ELEVATING BUILDING PERFORMANCE

Connecting Assets to Enable More Intelligent Operations

Honeywell

EXECUTIVE SUMMARY

Building owners and operations are facing ever-growing pressures to reduce costs and digitally transform their operations. At the same time, building operators must manage internal challenges as they plan to execute C-suites priorities including decentralized controls, legacy operational technology systems and lack of solutions to collect the data needed to identify optimization opportunities. Innovative technologies are required to mitigate these challenges, and some organizations are turning to building technology providers for such offerings. Software-enabled automation assets and systems can help enable intelligent operations by providing operators with access to real-time operational data, data-driven insights and centralized controls of sites. This information can help organizations reduce costs, better identify optimization opportunities and address labor and skill shortages.

METHODOLOGY

The research process sought to gain a better understanding of the perceived benefits of operational efficiency and how it can be achieved. Honeywell commissioned independent research firm Verdantix to explore the current state of operations; drivers and barriers to invest in software; objectives of the C-suite; capabilities of intelligent operations; and the benefits received. Verdantix undertook independent and anonymized quantitative interviews with 100 executives across digital transformation, sustainability, operations, facilities and asset roles from organizations with more than $1 billion in revenues. These executives were employed by office occupiers and owners or organizations in the facilities management services, pharmaceuticals, healthcare and semi-conductor/battery manufacturing sectors.

THE STATE OF OPERATIONAL STRATEGIES WITHIN ORGANIZATIONS TODAY

Building owners and operators are under immense pressure from customers, investors and regulators as they seek to meet more ambitious sustainability and performance targets. Legacy building systems and decentralized controls can prevent organizations from leveraging more advanced digital solutions to help track and improve performance, while labor constraints and evolving regulations are further hindering their efforts. This section of the report looks at the current state of operational strategies and the challenges building owners and operators are encountering.

"WHAT LEVEL OF PRIORITY IS THE C-SUITE PLACING ON THE FOLLOWING OBJECTIVES OVER THE NEXT 12 MONTH?"

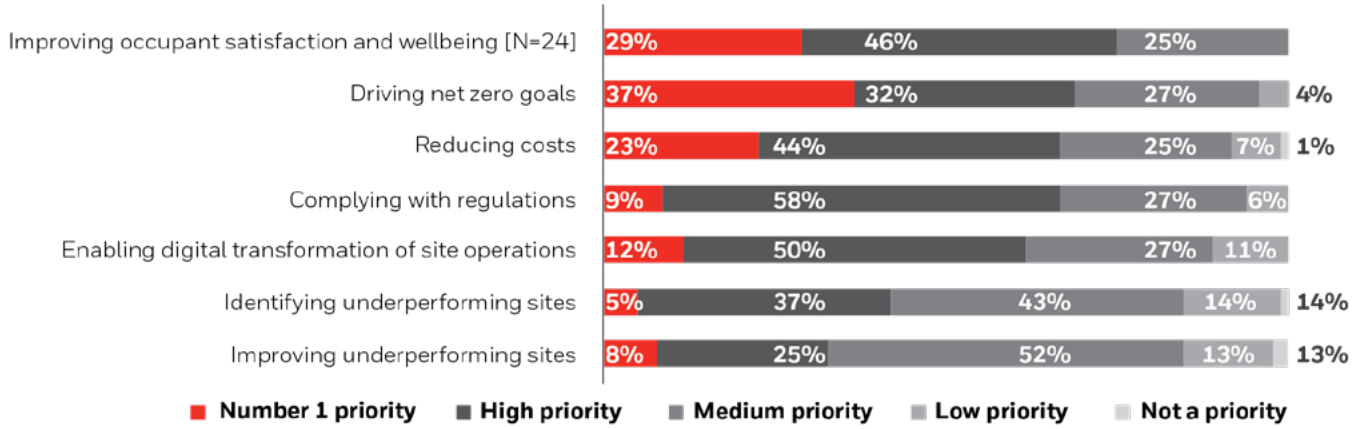

Figure 1. C-Suite priority objectives of the next 12 months | Source: Verdantix Research and Analysis for Honeywell

C-SUITES ARE PUTTING PRESSURE ON MANAGERS TO REDUCE COSTS AND IMPLEMENT DIGITAL SOLUTIONS

Managers are seeking strategies and solutions to meet targets and goals set by C-suite executives, leading organizations to:

- **Reduce operating costs through digital transformation**
  Following several years of high inflation and stagnant interest rates, many organizations are continuing to focus on cost reduction activities. Two-thirds of managers interviewed stated that cost reduction is the number one priority or a high priority over the next 12 months for C-suite executives, with an even higher percentage of organizations prioritizing cost reduction in the United States (80%) and Europe (75%) (see Figure 1). Cost reduction and efficiency improvement programs are major catalysts for driving digital transformation, with 46% of surveyed executives noting such programs as a very significant factor influencing the digital transformation of their operations (see Figure 2). This highlights that executives are pushing managers to move away from traditional maintenance strategies towards more digitally connected maintenance strategies, such as predictive and condition-based maintenance.

ORGANIZATIONS ARE SEEKING TO:

REDUCE OPERATING COSTS

COMPLY WITH REGULATIONS

MITIGATE SKILLED LABOR GAP

"HOW SIGNIFICANT ARE THE FOLLOWING FACTORS IN DRIVING THE DIGITAL TRANSFORMATION OF YOUR OPERATIONS?"

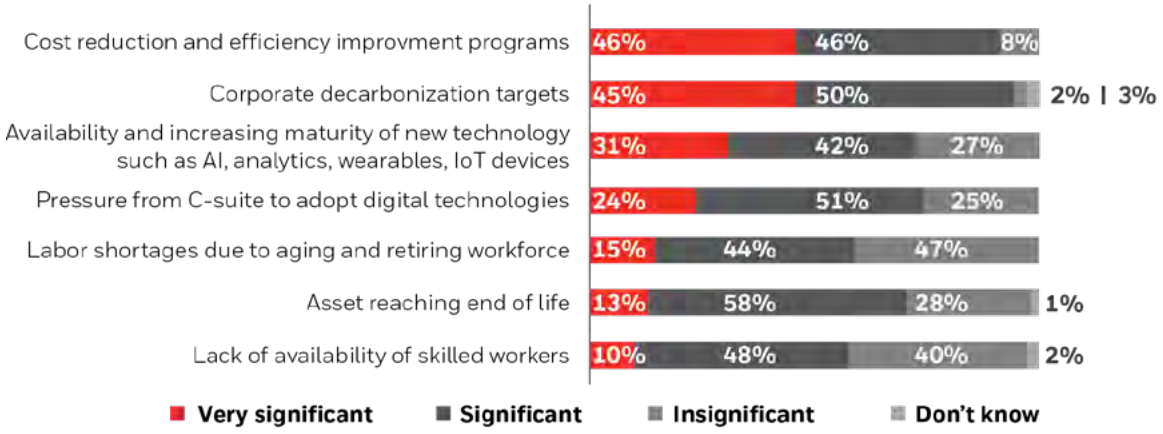

Figure 2. Drivers of digital transformation Source: Verdantix Research and Analysis for Honeywell

- **Comply with growing sets of regulations**
  As environmental, social and governance (ESG) and environment, health and safety (EHS) regulations continue to evolve and tighten, organizations must stay up to date and compliant, otherwise risking harsh penalties and harm to their brand's reputation. Two-thirds of surveyed organizations stated that complying with regulations is the number one priority or a high priority over the next 12 months, with an even higher percentage of organizations prioritizing compliance in the United States (80%) and APAC (75%). This is especially true for organizations in highly regulated industries with additional requirements such as pharmaceutical manufacturing (84%) and semiconductor and renewables manufacturing (75%).

- **Mitigate skilled labor shortages**
  Finding experienced and skilled people to support site operations is difficult in today's labor market, considering current levels of turnover and the increasing number of employees on the verge of retirement. This is forcing organizations to adopt digital solutions to augment their shorthanded staff. More than half of organizations surveyed stated that labor shortages due to an aging and retiring workforce were a very significant or significant driver of their digital transformation. This is particularly the case in industries with highly complex and unique processes and equipment such as semiconductor and renewables manufacturing (84%) and in regions with more complex labor conditions, such as the United States (75%).

ORGANIZATIONS STRUGGLE WITH DECENTRALIZED CONTROLS AND LEGACY SYSTEMS

Organizations face several internal challenges as they plan to execute C-suites priorities. The study found that many organizations today:

- **Centralize operational data to some extent but lack centralized controls of sites**

  All surveyed organizations have a centralized database for operational data either at a site, multi-site or portfolio level, while only 50% of those surveyed have centralized control of their sites and assets (see Figure 3). Regionally, APAC lags other regions in centralized control with only 35% of surveyed organizations having this capability, while the healthcare industry significantly falls below the overall industry average at just 30%. The lower levels of centralized control seen in industries such as healthcare can in part be attributed to the reliance on legacy systems, especially considering that all surveyed healthcare organizations had their entire suite of operational software hosted on premise. Conversely, 80% of surveyed advanced manufacturing facilities now host part of their digital solutions in the cloud. This shift from on-premise to cloud-based solutions, particularly in industries like advanced manufacturing which has significant greenfield development, can allow companies to enhance data integration across sites and systems. As a result, organizations can adopt a more cohesive and streamlined approach to managing their operations.

Only

30%

of healthcare organizations have centralized building controls.

80%

of advanced manufacturing facilities host part of their digital solutions on the cloud

"WHICH STATEMENT BEST DESCRIBES YOUR ORGANIZATION'S APPROACH TO OPERATIONS?"

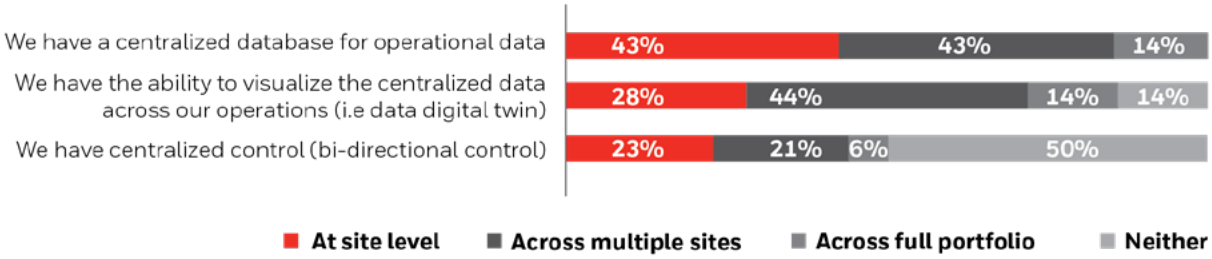

Figure 3. Existing state of operations | Source: Verdantix Research and Analysis for Honeywell

- **Lack the necessary IT and operational technology (OT) systems to enable intelligent operations**

  As organizations look to invest in digital solutions that enable intelligent operations, there can be significant perceived risks associated with deploying new technology into their existing system landscape. Over 80% of surveyed organizations looking to enable intelligent operations and centralized control believe legacy operational systems are a very significant or significant barrier to their investment in software (see Figure 4). Additionally, 65% of surveyed organizations feel their lack of necessary IT infrastructure and resources are a very significant or significant barrier to investment. The combination of on-premise legacy systems and a lack of internal IT resource expertise is delaying surveyed organizations from deploying the software needed to meet performance and sustainability goals.

"HOW SIGNIFICANT ARE THE FOLLOWING FACTORS IN HOLDING BACK YOUR ORGANIZATION'S INVESTMENT IN SOFTWARE FOR OPERATIONS?"

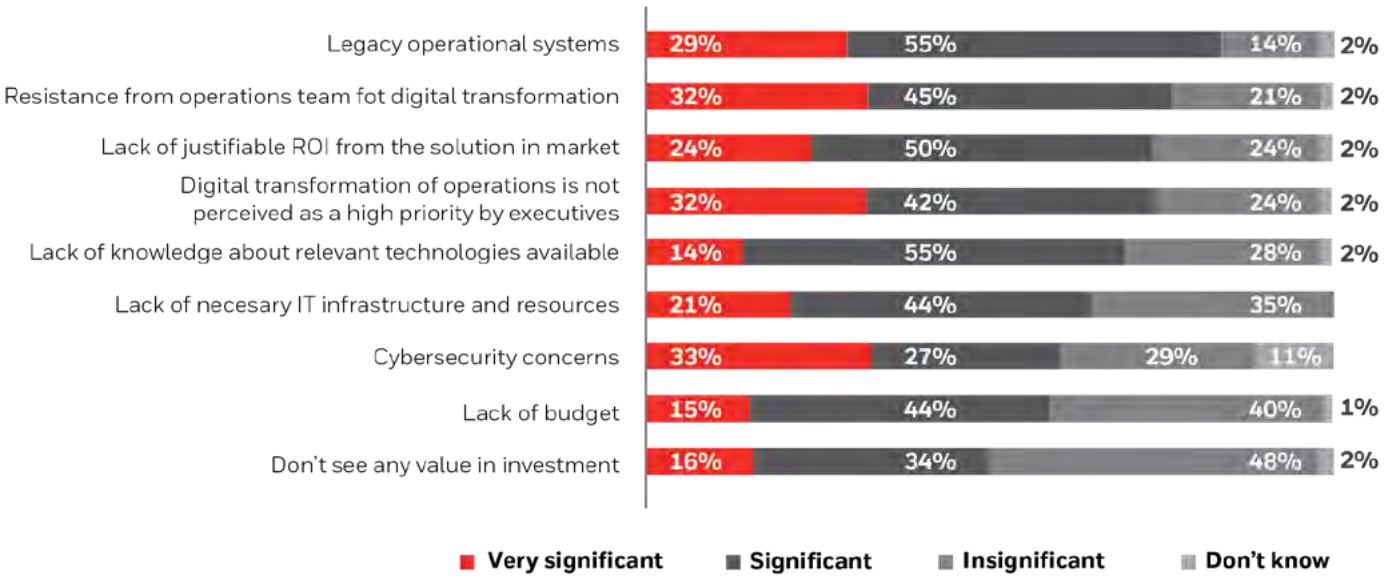

Figure 4. Barriers to investing in software | Source: Verdantix Research and Analysis for Honeywell

- **Need to collect more data on energy usage, carbon emissions and asset conditions**

  Data collection is also an area of focus for surveyed organizations to enable proper performance management and result tracking over time. Many surveyed organizations are still looking to increase the amount of data they are collecting or are looking to start collecting data on energy usage (65%), carbon emissions (44%) and asset condition (52%) (see Figure 5). Having digital solutions in place to frequently collect more robust datasets around these metrics would enable organizations to identify problem areas within their sites and address them to meet operational goals.

"DO YOU COLLECT THE FOLLOWING DATASETS WITHIN YOUR SITES?"

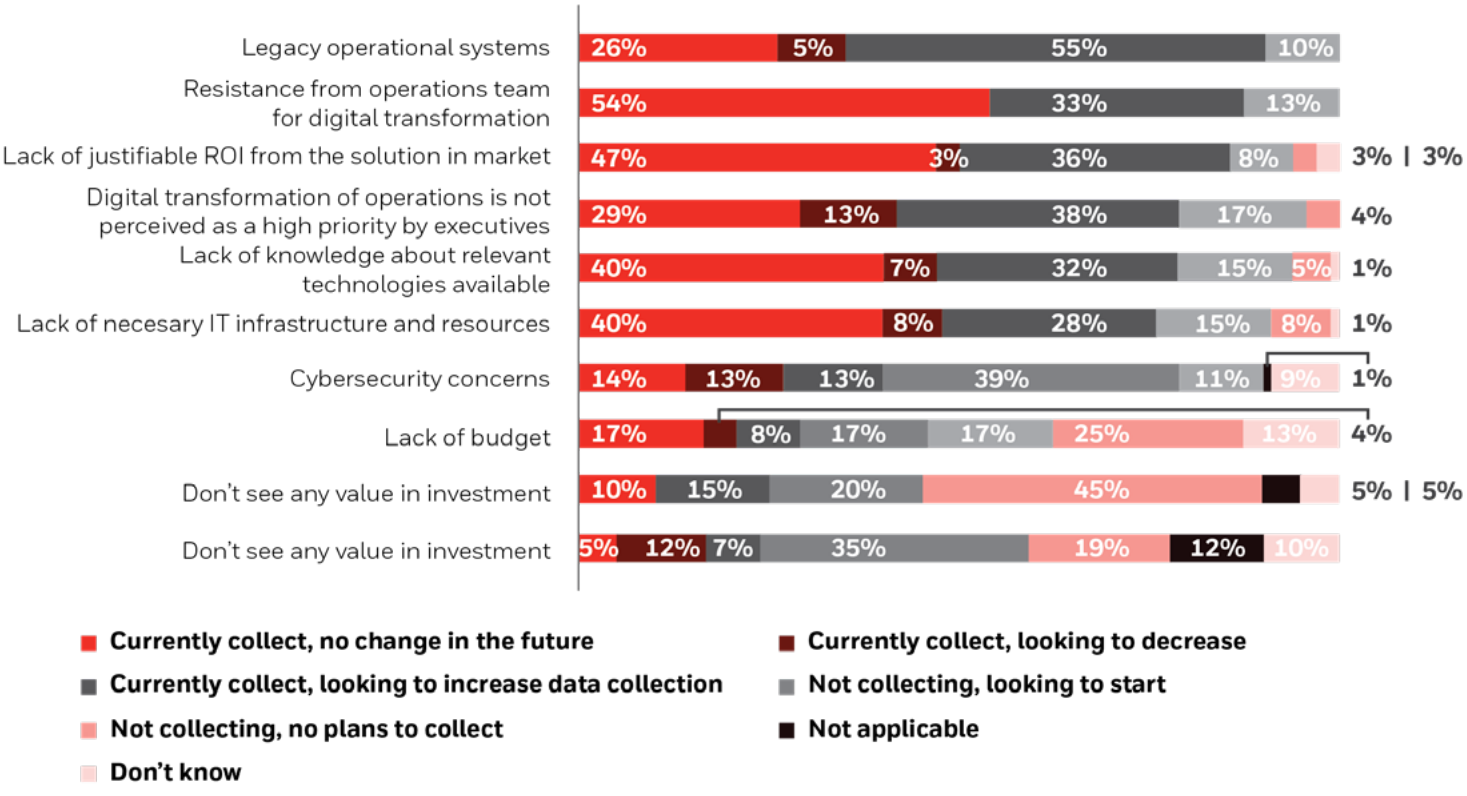

Figure 5. Collection of data sets | Source: Verdantix Research and Analysis for Honeywell

DEFINING INTELLIGENT OPERATIONS

Intelligent operations is a broad, all-encompassing term that can mean different things to different stakeholders. For the purpose of this report, intelligent operations is defined by the ability to:

- **Access real-time operational data from multiple systems**
  Intelligent operations provide managers and their teams with a holistic understanding of their operational performance in real time, enabling rapid response to critical failures and helping identify areas for continuous improvement. This can empower stakeholders across the organization to make more agile decisions and adapt to changes more effectively. Access to real-time data was a very important capability of intelligent operations for 40% of surveyed organizations, while integrating data from multiple systems (35%) and access to contextualized data (23%) were also seen as very important capabilities (see Figure 6). Access to real-time data is especially important for industries like healthcare, where 55% of surveyed organizations noted it as a very important capability.

- **Enhance decision making with analytics and insights**
  In many cases, key datasets are already being collected in some capacity from various systems, but many organizations are not able to quickly and easily leverage this data to make decisions. Intelligent operations allow for real-time contextualized data access and provide actionable insights and improvement opportunities - 36% of surveyed organizations see this as a very important capability. In this context, AI can play a tremendous role in rapidly processing and analyzing data to provide users with tangible recommendations. Over 80% of surveyed organizations see AI having a significant impact on enhancing maintenance processes through optimal maintenance schedule recommendations and equipment failure prediction (see Figure 7).

- **Centralize controls and automate site operations**
  Beyond visualizing real-time data and accessing relevant insights, intelligent operations also provide organizations the opportunity to control and automate critical site functionality. This enables organizations to implement centralized controls to rapidly deploy remediations across sites or leverage AI and closed-loop automated workflows to flag issues and adjust parameters to optimize performance of assets. Closed-loop operations to optimize sites was noted as a very important or important capability for 79% of surveyed organizations, while 72% of surveyed organizations noted centralized controls of operations across multiple assets, sites and their portfolio as a very important or important capability. Centralized control across sites is especially important for office occupiers with 96% those surveyed saying it is a very important or important capability of intelligent operations.

WHAT ARE "INTELLIGENT OPERATIONS"?

ACCESS REAL-TIME OPERATIONAL DATA FROM MULTIPLE SYSTEMS

ENHANCE DECISION MAKING WITH ANALYTICS AND INSIGHTS

CENTRALIZE CONTROLS AND AUTOMATE SITE OPERATIONS

“HOW IMPORTANT ARE THE FOLLOWING CAPABILITIES OF INTELLIGENT OPERATIONS?”

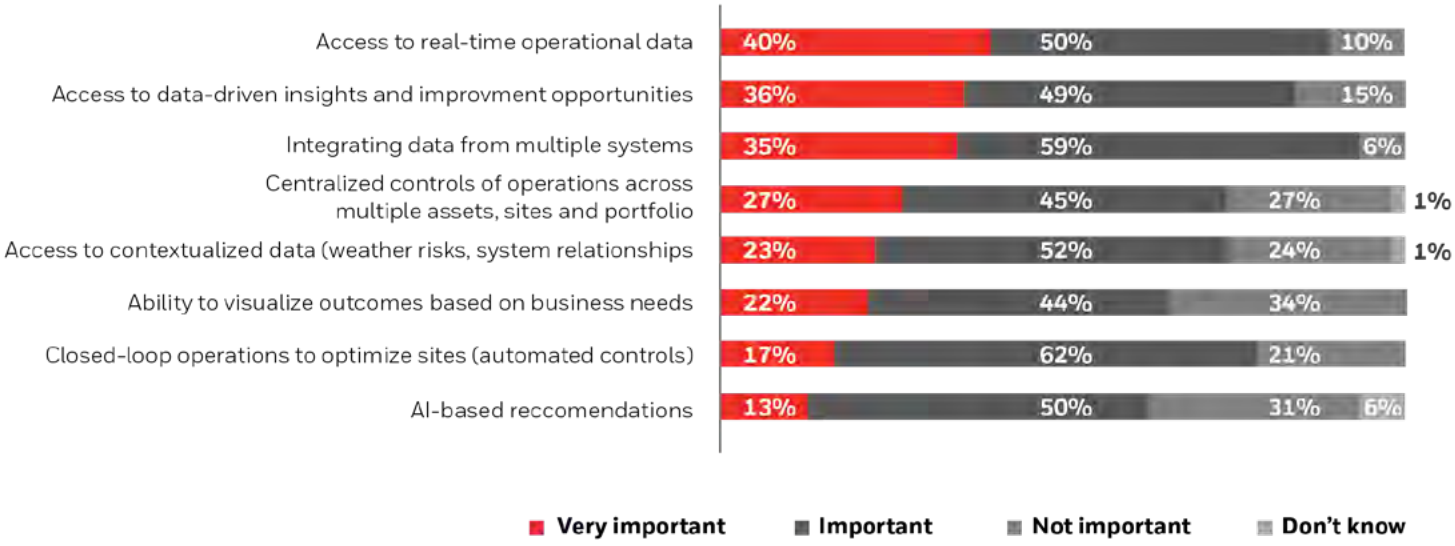

Figure 6. Capabilities of intelligent operations | Source: Verdantix Research and Analysis for Honeywell

“WHICH OF THE FOLLOWING PROCESSES DO YOU EXPECT AI TO HAVE A SIGNIFICANT IMPACT?”

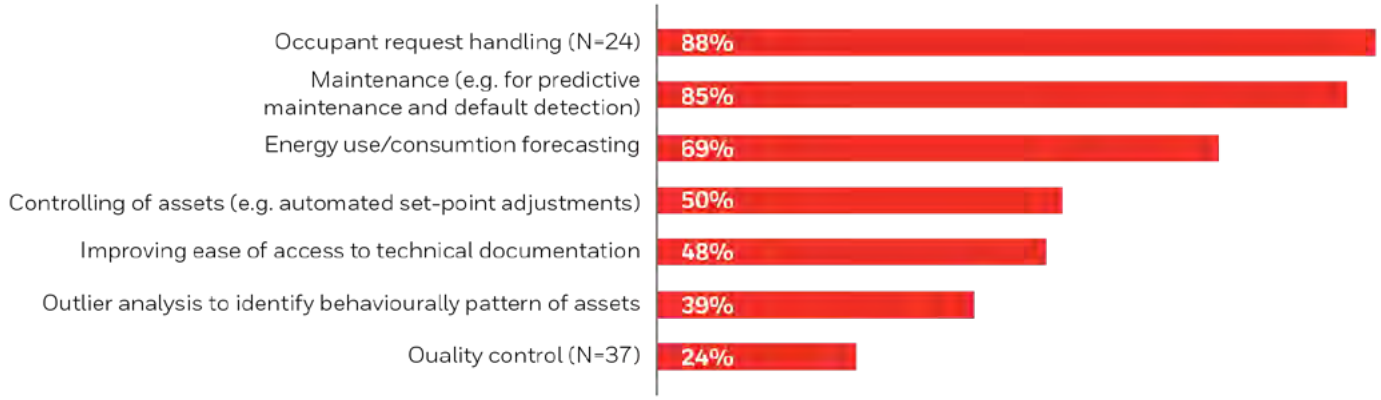

Figure 7. Impact of AI on operational processes | Source: Verdantix Research and Analysis for Honeywell

INTELLIGENT OPERATIONS CAN HELP ORGANIZATIONS ACHIEVE TOP AND BOTTOM-LINE KPIS

By digitalizing processes and enabling intelligent operations, organizations can:

- **Reduce costs across operational and capital expenditure**
  With increased pressure to drive down costs and accordingly plan future spending, organizations are focused on harnessing intelligent operations to achieve these goals. Nearly all organizations see operational expenditure reductions as a very important or an important outcome of intelligent operations, as digital solutions simplify energy efficiency optimizations, enhance asset maintenance schedules and improve employee productivity (see Figure 8). As organizations continue to roll out digital solutions and transform their existing operations, 75% of surveyed organizations are using improved budget planning and 73% are using lower operating costs as KPIs to understand the success of software deployments (see Figure 9).

- **Optimize site operations with process automation and fault detection**
  Fundamental to the reduction of operating costs lies in improvements to facility and asset uptime, hence 55% of surveyed organizations see facility uptime as a key metric in understanding the impact of digital solutions. Through asset failure prediction and automated performance management functionality, organizations are better equipped to reduce unplanned failures and quickly identify and address asset issues when they do occur - 86% of surveyed organizations say this is a very important or an important benefit of intelligent operations.

INTELLIGENT OPERATIONS CAN HELP BY

REDUCING OPERATIONAL AND CAPEX COSTS

OPTIMIZING SITE OPERATIONS WITH PROCESS AUTOMATION AND FAULT DETECTION

ADDRESSING LABOR AND SKILL SHORTAGES WITH DIGITAL TOOLS

HELPING ACHIEVE DECARBONIZATION GOALS

"HOW IMPORTANT ARE THE FOLLOWING BENEFITS/OUTCOMES OF INTELLIGENT OPERATIONS?"

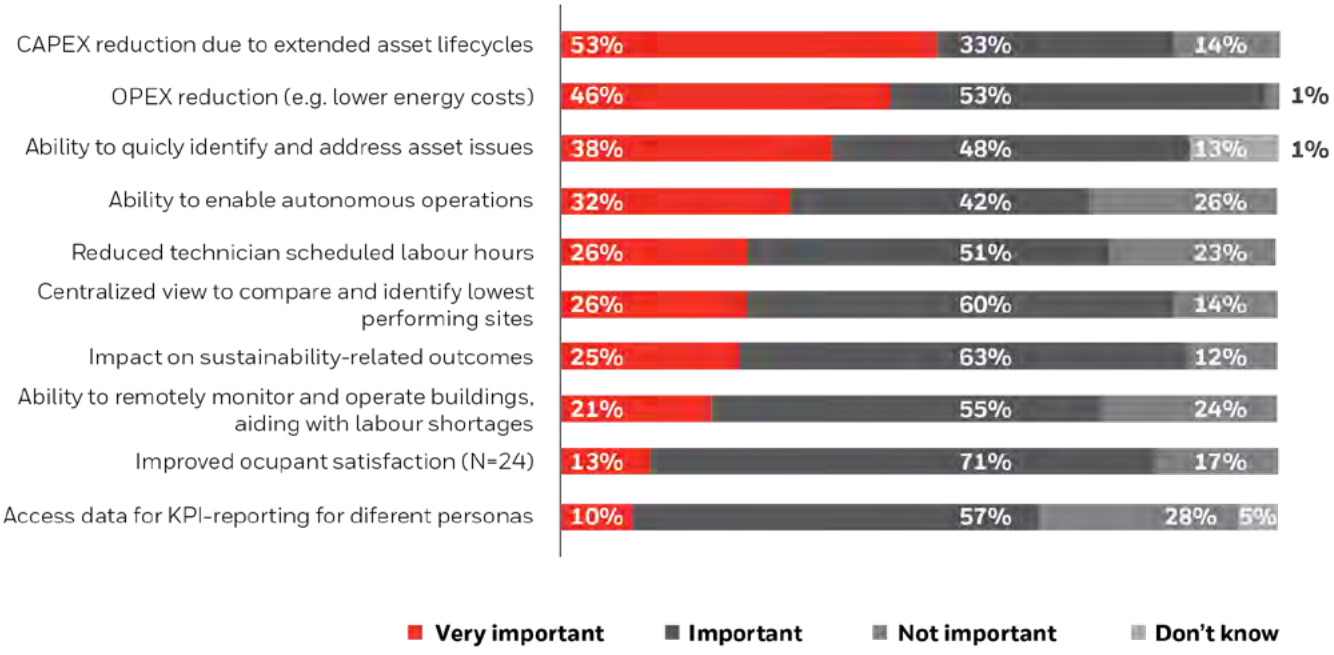

Figure 8. Benefits of intelligent operations | Source: Verdantix Research and Analysis for Honeywell

"WHICH OF THE FOLLOWING KPIS DO YOU TRACK TO UNDERSTAND THE IMPACT OF DIGITAL TRANSFORMATION OF OPERATIONS?"

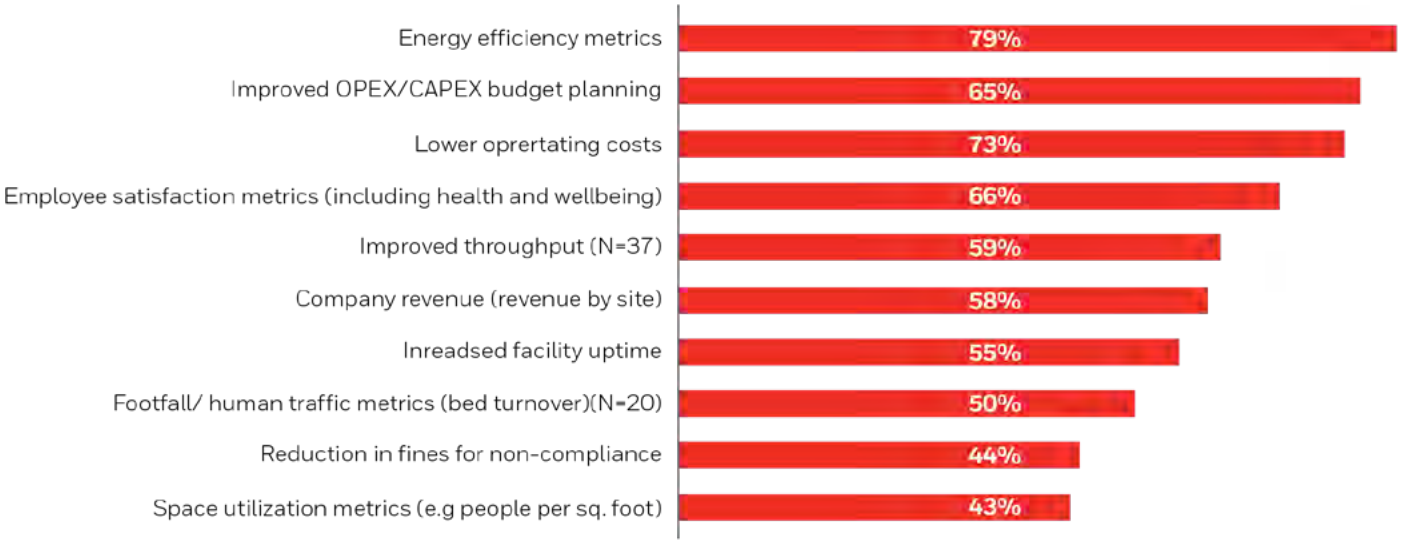

Figure 9. KPIs used to measure the impact of digital transformation | Source: Verdantix Research and Analysis for Honeywell

- **Address labor and skill shortages with digital tools**
  Through improved data collection and centralized visibility and control of site operations, organizations can counter the impacts of labor shortages and reduce resource hours to control costs. The optimization of maintenance schedules and the implementation of asset failure prediction models should help organizations reduce the amount of required overtime and scheduled hours for their existing workforce. Three-quarters of surveyed organizations noted that reduced technician scheduled labor hours is a very important or an important benefit of intelligent operations. In renewables and semiconductor manufacturing, where organizations require larger maintenance teams, this benefit is even more critical with 42% marking it as very important. The ability to remotely monitor and operate buildings to aid with labor shortages is a very important or an important outcome of intelligent operations for 76% of surveyed organizations. This is especially true in the healthcare industry with 50% of those surveyed marking it as a very important benefit.

- **Achieve net zero and decarbonization goals**
  Deploying digital solutions to improve energy efficiency provides multiple benefits for organizations including cost reductions associated with reduced energy usage and helping to reach corporate sustainability targets outlined by C-suites. This aligns with the expected benefits organizations plan to achieve through intelligent operations with 88% of surveyed organizations seeing impact on sustainability-related outcomes as a very important or an important outcome. As a result, 79% of those surveyed track energy efficiency metrics as a KPI to understand the impact of digital transformation on their operations. Organizations hoping to reduce costs and reach sustainability targets can leverage energy efficiency improvements delivered by intelligent operations.

CREATING BETTER CONNECTIVITY WITH INTELLIGENT OPERATIONS CAN ENABLE BUSINESS BENEFITS

The integration of intelligent operations, with a focus on enhancing connectivity across edge-to-cloud devices and connecting disparate operational systems, holds transformative potential for building owners and operators. By breaking down data silos between systems and people, digitalization creates a seamless flow of information, enabling more informed decision making and greater operational efficiency. The improved connectivity across assets, sites, systems and personnel can facilitate real-time insights, allowing operators to optimize asset performance, reduce operational costs, and better manage labor constraints. This heightened level of integration can also support sustainability efforts, providing a clearer path toward achieving organizational carbon reduction goals in the long term and reducing energy related costs in the near term. In essence, deploying connected, intelligent building systems can help modernize facility management while addressing the key challenges of today's evolving business landscape.

Building Automation
715 Peachtree St NE
Atlanta, Georgia 30308
Buildings.Honeywell.com

Honeywell