction

In the past, patients were satisfied with undergoing a physical checkup once a year and making a doctor visit only when something went wrong. However, with the changes wrought by COVID-19 and with the focus on prevention and maintenance and taking charge of their own health, patients are now demanding information about their health more frequently.

Consumer wearables can provide patients with personalized health data, which could assist with self-diagnosis and behavior change interventions. However, there are several concerns about the safety, reliability, and security of using consumer wearables in health care.

The top 5 of the most used wearable devices are:

- ▶ Wearable fitness trackers with sensors to keep track of user's physical activity and heart rate and many also provide health and wellness recommendations.
- ▶ Smart health watches include goal-based exercises, mental health tracking and movement reminders
- ▶ Wearable ECG monitors which can track heart rate and rhythm and BP amongst other parameters
- ▶ Wearable BP monitors with newer versions that not only measures BP, but also daily activity and calories burned
- ▶ Wearable biosensors which are still in their infancy as far as ability to be mass produced and adopted, they hold the key to a major revolution in healthcare. They can come in the form of clothing, gloves, bandages and implants, smart thermometers that not only measure body temperature but also respiratory rate, pulse rate, ECG, and blood oxygen

# Advanced Innovation Enabling Wearables in the Healthcare Space

## TechM's Skin Sensor

A lot of CPG companies face the issues of un-reliable consumer panel data from trial product testing, poor field test inputs for product design. These challenges along with collecting reliable data without privacy intrusion is a major impediment for firms.

TechM has conceptualized and designed innovative pocket size skin hydration measuring sensor. In trial studies, each panel member can be given a skin sensor to take home during trial period. The Sensors measures before-after cream application readings and transmits to cloud via mobile and cloud analyses data and convert to meaningful product design input.



The device works by measuring hydration index which is basic for all applications in basic research on skin and cosmetics. The sensor is ideal for:

- ▶ Formulation, claim support and efficacy testing of moisturizers
- ▶ Objective clinical trials and monitoring
- ▶ Course of cosmetic treatments

Principle of device:

It measures the change in the dielectric constant due to skin surface hydration and capacitance values of a precision capacitor.

## Solution Approach

TechM developed skin sensor modules to determine various skin health parameters. These are some of the important parameters that are imperative for any cosmetic company to formulate a new product.

These are:

**Base Module:** To measure skin hydration and temperature for various skin types

Measuring epidermis skin hydration is one of the most efficient ways to gauge the health of skin. If the skin is healthy and nourished the hydration of skin is high. CPG firms tend to focus on showing increased skin hydration post application of their skin product.

**With Attachment 1:** Skin impedance, skin epidermal thickness

Undamaged, normal skin presents a high impedance to alternating current of low frequency. If the skin is damaged in any way, the impedance gets greatly reduced. Hence this is a simple non-invasive method to measure efficacy of new formulations of skin products.

**With Attachment 2:** Estimates skin color, skin radiance, skin pH



## Key Highlights



**Connected Device:** Collects Data through Mobile App (iOS & Android) and stores data in Google Cloud for Data analysis.



**OTA via mobile application**



**Modular design,** incorporated multiple devices functionality into single device with One cap replacement



**Auto identification of module and communicate to mobile app to guide user with appropriate instructions**



**Replaceable battery-operated device**



**The readings are not influenced by composition in the skin**



**The modern, high-quality electronics allow a very quick measurement (1 sec).**



**Capacitance measurement frequency: 0.9-1 MHz, Accuracy:  $\pm 3\%$**



**Handy Device: Dimensions: 60X50X25mm | Weight: 20 g**

## Conclusion

The device is an example of how a simple-to-use innovation that has been developed in-house can speed up the consumer panel process and ensure faster reach to market from the formulation stage. Due to its ease of use by the panelist and streamlined data collection and interpretation, personalized devices like this skin sensor will be the way forward for future consumer panels and acceptance testing.

Overall, there are numerous benefits to the users of wearable technology like better motivation for better health, having quantifiable goals and being able to keep track of accomplishments. It is also an easy way to collect data and accessible. The price barriers are low, and they are generally easy to use. This leads to better outcomes overall for the user.

However, on the flip side, disadvantages include technical difficulties, poor data quality, poor design, and issues with waterproofing are common. Moreover, the device's small size and power reserves might create difficulties in accessing information. The performance and functionality of the sensors play a critical role especially if they are used as part of a medical diagnosis. Having constant access to health data can trigger an obsession with one's health. The two most important disadvantages that stick out however remain ethical and privacy issues.

## Author



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Samitha is currently leading the pharma, healthcare and life sciences sub vertical at Retail and Consumer Goods practice. She has over 23 years of experience. On the education front, she has completed B. Pharm and PGDIM in Marketing.



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