

# TOUGH CHOICE: RUGGED OR CONSUMER?

What to Consider When Selecting an Enterprise Mobile Device



**Honeywell**



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# TOUGH CHOICE SUMMARY

As new mobile technology options have become available to support enterprise operations, deciding which devices to use has become more difficult. Enterprises can choose from hundreds of devices with a variety of operating systems, features, and price points to support field service, logistics, and other mobile enterprise activity.

Before diving into device-by-device comparisons, enterprises should consider a fundamental decision: whether to use a consumer-grade or rugged, enterprise-class device.

The consumer vs. rugged argument has gone on for years but hasn't been conclusively resolved for two reasons. First, the line between consumer and rugged devices has blurred. Second, and more importantly, the right choice depends heavily on each organization's specific work processes, usage environment, preferences, and budget.

The most important considerations include:

- In what environment(s) will the devices be used?

- What processes will they be used for?
- For how long should the devices remain in service?
- How much maintenance and downtime are acceptable?
- How much do mobile workers depend on their devices to do their jobs?

This white paper highlights the key differences that emerge between rugged and consumer devices when they are used to support enterprise operations. You can make the right choice by deciding which differences are most important in your work environment.





# CONSIDER THE WORK ENVIRONMENT

# 1

Drops are a leading cause of damage to mobile computers, resulting in downtime and lost productivity. When you consider the work environment, you'll get a sense of the devices' exposure to risk.

One of the most important factors in choosing the right enterprise mobile computer is the work environment.

A handheld device that will land on a carpeted floor if it is dropped doesn't need to be as rugged as one that will land on concrete. If devices will be used outdoors, the screen should make accommodations so it remains visible in bright sunlight.

Environmental resistance and ratings are also important considerations if the devices will be exposed to rain, snow, dust, dirt, chemicals, or other hazards in the field. And it is also important to consider both uptime and potential loss of productivity should a device break and need repair service.

To be considered rugged — and therefore reliable — mobile computers must be tested to repeatedly withstand at least 1.5 meter (five-foot) drops to a non-yielding surface.

Enterprise buyers should also be aware that manufacturers may make claims regarding testing and certification that relate to their own standards, rather than an industry standard. Buyers should therefore consider the specification that they want their enterprise device to meet and check to see if the manufacturer's tests cover it.

It's worth noting that just because a device is IP rated, and able to withstand dust, dirt, and moisture affecting its operation, it is not necessarily rugged. A non-rugged device is unlikely to preserve its IP rating if it's dropped.



## THE CASE AGAINST CASES

Some organizations try to “ruggedize” their smartphones and tablets by using protective cases. Cases provide some protection, but will not bring devices to the level of protection recommended for non-office enterprise operations, where exposure to elements and drops to non-carpeted surfaces are common. Cases can potentially lead to condensation and increased humidity that may fog the device screen and otherwise interfere with its use.

While a case provides some external protection, it provides no internal durability to the device. The internal connections and screen housing design within a rugged device accommodates drops – the screen will flex slightly and the connector will hold. Screens are also slightly recessed to provide added protection against cracking.

A case can enhance a non-rugged device's durability, but it is no substitute for rugged design. Simply put, a rugged case won't make a device rugged.

“A critical consideration for any mobility investment is aligning the workflow with the appropriate mobile solution.”<sup>1</sup>



According to research conducted by the VDC Research Group, Inc., a critical consideration for any mobility investment is aligning the workflow with the appropriate mobile solution.

The unique usage scenarios and environments common to many business workers and applications

create substantial complications for consumer devices.

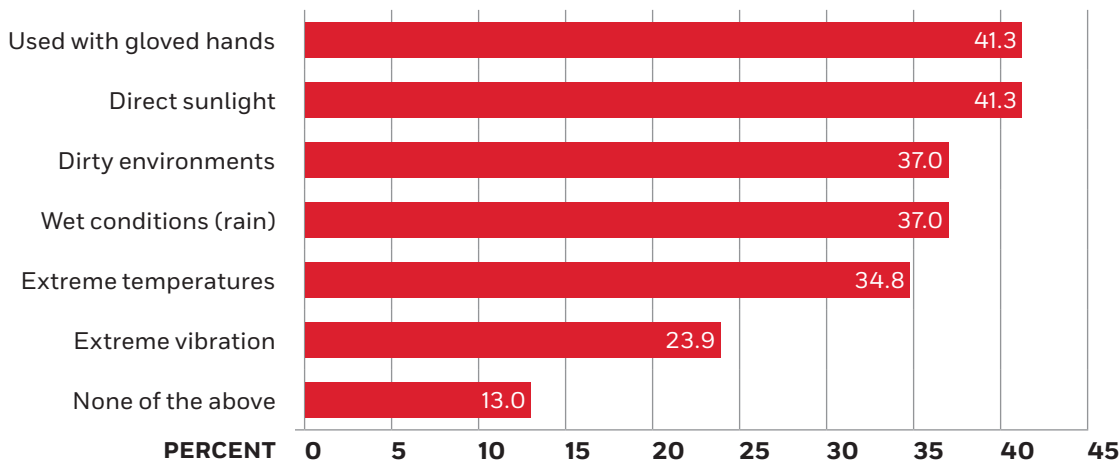
**Key issues range from:**

- Interfacing with a device using gloved or wet hands
- Using a device in direct sunlight
- Exposing the device to extreme temperature and vibration

**Key causes of consumer device failure include:**

- Exposure to water
- Dropping the device
- Temperature exposure

## Environmental Conditions: Mobile Device Exposure<sup>1</sup>



1. VDC Research Group, Inc. | Enterprise Mobility, “Total Cost of Ownership Models for Line of Business Mobile Solutions,” December 2018.

# CONSIDER THE WORK PROCESS

# 2

Consumer mobile devices are designed to give the best possible user experience for texting, making phone calls, and accessing social media, music, movies, and games. For enterprises, on the other hand, mobile devices are purpose-built to optimize work processes and provide easy access to business applications.

## EASE OF USE

Ease of use is an important variable for how well a mobile device enhances productivity. Seconds count in high-volume operations. By saving a few seconds recording each transaction, businesses create value by producing significant time and labor savings that lower their overall cost.

Productivity will decrease and costs will go up if the mobile device does not easily support the work process. Consumer smartphones and tablets are not optimized for entering data (via keypad, touchscreen, barcode scanning, imaging, or a peripheral). If those activities will be part of your enterprise mobility work process, carefully consider how convenient and ergonomic consumer devices will be for users.

Some purpose-built enterprise computers feature keypads and touchscreens designed to support more convenient and accurate data entry for glove-wearing users. A typo on a text to a friend has different consequences than entering an incorrect digit for a quantity or part number on an order form. Screens also need to be readable in direct sunlight, another feature of enterprise-designed devices.

Hand straps on an enterprise mobile device or wearable accessories are also a consideration. They free the hands of users in the field to carry parcels or handle other equipment, and are often accompanied by a stylus for on-screen customer signatures. Combined with buttons that allow left- or right-handed use, hand straps can save valuable seconds per transaction or event, and improve productivity.



*Productivity will decrease and costs will go up if the mobile device does not easily support the work process.*





## **INTEGRATED FUNCTIONALITY AND PERIPHERAL SUPPORT**

Rugged mobile computers that are purpose-built for enterprise operations often have built-in support for barcode reading, document scanning, speech input, mobile printer drivers, and other functionality. Having these capabilities native to the device helps to future-proof it for multi-use cases.

Peripherals that are designed by enterprise manufacturers take into account the use case of the device and its lifecycle (for instance, the amount of times a device could be in and out of a vehicle dock in its lifetime). That's not the case with consumer devices, whose manufacturers rely on OEMs to design and manufacture peripherals.

## **BARCODE SCANNING PERFORMANCE**

Ease of use is important for mobile device selection, and barcode scanning capability is an important ease-of-use differentiator among devices.

Although consumer smartphone cameras are capable of reading some barcodes, they are not necessarily designed for it.

For enterprise applications, you must closely consider:

**SCANNING SPEED** needed in your line of work.

**TYPES OF CODES** you'll need to scan.

**ABILITY TO READ DAMAGED CODES**, thus saving you from manual data entry.

**DEVICE ERGONOMICS** necessary for comfortable, productive scanning. High volume scanning, for example, requires a device that is designed for easy scanning from different angles without causing wrist strain.

**SCANNING DISTANCES** in your line of work. While general purpose scanning may only involve a few inches between the scanner and barcode, industrial environments, like warehouses and distribution centers, are much more likely to involve fast-paced, high-volume barcode scanning from a variety of distances.

Consumer-grade devices do not offer long-range scanning capabilities. Industrial barcode scanners, on the other hand, are capable of reading barcodes up to 54 feet away.

## **POWER MANAGEMENT**

Mobile devices designed for productivity have power management advantages that can help ensure that batteries will last an entire shift. For remote mobile workers, device uptime is crucial. Dead batteries could mean a lost day of work. Enterprise devices have more powerful batteries, which extends working hours before batteries need to be recharged or swapped out for spares.

Using a spare battery may not be an option with a consumer device because the battery is often integral to the device. The end-user cannot remove it. Instead of a simple battery swap, you must take the device out of service to recharge its battery.

Also in these cases, you will want to ask: Can a service technician replace a faulty battery? Or will I have to replace the whole device? In either case, you'll need to factor in the resulting downtime and the cost for repair and/or replacement.

# CONSIDER THE PRODUCTIVITY VS. FAILURE EFFECT

# 3

How a device influences productivity is more important than how big it is, how much it costs, or what operating system it runs.

Improving workforce productivity is the leading driver of business-critical mobility investment today, followed by increasing revenues, improving real-time decision-making, and differentiating competitively.<sup>1</sup>

Workforce mobility provides value by saving time, preventing errors, and improving the user and customer experience. Mobile devices that support and enhance these benefits provide value; devices that detract from mobile worker productivity because they break frequently, are not ergonomic, run slowly, or wear out reduce the value of enterprise mobility programs. That hasn't changed and never will, no matter how mobile device technology changes.

## The Value of Productivity

Consider what would happen if a device failure delayed deliveries or caused missed appointments. In addition to having a negative impact on brand reputation, those disruptions incur measurable costs: overtime to cover for lost productivity; lost revenue opportunities in field sales and service operations; and discounts and credits offered to inconvenienced customers.

The biggest influence on worker productivity is device reliability, so it is important to consider the ruggedness and use-case factors presented earlier.

## PRODUCT LIFECYCLE

Product lifecycle is the key differentiator between consumer smartphones and rugged mobile computers. Consumer

devices have a much shorter timespan before they are supplanted by a brand-new model, whereas enterprise devices are designed to provide many years of service.

Instead of deploying rugged enterprise devices, some organizations choose consumer devices and budget accordingly for the shorter lifecycle. While this strategy eliminates the surprise of replacement costs, you would need to forecast device cost over a certain period to ensure that it's a cost-competitive option vs. a rugged model.

Even organizations that plan for a consumer device refresh – something they'd typically have to do twice as often as a rugged device – they often overlook the associated cost and disruption in device availability. The new devices must be purchased, shipped, stored, tested, configured, and more. In addition, old devices must be returned. Experienced companies may handle these efforts well, but they still bear the cost.

It's also worth noting that once a device reaches end of life (EOL), so will the spares and accessories available for it.

In addition to providing a much longer lifecycle, enterprise devices also have replacements, spares, and repairs factored into the design process. This helps ensure that the devices provide the maximum service time before replacement.

## SPARES, REPAIRS, SUPPORT

Every time devices need to be



## FAILURE HAS HIDDEN COSTS

Consider a delivery driver out on his route making stops. His device fails at 11 a.m. What does he do? Does he return to the depot for a replacement device – if any are available? Or does he revert to paper?

To return to the depot would cost time, possibly leading to late or failed deliveries and a poor customer experience.

If the driver reverts to paper, each delivery will take longer, be prone to error, and will take more time for re-keying when he returns to the depot.

When devices fail in the field, workers have several options. None are good. And all will result in inefficiency and reduced customer service. The key points to consider are the cost in time, resources, and customer service. Imagine this cost extrapolated across a company's entire device population and you can start to see the long-term benefits of choosing rugged devices.

1. VDC Research Group, Inc. | Enterprise Mobility, "Total Cost of Ownership Models for Line of Business Mobile Solutions," December 2018.



replaced due to breakage or failure, organizations incur costs and delays related to device configuration and deployment, in addition to the direct cost of purchasing the new device.

The higher the failure rate for a category of devices, the larger spare pool the organization should keep on hand to mitigate lost productivity when devices fail. Adding to the spare pool adds to the overall acquisition cost, but not the

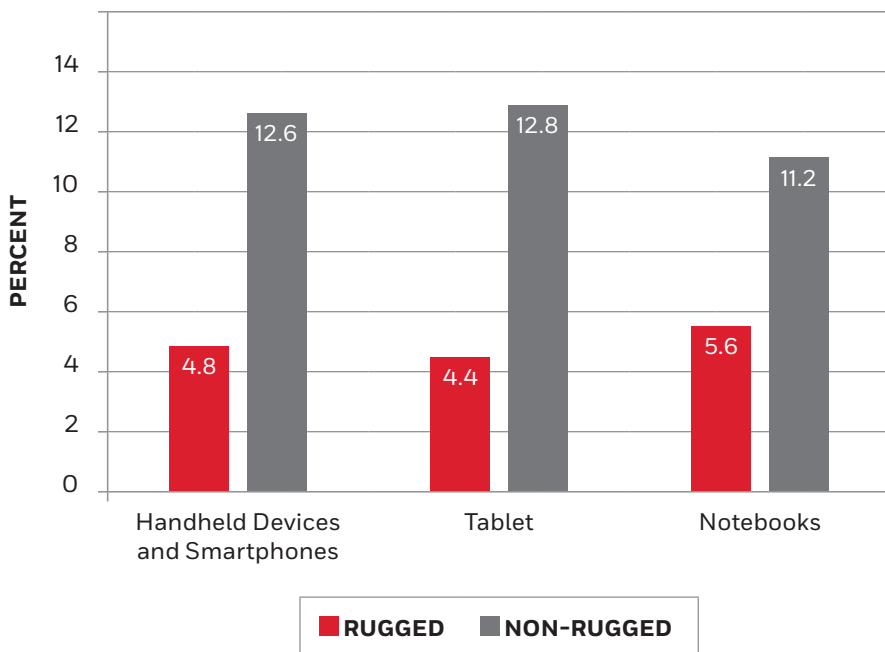
per-unit acquisition cost, and thus may be overlooked in some cost comparisons.

It is important to note that rugged enterprise devices are designed to be repairable. Manufacturers typically have mature service programs and infrastructures that can contractually commit them to quickly provide replacement devices and complete repairs in a timeframe that is acceptable to the organization buying the devices.



## Average Annual Failure Rates by Form Factor<sup>1</sup>

**The Failure Rate of Non-Rugged Devices is 2 to 2.9 Times Higher Than Rugged Devices.**



According to research conducted by the VDC Research Group, Inc., **mobile device failure is a major issue impacting enterprise operations and increasing the overall mobile cost of ownership.**

The research represents the failure rates of mobile devices that support line of business applications, such as field service automation, warehouse management, or mobile point of sale.

**The causes of device failure include:**

- Hardware-specific failures (dropping the device)

- Software and application failures
- Failures to network connectivity

Battery performance is also a key challenge. For the majority of end users, the battery fails to last an entire shift.

Retailer Target® is one of several high-profile organizations that has deployed consumer-grade devices to support their line of business workers only to revert to purpose-built solutions after experiencing challenges with the consumer devices – for example, battery erosion over time and the lack of replaceable batteries.

### FREQUENT FAILURES LEAD TO SWITCH FROM CONSUMER DEVICES

The inconvenience and cost of having to frequently repair its consumer-grade PDAs led Bon Appetit Bakery, a baked goods wholesaler that delivers to convenience stores and other retail outlets, to switch to more rugged enterprise handheld computers.

“Our distributors are rough, and we were replacing between 15 and 20 of our old PDAs each week. Even though we had them under warranty, we were still constantly on the phone working to get them replaced. On top of that, the repair or replacement took a two-week turnaround,” said Marc Sy, IT Manager at the time of the upgrade.

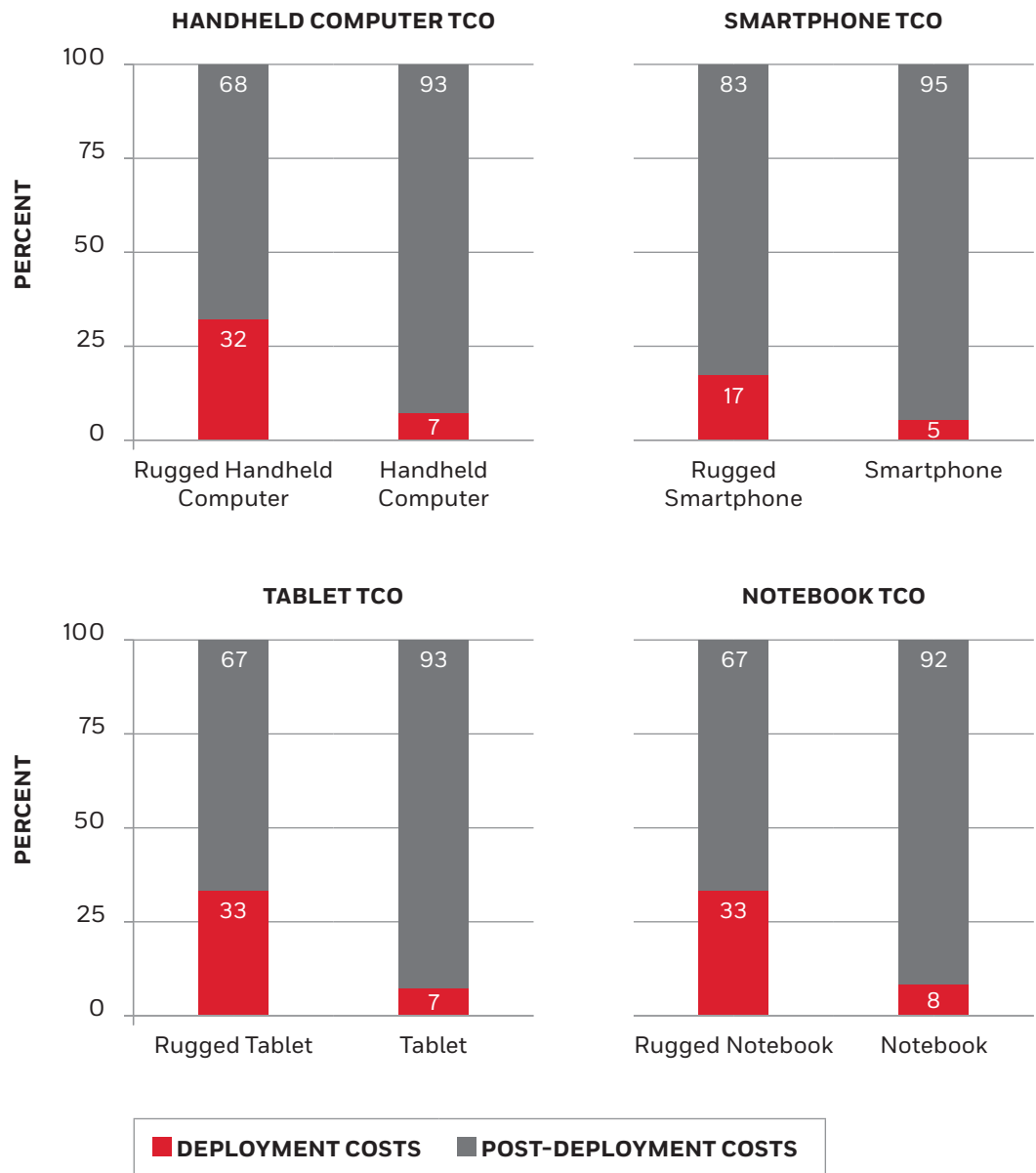
“We’ve seen a lot of time savings, reduced user error and we now spend much less time on the back and forth involved in product replacement and repair. The new technology has really just made life a lot easier. Drivers can now get in and out of the stores much faster and in a more efficient way.”

**Download the case study →**

1. VDC Research Group, Inc. | Enterprise Mobility, “Total Cost of Ownership Models for Line of Business Mobile Solutions,” December 2018.

# Rugged Devices Supporting Line of Business Applications Have Lower Post-Deployment Support and Ownership Costs<sup>1</sup>

## Comparing Deployment Costs (red) and Post-Deployment Costs (gray)



**DEPLOYMENT COSTS:** Mobile hardware, accessory, and installation costs  
**POST-DEPLOYMENT COSTS:** IT support and lost productivity cost from device failure

1. VDC Research Group, Inc. | Enterprise Mobility, "Total Cost of Ownership Models for Line of Business Mobile Solutions," December 2018.



# CONSIDER THE TOTAL COST OF OWNERSHIP

# 4

A TCO analysis balances the upfront investment costs of a technology option with its ongoing support costs (soft costs). TCO analysis is a powerful measure of the ultimate cost and impact of a technology investment, yet only 31.6% of organizations performed a TCO analysis during their most recent mobile computing deployment.<sup>1</sup>

Despite providing important information that decision makers need to understand the costs and benefits of mobile solutions, a TCO analysis has not become a standard measurement in mobile deployment evaluations.<sup>1</sup> It should be.

As VDC Research explains, not all mobile solutions are equal.

“Failing to align the ‘right’ mobile solutions with the target application or use case can expose organizations to significantly higher cost of ownership. This places a premium on reliability for business-critical solutions to minimize the disruptive impact of solution failure and visibility to quickly identify and respond to problems that do arise.”<sup>1</sup>

Additional sources of research also support the importance of conducting a TCO analysis before investing in an enterprise mobility solution:

**LOST PRODUCTIVITY REPRESENTS AS MUCH AS 41 PERCENT** of a mobile device’s TCO. On average, mobile workers lose 50 to 80 minutes of productivity when their mobile devices fail.<sup>2</sup>

**CONSUMER-GRADE DEVICES INCREASE SUPPORT COSTS.** A business with 1,000 mobile devices spends approximately \$170,000 more per year to support consumer-grade devices than the enterprise-grade devices.<sup>3</sup>

Selecting the right mobile device for the workflow and the environment in which it will be performed is key to success. Doing so reduces the risk of a failed or poorly performing mobile solution that disrupts workflow productivity and increases the overall cost of ownership.

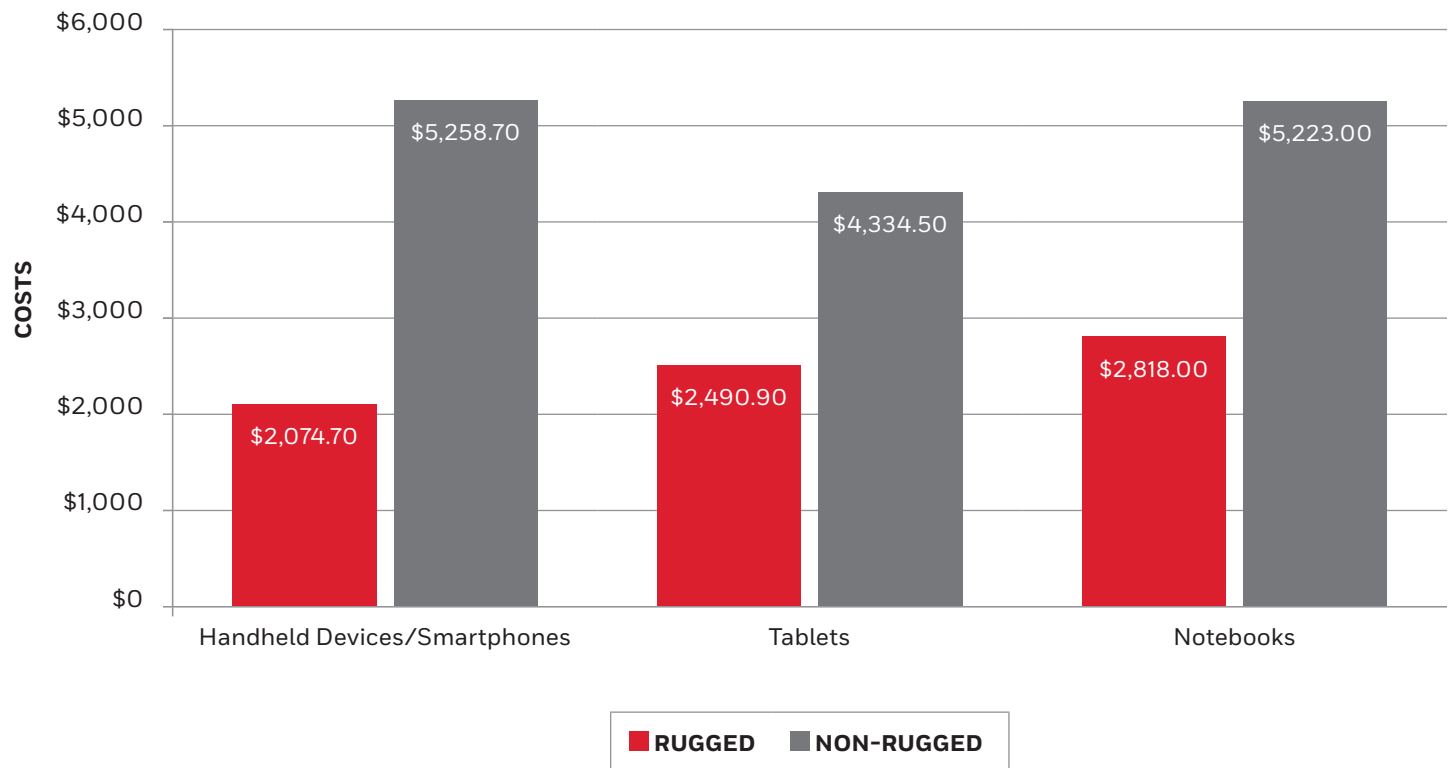
1. VDC Research Group, Inc. | Enterprise Mobility, “Total Cost of Ownership Models for Line of Business Mobile Solutions,” December 2018.

2. [https://www.automation.com/pdf\\_articles/VDC\\_Research\\_TCO\\_Whitepaper.pdf](https://www.automation.com/pdf_articles/VDC_Research_TCO_Whitepaper.pdf)

3. <https://dsmedia.com/rugged-vs-consumer-devices-in-the-warehouse/>

# Annual TCO by Mobile Form Factor Supporting Line of Business Applications<sup>1</sup>

Rugged devices have a 42.5% to 60.5% lower annual total cost of ownership vs. non-rugged devices.



1. VDC Research Group, Inc. | Enterprise Mobility, "Total Cost of Ownership Models for Line of Business Mobile Solutions," December 2018.

According to research conducted by the VDC Research Group, Inc., the average annual total cost of ownership (TCO) of mobile devices supporting line of business applications is at least 42.5% lower for rugged devices.

The TCO research factored in the following costs:

- Upfront acquisition costs
- Deployment costs
- Training costs
- Support costs
- Cost of downtime

Although consumer-grade devices offer lower upfront acquisition costs, they have substantially higher failure

rates (see page 8). This contributes to their higher TCO as calculated by the disruptive impact to worker productivity, in addition to higher support costs.

Additional consequences of device failure include:

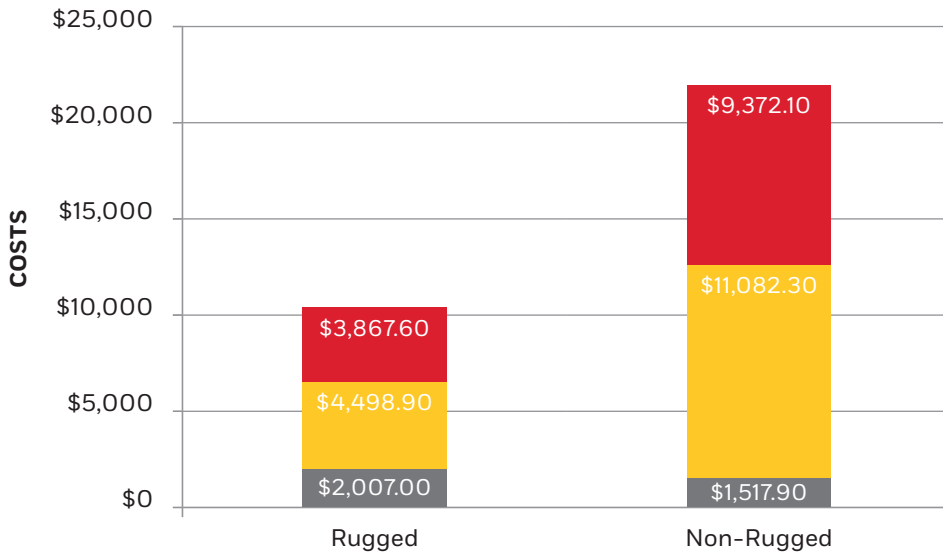
- Employee frustration
- Potential for lost sales revenue (application dependent)

While those two consequences were not included in VDC Research Group's TCO calculations, they have a potentially significant impact.



# 5-Year Handheld Computer/Smartphone TCO: Line of Business Applications<sup>1</sup>

**Rugged devices have a 52.7% lower 5-year total cost of ownership vs. non-rugged devices.**



■ UPFRONT DEPLOYMENT HARD COSTS   ■ IT SUPPORT COSTS   ■ PRODUCTIVITY LOSS COSTS

1. VDC Research Group, Inc. | Enterprise Mobility, "Total Cost of Ownership Models for Line of Business Mobile Solutions," December 2018.

VDC Research Group, Inc. also studied the five-year TCO of rugged vs. non-rugged handheld computers/smartphones supporting line of business applications.

As the chart above shows, the higher upfront costs for a rugged device are more than offset by lower IT support costs and productivity loss costs over five years compared to a non-rugged device.

**UPFRONT DEPLOYMENT HARD COSTS:** 32% higher for rugged devices.

**IT SUPPORT COSTS:** 59% lower for rugged devices.

**PRODUCTIVITY LOSS COSTS:** 58.7% lower for rugged devices.

Combining the three cost areas, the research shows that the five-year TCO of a rugged device is more than 52% lower than that of a non-rugged device.

# CONCLUSION

**As mobile computers have evolved and become commonplace in business, some of the once-clear differences between what is a consumer device and what is an enterprise mobile computer have disappeared. That has made choosing between enterprise and consumer devices more challenging.**

Making the right choice for your enterprise begins with understanding:

- Usage environment
- Work processes
- How various device features and functions contribute to productivity and reliability

Specialized mobile work processes usually require specialized devices that are designed for the task. Understanding which specialized features and environmental protections you need is key to making the right device choice.

Because productivity is so important, rugged enterprise mobile computers have a significant total cost of ownership advantage over consumer models in challenging work environments where devices are exposed to drops to hard surfaces, weather, spills, and other potential causes of damage.

In conclusion:

While consumer devices tend to cost less up front to purchase than rugged enterprise models, they have a shorter life span in enterprise environments.

Rugged devices cost more up front to purchase, but have a longer life span in enterprise environments.

When you factor in the downtime, maintenance, and replacement costs, rugged devices cost significantly less over the entire life span than consumer devices.



# ABOUT HONEYWELL

Your enterprise need not compromise to get the mobile devices that meet your specific needs. Honeywell Safety and Productivity Solutions offers a full range of mobile computers, smartphones, and accessories, including different ruggedness levels, features, and configuration options.

Honeywell Safety and Productivity Solutions is a leading manufacturer of high-performance image- and laser-based data collection hardware, including rugged mobile computers and barcode scanners, radio frequency identification solutions, and voice-enabled workflow and printing solutions.

With the broadest product portfolio in the automatic identification and data collection industry, we offer data collection solutions for retail, healthcare, distribution centers, direct store delivery, field service, manufacturing, and transportation and logistics companies seeking to improve operations and enhance customer service.

We also offer advanced software, service, and professional solutions to help you better manage your data and assets. For example, Honeywell Operational Intelligence is our cloud-based, vendor-agnostic software solution for mobile device management and so much more. By systematizing service workflows and aggregating and analyzing real-time information from all your devices, Operational Intelligence gives you the actionable insights you need to optimize the performance and maintenance of your critical IT assets and their associated workflows.

Honeywell Safety and Productivity Solutions products are sold worldwide through a network of distributor and reseller partners. For more information, please visit [www.honeywellaidc.com](http://www.honeywellaidc.com).

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## ADDITIONAL RESOURCES

[Top 5 Tips for Choosing Mobile Computers](#)

**For more information**

[www.honeywellaidc.com](http://www.honeywellaidc.com)

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Tough Choice White Paper | Rev C | 11/19  
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