



A Panasonic Toughbook rugged
handheld tablet benchmark test

Introduction

Panasonic Toughbooks are designed to slash field failure rates, boost productivity and deliver lower total cost of ownership. Today, Panasonic is leveraging its 20 year heritage in ruggedised IT with a new range of handheld Toughbook devices.

Here we explore user insights into Panasonic Toughbooks vs competitor devices, review the health implications of angled barcode readers for their users and review the results of a newly commissioned 500 user survey into best practice workflow in ruggedised handheld devices.



Research overview

Independent market research company Opinion Matters invited eight mobile workers who use mobile tablet scanning devices as part of their daily working activities (i.e. delivery drivers, warehouse workers, postal, courier and retail logistics workers) to benchmark three different handheld tablets.

The survey was commissioned by Panasonic Computer Product Solutions, and undertaken in March 2016. The Panasonic Toughbook FZ-N1 handheld device was benchmarked against two other industry-leading Android tablets. For the purposes of impartiality neither of the other two handheld tablets are named in the test.

A medical expert on repetitive strain injury (RSI), Bronwyn Clifford, Chartered Physiotherapist and Ergonomic Consultant also observed the benchmark test and provided her view on the Panasonic handheld tablet.

About the benchmark test

The test participants were given one of each of the three different handheld devices and asked to rate the devices against various criteria such as ease of use, weight and how fast the devices were at scanning. Respondents also rated the ergonomic design and how easy each tablet was to hold, regardless of whether they were left or right handed.

They were asked to rate how easy it was to view the barcode reader in various different conditions including under bright lights and at different angles.

The health issues around scanning were also explored to see if participants felt that the scanners would help to prevent wrist, elbow and arm stress and hence reduce the risk of (RSI).

Respondents were also asked to evaluate the devices at different heights simulating scanning from the top shelf to the bottom shelf as well as to hold and scan at an angle. Finally, participants were invited to score each device and then to compare the devices, outlining which one they preferred and why.

Health is an issue

To put this into context in parallel to running the benchmark test, Panasonic also commissioned a mobile barcode scanning study questioning 500 workers who use mobile barcode scanning devices in their daily jobs. Findings from this research demonstrated that health is a real issue.

63% reported they suffered from wrist or arm aches and pains with 69% forced to take time off for an average of two and three quarter sick days in the

past year – costing their employer \$540 per person*. Repetitive Strain Injury (RSI) also affected 52% of the workforce with 78% of those affected having to take an average of three sick days in the past 12 months – costing the employer \$590 per person*.

* Sickness costs based on XpertHR's survey on the cost of British worker sickness 2014, based on data provided by 670 organisations, covering just under two million employees.

63% Suffered from wrist or arm pains

52% RSI
Suffered from

Cost per worker
\$390



High-level results

Panasonic came out top

Half the respondents said the Panasonic Toughbook FZ-N1 was the fastest and half the respondents liked it the most for reasons such as speed and ease of use, the distance from which you can scan from, its design and weight, and that the barcode reader was on the rear of the device.

The smallest device was the easiest to use

Small and incredibly light, the Panasonic Toughbook FZ-N1 was voted the easiest to use with three quarters (6 out of 8) stating this to be the case.

Unique angled rear barcode reader enhances user productivity

The angled rear barcode reader on the Panasonic device meant that respondents voted this handheld top when it came to scanning bar codes at different shelf heights. On all three tests at a high, medium and low height, the Panasonic handheld came out ahead of the other two devices in terms of both speed and how fast respondents were able to scan, as well as ease of scanning.

Easy to read from an angle

The angled rear barcode reader also made it easier for respondents to read the scan on screen. Panasonic was voted the easiest with three respondents saying they could see the screen very easily and the other five saying they could see it easily.

No contest whether flat or angled

When asked how easy or difficult is it to read the scan input on the screen when the device is flat or at an angle the Panasonic device was unanimously voted the easiest to use.

The healthiest device

When asked which device do you think will help most to reduce the risk of repetitive strain injuries five out of eight respondents chose the Panasonic device.



View from the medical expert



A medical expert on Repetitive Strain Injury (RSI), Bronwyn Clifford, Chartered Physiotherapist and Ergonomic Consultant also observed the benchmark test, here are her views on the Panasonic handheld tablet.

I do think the Panasonic handheld will help prevent RSI because you are not constantly having to deviate your wrist to scan and see what is on the screen.

The Panasonic handheld allows the user to hold the device in a much more neutral position when they are scanning and because the scanning part of the device is angled it means that you don't have to tilt the device every time to read the screen, you can just hold it in one position.

This also helps for scanning in different positions. When you are scanning something that is low down, for example, you can still hold the device in a neutral rest position whereas with the other devices you would have to be tilting or deviating your wrist to see the barcode scanner. I certainly felt that the Panasonic handheld was lightest out of the three devices and because it was slightly narrower, it was easier for me to hold and to use.

Overall the Panasonic devices allow you to keep your arms in a neutral position which means you do not have to use other major muscles, like your shoulder or upper arm to help out. Long term this makes the Panasonic device easier to use. In my view this will definitely prevent the need to deviate the wrist as much as when using the other devices just because of the tilted barcode scanner and this in itself will help to prevent health issues and Repetitive Strain Injury.



On average mobile workers estimate that they make around 197 scans per day. And nearly two thirds (65%) of these workers believe that the number of scans is increasing year-on-year by 24%.*



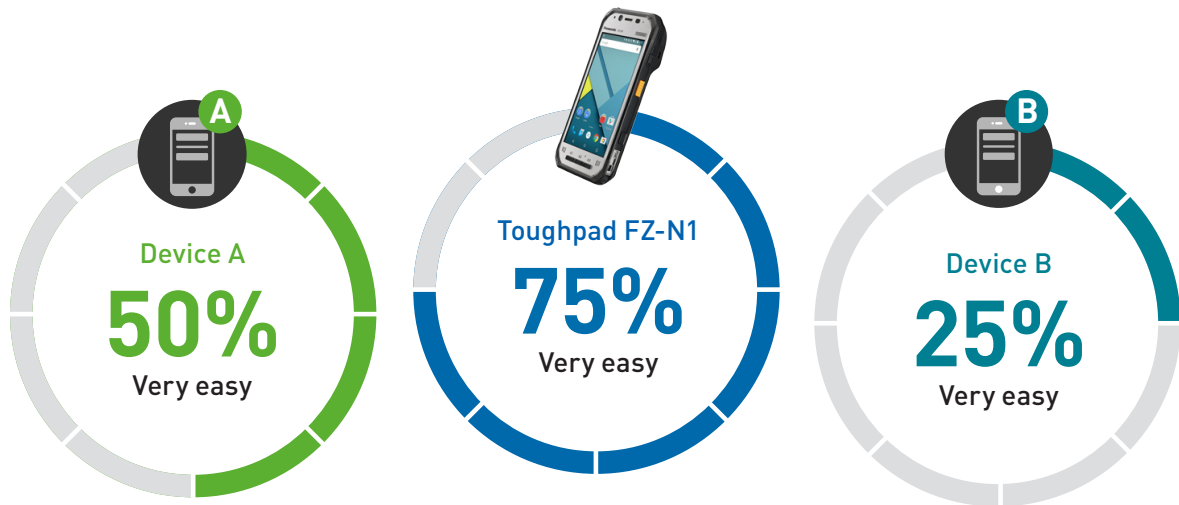
Repetitive Strain Injury (RSI) affects 52% of this workforce with 78% of those affected having to take an average of three sick days in the past 12 months.



The top three suggestions to improve barcode scanning and signature capture were a high precision pen (49%), a device with an angled barcode scanner (36%) and better screen visibility in bright sunlight (22%).*

Individual handheld tablet – full results

Q1. Generally, how easy/difficult is the product to use?

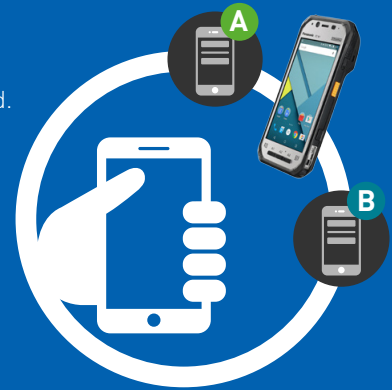


Q2. Can you operate it in one hand?

All of the respondents said yes when asked if they could operate each device in one hand.

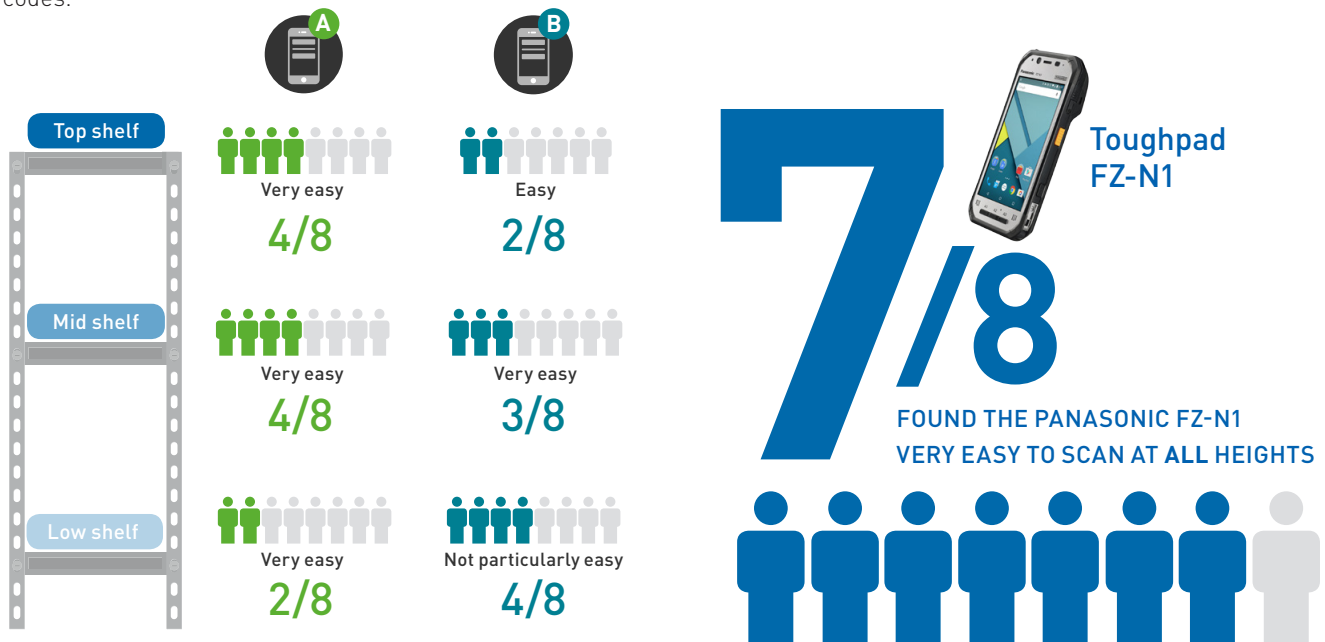


100%
can operate in one hand



Q3. Is it easy to scan barcodes from the following shelf heights (top, mid, low)?

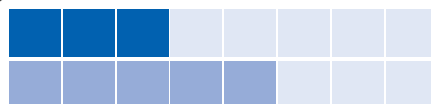
At the top height the Panasonic FZ-N1 was the easiest to use, with seven out of eight respondents saying it was very easy to scan barcodes.



Q4. How easily can you see the scan on screen when you are looking at it from an angle?

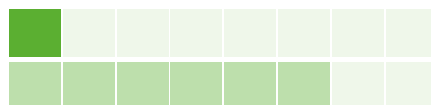


Toughpad FZ-N1



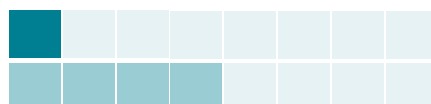
3/8 Very easy

5/8 Easy



1/8 Very easy

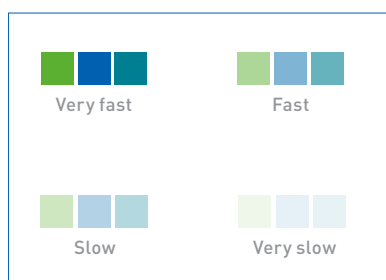
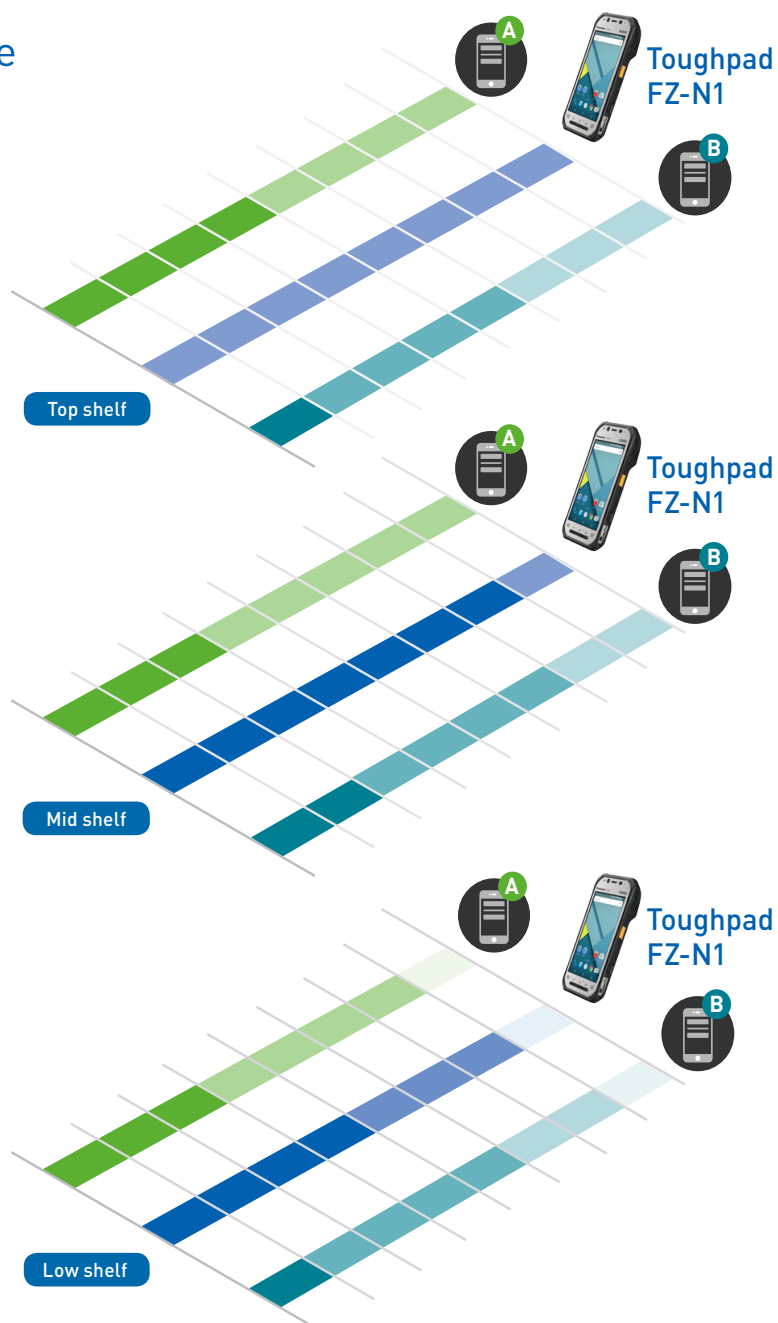
6/8 Easy



1/8 Very easy

4/8 Easy

Q5. How fast is the device to scan at the various shelf heights?



Q6. How easy/difficult is it to read the scan input on the screen when the device is in the following positions?



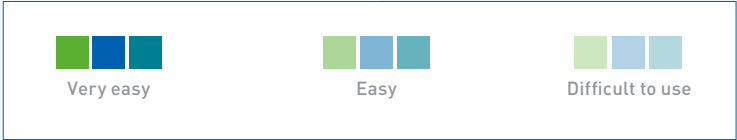
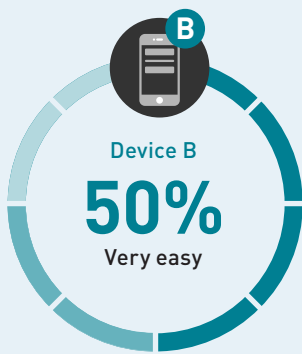
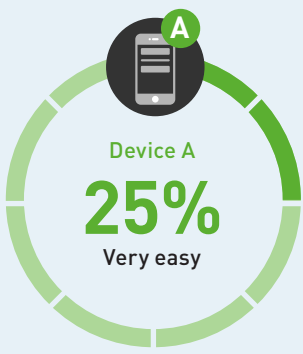
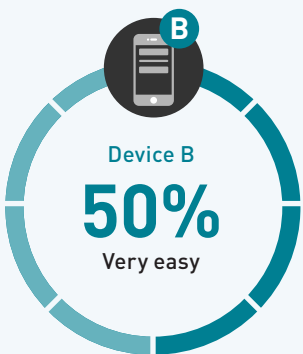
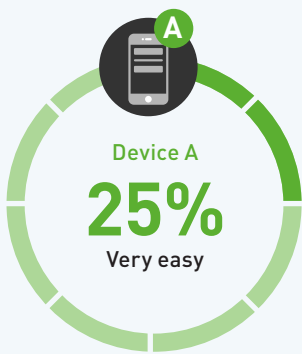
HOLDING FLAT

Flat: The Panasonic FZ-N1 was the easiest to read flat with three-quarters of respondents finding it very easy and the other quarter finding it easy.



HOLDING AT AN ANGLE

Angle: The Panasonic FZ-N1 was the easiest to read at an angle with half the respondents finding it very easy and the other half finding it easy.

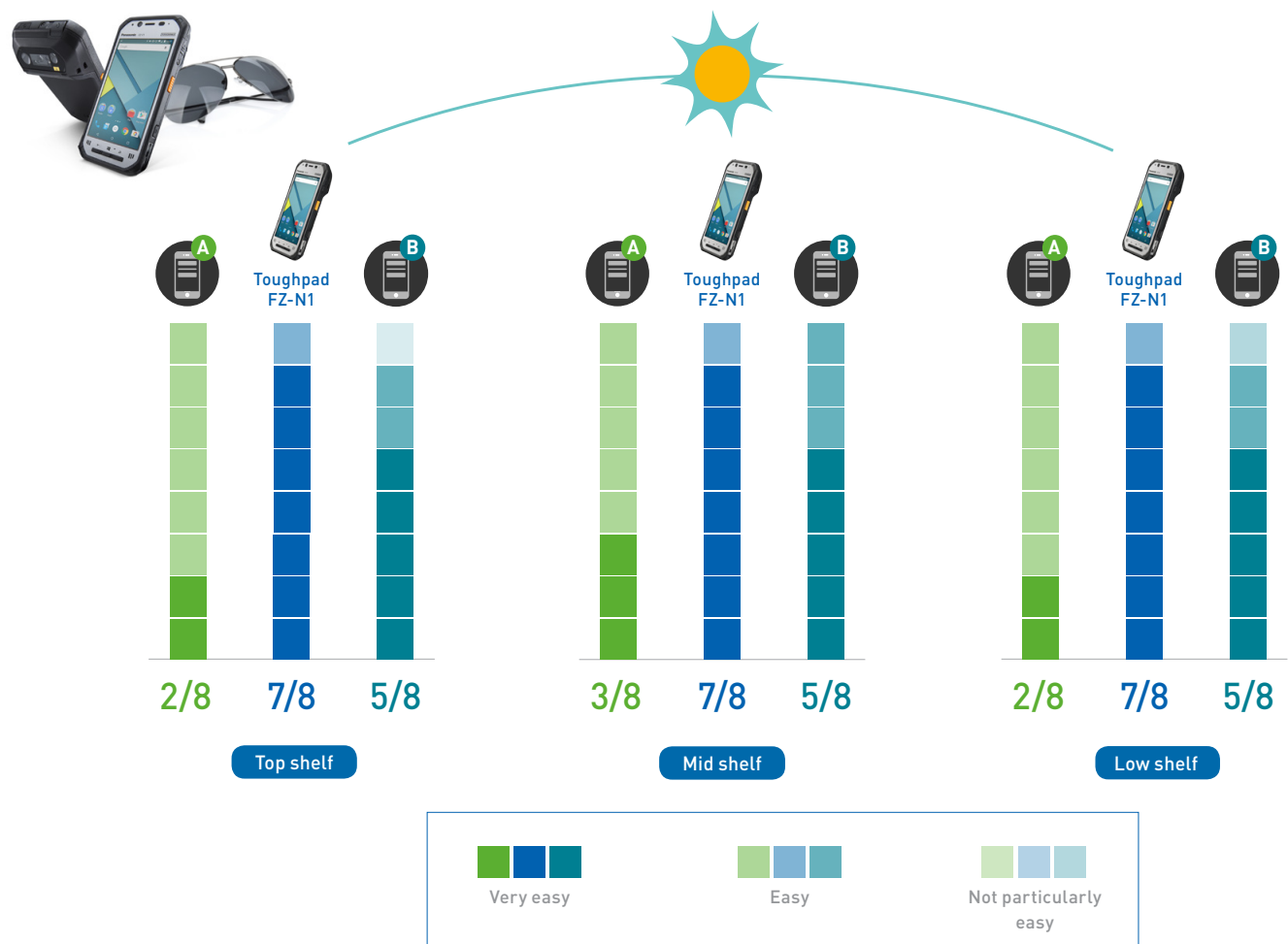


Q7. Can you easily read the screen in bright lights at various shelf heights?

At the top shelf height the Panasonic FZ-N1 was the easiest to read with seven respondents finding it very easy and the other respondent finding it easy.

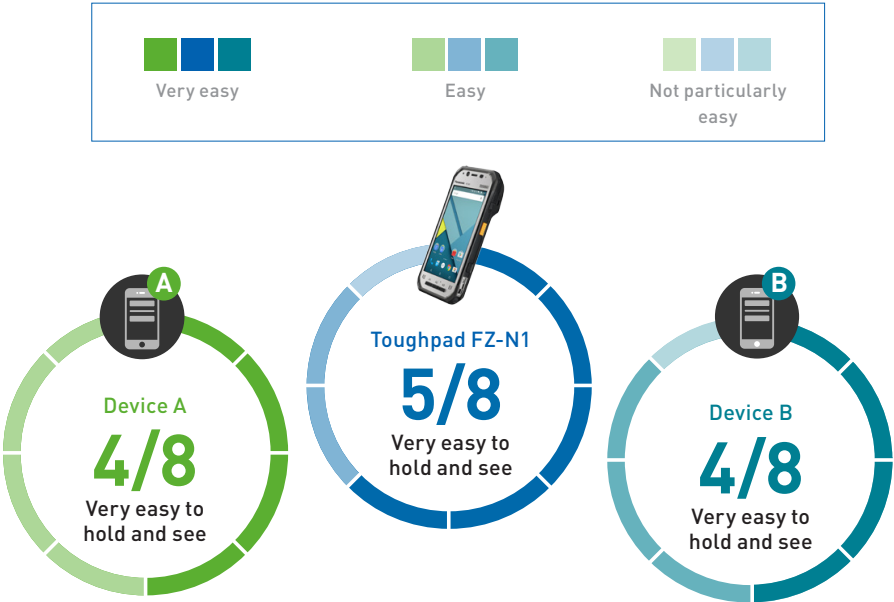
At the mid shelf height the Panasonic FZ-N1 was the easiest to read with seven respondents finding it very easy and the other respondent finding it easy.

At the low shelf height the Panasonic FZ-N1 was the easiest to read with seven respondents finding it very easy and the other respondent finding it easy.



Q8. How easy is it to hold in the hand and see what you have scanned on the screen?

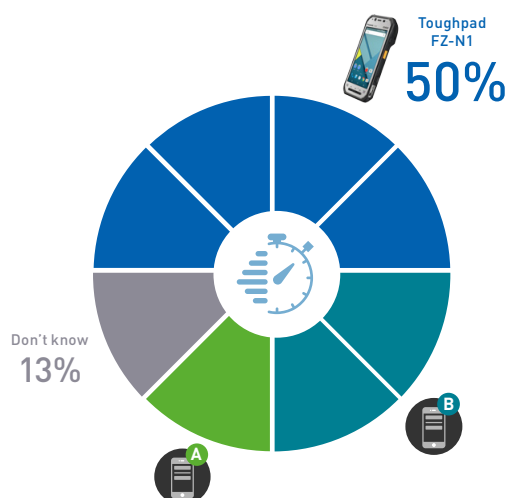
Respondents found that the devices were generally similar in their ease.



Comparative device report – full results

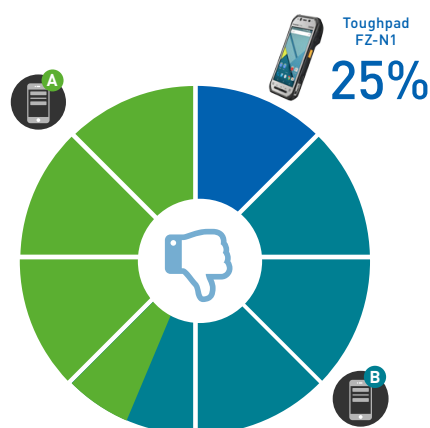
Q1. Which device was the fastest to use?

Half the respondents said the Panasonic FZ-N1 was fastest, a quarter said Device B, and one respondent said Device A.



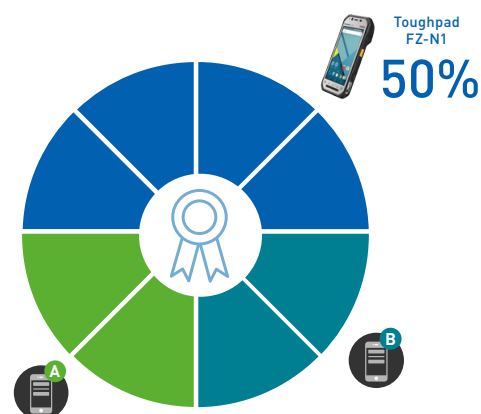
Q3. Thinking about the design of the device, which one did you dislike the most and why?

Three respondents each found Devices A and B to be the one they disliked the most. Two of the three respondents who chose Device A did so because of its size [and weight and comfort when holding]. Other reasons included time taken to scan and that it does not beep. Reasons for respondents' dislike of Device B include difficulty in using, the time taken to scan, and difficulty in reading the screen in light.



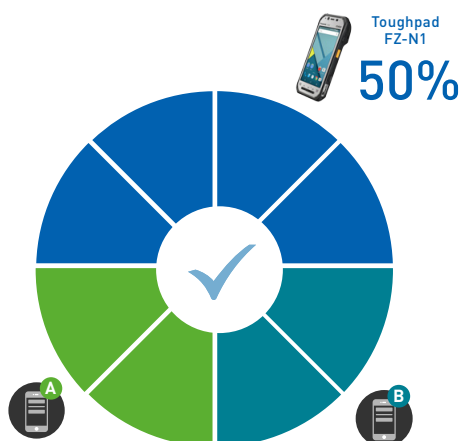
Q2. Thinking about the design of the device, which one did you like the most and why?

Half the respondents liked the Panasonic FZ-N1 the most (for reasons such as speed and ease of use, the distance from which you can scan from, its design and weight, and that the barcode reader was on the back of the device). A quarter liked Device A the most (due to being easy to hold and use, and familiarity to respondent's current device). The other quarter liked Device B the most (for reasons including being able to read the screen clearly when scanning and the two side buttons).



Q4. Which device is the easiest to scan with?

Half the respondents found the Panasonic FZ-N1 to be the easiest to scan.



Q5. Which device do you think will most help to reduce the risk of repetitive strain injuries?

Five respondents thought the Panasonic FZ-N1 will help most.

