WEARABLE TECHNOLOGY AND INTERNET OF THINGS

Consumer view on future wearables beyond health & wellness
METHODOLOGY

Representative of opinion of 280 million smartphone users across 5 markets.

Interviews with wearable experts & industry watchers to identify emerging wearable categories

Markets chosen for the quantitative online study in the age group 15-65 years

5

Smartphone users

2500
Wearable users

5000

280
Million represented

of which there were...

USA

BRAZIL

UK

SOUTH KOREA

CHINA
WEARABLE USER COMPOSITION IS EVOLVING

Wearable ownership almost doubled in the past year across the markets surveyed

14% (2015)  ▶️  30% (2016)

- 43% of new users are those who don’t exercise or workout!
- 24% of users of wearables who bought wearables in the past 3 months are aged 15–24

EXPERIENCED AND NEW USERS OF WEARABLES BY AGE GROUP

<table>
<thead>
<tr>
<th>Age Group</th>
<th>New User</th>
<th>Experienced User</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>24%</td>
<td>12%</td>
</tr>
<tr>
<td>25-34</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td>35-44</td>
<td>12%</td>
<td>21%</td>
</tr>
<tr>
<td>45-54</td>
<td>11%</td>
<td>25%</td>
</tr>
<tr>
<td>55 and above</td>
<td>17%</td>
<td>24%</td>
</tr>
</tbody>
</table>

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users owning wearables, Brazil, China, Korea, UK, US
WEARABLES AS INTIMATE AS SMARTPHONES

2/5 Wearable users say they feel naked when not wearing them

1/4 Users even sleep with them

OCCASIONS WHEN WEARABLE DEVICES ARE WORN ACROSS THE DAY

- Morning in bed: 24%
- While exercising: 67%
- While travelling: 55%
- At work or college: 49%
- Outside at cafes etc.: 40%
- While shopping: 48%
- While having Dinner: 33%
- Sleeping in bed: 26%
- On other occasions: 1%

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016

Base: Smartphone users using smartwatches or fitness bands
RISING EXPECTATIONS

A third of owners still abandon these devices but now in just mere couple of weeks.

 Owners of First generation wearables have been left disappointed.

Of wearable users in US will recommend others to buy wearables whereas this drops to just 1/4 in Korea.

<table>
<thead>
<tr>
<th>Wearable cameras</th>
<th>Meet/Meet Expectations</th>
<th>Above Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>28%</td>
<td>38%</td>
<td>34%</td>
</tr>
<tr>
<td>Smartwatches</td>
<td>27%</td>
<td>39%</td>
</tr>
<tr>
<td>Smartglasses</td>
<td>32%</td>
<td>33%</td>
</tr>
<tr>
<td>Fitness bands/Activity Tracker</td>
<td>21%</td>
<td>47%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Korea</th>
<th>Meet/Meet Expectations</th>
<th>Above Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>43%</td>
<td>37%</td>
</tr>
<tr>
<td>USA</td>
<td>56%</td>
<td>31%</td>
</tr>
<tr>
<td>Global</td>
<td>49%</td>
<td>34%</td>
</tr>
</tbody>
</table>
Wearables are still tethered to the smartphone via Bluetooth and follow a walled garden approach. 23% abandoned wearables because of lack of standalone connectivity.

<table>
<thead>
<tr>
<th>Reason</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited functionality and use</td>
<td>21</td>
</tr>
<tr>
<td>Aren’t standalone products</td>
<td>14</td>
</tr>
<tr>
<td>No inbuilt internet connectivity like 3G/4G</td>
<td>9</td>
</tr>
<tr>
<td>Inaccurate Data or information</td>
<td>9</td>
</tr>
<tr>
<td>Poor integration with smartphones</td>
<td>9</td>
</tr>
<tr>
<td>New device with better features were on the market</td>
<td>9</td>
</tr>
<tr>
<td>Battery drained fast</td>
<td>8</td>
</tr>
<tr>
<td>Poor design and look</td>
<td>6</td>
</tr>
<tr>
<td>Complicated to use</td>
<td>4</td>
</tr>
<tr>
<td>Not enough Third party apps</td>
<td>4</td>
</tr>
<tr>
<td>Difficult to set up</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users who abandoned wearable devices
WEARABLE FIRMS TRUSTED WITH PERSONAL DATA

1/2
Half of wearable users share data from wearables online, 60% feel in control of data they are sharing and who has access to it

67%
are open to sharing data with third party entities provided its anonymous

70%
of wearable users perceive wearable manufacturers to be very serious in protecting their wearable data

2X
Wearable users are more likely to share their data with wearable manufacturers rather than service providers or retail firms

ORGANIZATIONS AND ENTITIES CONSUMERS ARE WILLING TO SHARE WEARABLES DATA WITH

<table>
<thead>
<tr>
<th>Organization/Entity</th>
<th>Willingness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wearables manufacturers</td>
<td>54%</td>
</tr>
<tr>
<td>Doctors/Physicians</td>
<td>46%</td>
</tr>
<tr>
<td>Health insurers</td>
<td>39%</td>
</tr>
<tr>
<td>Internet firms like Google, Facebook</td>
<td>38%</td>
</tr>
<tr>
<td>Private firms like gyms</td>
<td>31%</td>
</tr>
<tr>
<td>Market Research firms</td>
<td>29%</td>
</tr>
<tr>
<td>Mobile Service Providers</td>
<td>28%</td>
</tr>
<tr>
<td>Retail and e-commerce</td>
<td>27%</td>
</tr>
<tr>
<td>Authorities/organizations</td>
<td>21%</td>
</tr>
<tr>
<td>Employers</td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Existing wearable owners across Brazil, China, South Korea, UK, US
WEARABLES BEYOND HEALTH AND WELLNESS
SOME WEARABLE IDEAS TESTED

SAFETY & SECURITY

SMART LOCATOR
A GPS tracker designed to blend in clothing or an accessory which helps you know the whereabouts of children or elderly parents.

LOW WASH SMART GARMENT
A garment that notifies or alerts you when it is the right time to wash. Helping you save water & multiple washes.

SMART WATER PURIFIER
A wearable water purification bracelet device which contains a UV purifying light bulb that kills contaminants & bacteria in minutes.

EMBRACE
A GPS tracker designed to blend in clothing or an accessory which helps you know the whereabouts of children or elderly parents.

SMART GARMENTS & ACCESSORIES

PANIC BUTTON
When in distress or trouble, a device that is built into any jewelry or clothing, and lets you quickly reach someone.

VIRTUAL REALITY SPORTS ATTIRE
Allows sports fans to feel & experience what players see & feel during games, using real-time sports data.

THERMAL BRACELET
A bracelet changes the body’s internal temperature by producing cooling or heating sensations on the wrist which affects the whole body.

GESTURE COMMUNICATOR
A device that lets you send and receive expressions and alerts with a simple gesture, the recipient will be able to sense the message through unique light, sound, and vibration patterns on his device.

EMOTION SENSING TATOO/ MOOD DETECTOR
A skin-colored patch or tattoo-like sensor that tracks your mood throughout the day and recommends actions to take.

IDENTITY AUTHENTICATOR
A wearable device which identifies you automatically without pulling anything out in situations. Eg: unlocking cars, in security systems & shopping.

SAFETY CLIP ON CAMERA
Wearable clip-on camera that automatically snaps 2 pictures a minute throughout the day, to gather evidence in case you encounter anything negative.

SAFETY & SECURITY

SAFE DRIVING INTERNABLE
An ingestible pill that measures blood-alcohol content. The pill communicates with your car, rendering it useless if you attempt to drive.

EXACT MEASUREMENT
Garments with built-in sensors taking thousands of body measurements to provide exact measurements to an app.

FAST FASHION
Garments that are blank on purchase but can be customized to any colour & pattern using your designs done on a mobile app.

FILTER NOTIFICATION BRACELET
An armband or ring that vibrates to alert you to calls, messages. Through an app, users can predefine which notifications get passed.

NON VERBAL COMM.

ALLERGY ALERT SCARF
A wearable device or a scarf that can sense objects around it and lights up alerting both the wearer and others of the allergic substance being in the vicinity.
SAFE DRIVING INTERNABLE

An ingestible pill that has sensors which you can swallow that measures blood-alcohol content. Such a pill could then communicate with your car, rendering it useless if you attempt to drive it above the prescribed legal limits.

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
SMART GARMENTS WITH ARTIFICIAL INTELLIGENCE

EXACT MEASURE:
A garment that is equipped with built-in sensors that take thousands of measurements of your body which get sent via Bluetooth to an app, which matches up your exact measurements online to find the right fit among all the brands.

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
PERSONAL TEMPERATURE CONTROL THERMAL BRACELET

Bracelet measures external and internal temperature

Produces cooling or heating sensations on the wrist

Adjusts temperature across the whole body

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
CONNECTED TOGETHERNESS
From transferring touch wirelessly to sharing emotions

A skin-coloured patch or tattoo-like sensor. that tracks your mood and emotions throughout the day and recommends you with actions like deep breathing while in stress or anxiety, you can also chose to share this data with others.

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Do consumers think wearable tech’s time has come?

What will they be wearing in next 4 years and beyond?

Consumers predict wearable technology inflection point to be beyond 2020.

Current generation of wearables:
- Safety and Security
- Smart Garments
- Non verbal Communications

Safety and Security:
- Smart Watches
- Fitness Trackers
- Wearable Camera

Non verbal Communications:
- Smart glasses
- Panic button
- Smart Locator
- Filter notifications
- Safety clip on camera

Smart Garments:
- Low-wash garments
- Exact Measure
- Safe driving
- Low-wash garment
- Internal filter notifications

Non verbal Communications:
- Identity Authenticator
- Safe driving
- Safe driving
- Low-wash garment
- Internal filter notifications

Video calls & message:
- Smart Water Purifier
- Thermal Bracelet
- Fast Fashion
- Allergy Alert Scarf
- Embrace

Note:
Bubble size = Willingness to buy

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users across Brazil, China, South Korea, UK, US
Why Personal safety wearables are most sought after?

28% of smartphone users surveyed have been victim of some crime in the past 12 months.

17% of smartphone users already use apps for personal safety and security.

On an average sense of safety drops by 20 percentage points among consumers from day to night.

Just about half of users surveyed feel safe while taking or waiting for public transport at night with

60% women in US, UK and South Korea say they feel unsafe in such situations.

HOW SAFE DO YOU FEEL DURING...

At home Walking in the neighborhood/area Outside your neighborhood/area At public places Waiting for or taking public transport

Brazil China Global UK US Korea

Source: Ericsson ConsumerLab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users across Brazil, China, South Korea, UK, US
THE ROLE OF SMARTPHONE IN A WEARABLE FUTURE
Outsmarting the Smartphone

43% say smartphones will be replaced by smart wearables

42% say that identification documents, like passports, will be a thing of the past

19% believe that connected TVs are likely to be replaced in the future

GADGETS/ITEMS THAT WEARABLES ARE LIKELY TO REPLACE IN FUTURE

- Watches and clocks: 50%
- Glucose and blood pressure monitoring meters: 48%
- Car/house keys: 48%
- GPS and navigation devices: 46%
- Smartphones: 43%
- Identification documents: 42%
- Handheld cameras: 40%
- TV remote: 38%
- Wallets: 37%
- Music players like iPod: 34%
- Tablets: 24%
- Streaming media players like Apple TV, Amazon etc: 19%
- Connected TVs: 18%
- Video gaming consoles eg Xbox, PlayStation etc: 17%

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users across Brazil, China, South Korea, UK, US
A BODY OF SENSORS

74% See that wearables will act as conduit for exchanging data between them and other physical objects and things. These may not necessarily be devices but sensors that are ingestible or implants that help interact with objects and devices.

25% Already today 25 percent of smartwatch owners use their smartwatch to remotely control digital devices at home.

6/10 Smartphone users believe that ingestible pills & chips under the skin will be used to interact with objects within 5 years.

In 5 years’ time walking around with an ingestible sensor, which tracks your body temperature & adjust the thermostat setting automatically once you arrive home, may be a reality, according to consumers.

Source: Ericsson Consumerlab Wearable Technology and the Internet of Things, 2016
Base: Smartphone users across Brazil, China, South Korea, UK, US
INTERNET OF WEARABLE THINGS IN FUTURE

With consumers predicting they will wear at least 5 connected wearables beyond 2020…

The future looks connected

But a delay in wearable adoption will delay the development of a consumer IoT future
IN SUMMARY

WEARABLES BECOME THE MOST PERSONAL DEVICES
› Two in five users of wearables say they feel naked when not wearing their device, with one in four even sleeping with it on
› Despite this, a quarter of those who have bought wearables in the past three months say their expectations have not been met

CONSUMERS PREDICT THE WEARABLES INFLECTION POINT TO BE BEYOND 2020
› 6 out of 10 smartphone users are confident that wearables will have uses beyond health and wellness
› Consumers predict that most wearable ideas will only become mainstream beyond 2020. However, current users of wearables believe the development will be much faster

WEARABLES MANUFACTURERS AS PERSONAL DATA BROKERS
› 70 percent of users of wearables perceive wearables manufacturers to be very serious in protecting their data. In fact, users of wearables are more likely to share their data with wearables manufacturers than with doctors, insurance companies and internet companies

A NEW ROLE FOR SMARTPHONES IN THE WEARABLES FUTURE
› 43 percent of those surveyed believe smartphones will be replaced by wearables, while 40 percent of smartwatch users already interact less with smartphones today. As wearables get smarter, the smartphone may become a secondary screen

INTERNET OF THINGS FUTURE SHAPED BY WEARABLES
› 74 percent believe multiple wearables and sensors will help them interact with other devices and physical things around them, whilst 1 in 3 smartphone users believe they will wear at least 5 wearables beyond 2020. Thus, a setback in wearables adoption might delay the overall adoption of the IoT among consumers