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IoT's implications for the future of workforce productivity

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As increasingly more devices get connected, and more data is gleaned and analyzed, knowledge workers are beginning to see improvements in their physical environments, better support for alternative work models and better optimization of their mental performance.

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Introduction

In the early days of the Internet of Things (IoT), much of the hype was on consumer use cases as tech giants touted their connected speakers, wearables and ‘smart home’ accessories. Meanwhile, IoT adoption has grown in the industrial space, where manufacturing firms look to improve processes such as inventory management and developing predictive maintenance of equipment, aiming to improve overall equipment effectiveness (OEE). Transportation firms prioritize use cases like fleet and fuel management. Utilities manage complex microgrids with a mix of renewable and traditional sources of power. In these and adjacent industries, IoT shows great promise for reducing costs, improving safety, and presenting new insight and potential business models.

Although far less obvious in its implementation options, IoT has begun to address similar productivity and efficiency issues among traditional enterprise knowledge workers in recent years. As increasingly more devices get connected, and more data is gleaned and analyzed, knowledge workers are beginning to see improvements in their physical environments, better support for alternative work models and better optimization of their mental performance.

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Traditional knowledge-worker productivity is the next frontier for IoT disruption – advances in connected buildings, wearables, data analytics and artificial intelligence could help optimize the employee experience and support more efficient work inside and outside of the office. Dealing with personal data, however banal, presents a host of ethical challenges. However, if these challenges are adequately addressed, and companies approach IoT-supported productivity in a prescriptive manner, rather than punitive, we believe it could be a key differentiator in supporting healthy work habits that set the stage for improved business outcomes. Just as in the industrial space, having smarter systems through analysis of IoT data also needs the workforce to be digitally enabled in order to act on these insights; otherwise, only half the job is being done.

Context

To understand the potential impact of IoT on workforce productivity, we must first understand why businesses are pursuing IoT strategies in the first place. In order to better understand what our survey respondents would consider a successful IoT deployment, we asked them to list their most important key performance indicators (KPIs) for their IoT initiatives. Here are the responses from our Voice of the Enterprise: Internet of Things, the Operational Technologies Perspective report, which has respondents from within industries such as manufacturing, oil & gas and utilities.

Which KPIs are most important for measuring the success of your organization's IoT initiatives?

Source: 451 Research's Voice of the Enterprise: Internet of Things, the Operational Technologies Perspective



Sample Size = 593
Base: All respondents

As we can see, sales and profit growth top the list, with customer satisfaction in second place. What's telling here is that in third place, with slightly more than one percentage point separating them, is employee satisfaction. This is crucial because it helps us to understand the employee experience as one of the driving forces behind enterprise IoT initiatives. Sales and profit growth are driven by improving KPIs such as OEE, simply keeping the machines running more efficiently. The physical nature of OT industries relies heavily on the workforce, and industrial companies are known to be facing 'the great crew change,' where the demographics have a mass of experienced workers about to retire and not yet back-filled due to the nature of the work. Hence, a need to both attract a new generation with higher-tech tools and environments while retaining as much expertise as possible.

Often, enterprise IoT initiatives that are focused on knowledge workers start with the deployment of wearables. According to our VoCUL: Endpoints and IoT, Consumer Representative survey from Q2 2019, 17% of responding employers are providing wearables to their employees. When we segment the data by employees aged 25-34, that number jumps to 33%. Of the organizations that did provide wearables to their employees, 45% did so for fitness tracking – the primary reason for deployment since it has impacts on health and wellness initiatives, as well as benefit spend. However, the second-most-important reason was for workforce productivity, cited by 37% of respondents.

These wearables deployments are often the gateway into a broader IoT deployment within an organization – especially one that is workforce-centric. What this data tells us is that, although deployments aren't yet very broad, companies are approaching these initiatives with workforce productivity in mind. And if that focus is a part of their initial wearables deployment, it will likely be a part of the larger enterprise IoT focus, as well.

Even if this focus continues, and organizations begin to double down on productivity-related IoT deployments, it can be hard to picture what that looks like concretely. We believe the strongest benefits, at the start, will be seen in optimizing the physical environment for employees, supporting new mobile and remote work models, and optimizing individual performance and efficiency.

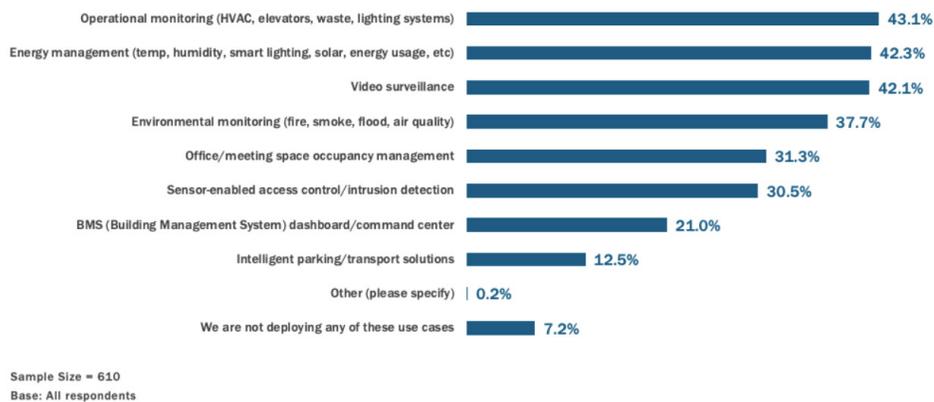
Optimized environment

One of the easiest entry points into a broader IoT deployment that is focused on knowledge-worker productivity is the physical environment these workers reside in, as we covered with OSISOft. This is a great starting point because an employee's environment can have a major impact on their productivity, and many organizations are becoming more familiar with smart office and smart building initiatives – sometimes stemming from an initial stint with a connected datacenter.

Additionally, many companies already have some sort of smart-building strategy in place, and are actively measuring KPIs relative to their building and thinking of ways to optimize. According to the aforementioned VotE report, here are the top smart-building use cases that organizations have in play today.

Which of the following smart-building use cases are implemented within your organization today?

Source: 451 Research's Voice of the Enterprise: Internet of Things, the Operational Technologies Perspective



Let's walk through some scenarios for improving work productivity, based on this list. With operational monitoring and energy management, companies can automatically plan heating and cooling initiatives for the optimum temperature requested by a team, or manage the temperature of a room based on the number of occupants. Sensor-enabled access means that companies working in a different office can 'badge in' more efficiently, bypassing a physical sign-in sheet at a front desk.

From this list, office and conference room occupancy management is key. If effectively managed and tied into the calendar and scheduling systems of record, it could preemptively check meeting room equipment, boot relevant machines and trigger a call to an AV team in advance of the meeting to minimize the chance of problems. More efficient meetings mean more work gets done.

Support for new work models

IoT initiatives can also help support productivity in new work models, both in-office and remote. Starting with the in-office models, one such example would be the bolstering of hoteling initiatives. Hoteling is an organizational model in which no employee has an assigned seat. Rather, employees schedule their time at a desk or other workspace as needed. This frees up employees to work where they are most comfortable, and saves the company money in real estate and operations if they have employees who only work part time in the office.

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With additional sensors, employees can more effectively manage their reservations and needs within a workspace. Additionally, the data collected and analyzed from such hoteling efforts could help leadership better understand the shifting dynamics of remote work or employees working flexible hours, and thus support planning for future growth.

The growth of the distributed workforce demands new methods and models for professional interaction. Sensors can help employees better understand the availability of their remote counterparts, but augmented reality – what 451 Research considers to be the user interface for IoT – holds even more potential value. With AR and virtual reality (VR) in play, remote workers can have more in-depth meetings and discussions with their on-premises counterparts, including bringing in the results of IoT instrumented devices. Additionally, business units like IT and HR can better support their constituents remotely with these new technologies and provide services such as training without travel expense.

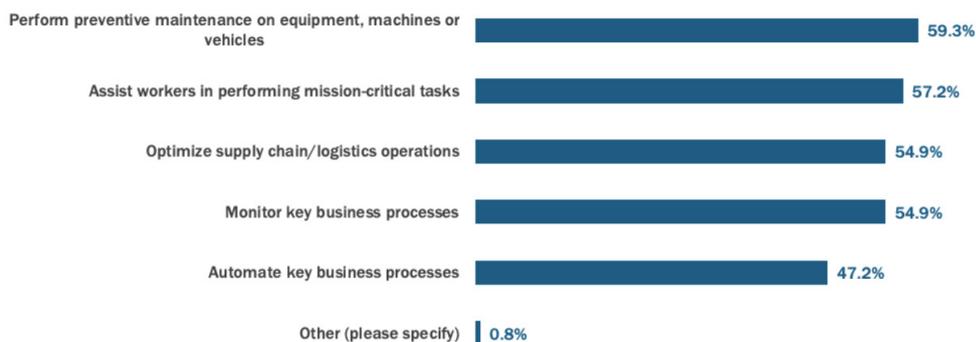
Another work model that will be impacted by IoT is field work. IoT and edge computing have long been established as a disruptive force in industries such as agriculture and construction, but they will also have an impact on field service technicians, field sales representatives, mobile workers and more. If we harken back to the aforementioned VoCUL survey data, we see that the third-most-important reason for deploying employee wearables is to improve real-time communication with mobile workers and field employees, cited by 36% of respondents. Connectivity and availability are vital to innovations in field work, and IoT has promise for improving both of those.

Optimized self

While it has great potential to improve workplace environments and work models, IoT also has the potential to optimize the productivity of the individual worker. Employee satisfaction was listed as one of the key drivers behind IoT initiatives, but one of the most desired outcomes from these deployments is optimization of mission-critical work. Take a look at how it stacks up against other optimizations in the graphic from our aforementioned VoTE survey.

In which of the following ways does your organization use IoT initiatives to optimize operations?

Source: 451 Research's Voice of the Enterprise: Internet of Things, the Operational Technologies Perspective



Sample Size = 388

Base: Respondents whose organization uses IoT initiatives to optimize operations

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Performing mission-critical tasks could mean a variety of things, depending on the industry of the respondent. It can be assumed that supporting the employee with the time, space, resources and tools to get the job done would likely cover the bases here.

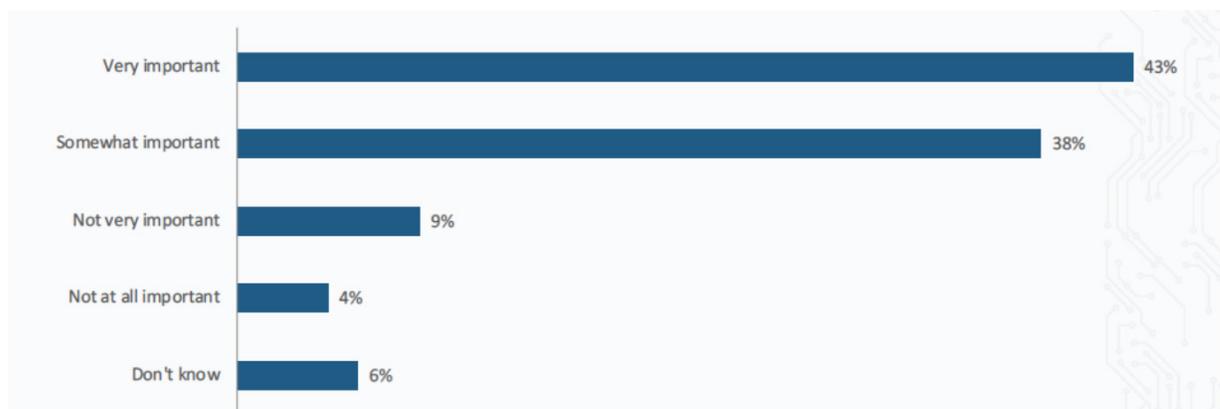
It is important that we consider both just-in-time needs and more evergreen workforce needs. Wearables are a good start here, especially when we consider a potential blend of well-being and productivity. For example, fitness monitors can measure heart rate relative to certain tasks, projects or seasons, and managers can use that information to best fit employees to the projects that fit their work styles the best.

Additionally, products like the EMOTIV headsets can be used to measure attention and stress levels on given projects. All of this data can be used to find patterns and determine what works best for certain employees. For example, a certain set of employees may be more attentive when they are allowed to work from home or work nontraditional hours. These insights help contextualize work for the individual, improving their employee experience and possibly boosting their work output, as well.

It's important to understand the marketable value of productivity, as well. In the chaotic talent market, productivity can even be leveraged as a benefit to more effectively attract new employees. In our 451 Research VoCUL: Corporate Software Survey from September 2018, we asked respondents, if they were in the market for a job, how important it would be that their prospective employer offer devices, applications and other productivity tools in order to help them get work done.

How important would it be for a new employer to offer devices, apps and other productivity tools to help get your work done? (n=1,121)

Source: 451 Research's VoCUL: Corporate Software Survey, September 2018



As we see from the results, 81% said that productivity would be at least somewhat important – 43% said it would be very important. Human resources practitioners and hiring managers should not overlook the impact of productivity on talent management.

How to move forward

IoT is still such a nascent concept that, for many businesses, it can be hard to understand the best path forward. At the onset, our recommendation would be to clearly define the goals of your IoT initiative, especially regarding productivity, since that will inform the devices and services you will need to get started. These goals should include primary and secondary KPIs, and a method for managing their measurement and analysis.

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Once you know what data is needed, capture it and clean it. Working with dirty data will negatively impact your ability to glean insight from your deployment, and may send you down the wrong path in future efforts. Because we're dealing with personal data here, do your best to understand employee concerns and mitigate any potential ethical issues that may arise. This is especially true when attempting to optimize individual performance. Data should only be used to help employees and improve their employee experience. The data can be used prescriptively for workforce optimization, but should not be used to punish or ostracize an individual.

As next-gen workforce strategies are coming into view, we believe that IoT will play a central role in the foundation of these strategies for blue-collar workers, white-collar workers and every worker in between.