



# 2024 Smart Building Trends & Technology Adoption

LANDMARK RESEARCH PROJECT

## EXECUTIVE SUMMARY



ASHB AND THE FOLLOWING ASHB MEMBERS FUNDED THIS RESEARCH PROJECT

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## **Introduction**

In support of ASHB's research and analysis of smart building opportunities, Harbor Research fielded a comprehensive survey on smart building technologies and trends. The 2024 Smart Building Technology Trends Survey asked 308 individuals involved in the ownership, operation, or management of buildings across the United States (78%) and Canada (22%), about their perceptions, preferences, and challenges influencing the adoption of smart building technologies. The insights from this study highlight current trends, challenges, and opportunities such as connectivity, data, AI, and sustainability technologies.

The respondents' roles represented a broad range of responsibilities. The largest segment of respondents (43%) were Building/Property/Facilities Operators or Managers. Building/Property/Facilities Owners comprised 28% of the participants, while 17% were involved as Operations Staff, such as HVAC or lighting technicians. The remaining 12% were Real Estate Asset or Portfolio Managers.

In terms of building characteristics, the most common building use reported was commercial office space, with 52% of respondents claiming to work in this space. Other top building types included multi-unit residential, industrial/manufacturing, and mixed-use facilities, with lesser representation (from 20% to 9%) in hospitality, retail, data centers, government, hospitals, and educational institutions.

Compared to the 2023 survey, the 2024 survey shows an increase in the adoption of smart building technologies. In the 2024 survey, 90% of respondents reported having smart capabilities in their buildings, a notable increase from 74% in the 2023 survey. However, one caveat to this increase is that this year's survey had a higher share of newer buildings, with 60% of buildings reported as being constructed after 2000, compared to 43% in the previous year's survey.

## **Smart Building Technology Adoption Drivers**

The survey found that organizations adopting smart technology are primarily focused on improving operational efficiency and reducing costs, with 55% of respondents identifying this as a top priority. Sustainability is also a key goal, with 40% of organizations aiming to implement sustainable practices and technologies. Improving occupant experience and amenities, along with enhancing facility resiliency and reliability, are both areas prioritized by 36% of organizations. Additionally, 32% are focused on retrofitting buildings for new uses, while 30% are concerned with complying with and adapting to regulations. Areas noted to a lesser extent include improving indoor environmental quality (21%) and augmenting the existing labor force (9%)..

Specifically, regarding the adoption of smart technology, energy efficiency, and sustainability were cited as the most significant driver for both current users and non-users. Operational cost reduction is the second major driver, followed by occupant safety and security. Following these drivers were: resilience against extreme weather; occupant health, comfort, and productivity; regulatory compliance; and workforce augmentation.

### **Smart Building Technology General Adoption Trends**

The survey showed the current adoption of smart building technologies across different building segments. Climate/HVAC control was the leading use case across segments, reflecting its relative importance in building management. Its highest reported adoption was in the commercial segment (office and residential) at 81%, and its lowest in the institutional segment (education and government) at 67%.

Regarding smart technology's translation into maintenance operations, most smart building technology adopters are still using either corrective or routine maintenance, with fewer organizations utilizing condition-based or predictive maintenance. This is despite most respondents reporting some form of advanced data connectivity in their processes, such as "Advanced Asset Data Mgmt." or "Integrated Mgmt. & Bidirectional Data Flow." This reliance on traditional maintenance approaches despite connected data infrastructure suggests a significant opportunity for the adoption of more advanced, condition-based, and/or predictive maintenance strategies.

### **BMS/BAS Smart Building Technology Adoption Trends**

Zooming into BAS/BMS adoption specifically, the survey shows Climate/HVAC Control and Lighting Control as the leading use cases, with over 50% of smart tech adopter respondents managing these functions through their BMS/BAS. Other commonly managed systems include Energy Management, Security & Access Control, and Power Quality, Standby, & Backup.

Additionally, a significant majority of BMS/BAS systems are less than 10 years old, with 41% being under 5 years old and 43% between 5 and 10 years old. Many BMS/BAS setups are cloud-based (39%), followed by hybrid systems (20%) and on-premises setups (32%), suggesting a real trend towards cloud adoption in BMS/BAS hosting.

### **Smart Building Technology Adoption Challenges**

The survey highlights that cost remains the largest challenge across all building segments. For both current users and non-users, the high cost of

purchase and implementation is the top barrier, cited by 36% of current users and 34% of non-users. This financial barrier extends to specific applications such as data solutions and AI/ML technologies. Data privacy and cybersecurity concerns are the next most significant challenges, particularly for current users, with 26% identifying it as a major issue. Other common concerns include the high ongoing costs of maintenance and operation, resistance from staff to adopt new technology, and the potential dependence on external expertise.

The survey further breaks down these challenges across various building segments, such as Commercial Multi-Unit, Institutional, Retail & Hospitality, Mission-Critical, and Mixed-Use. In each segment, the high cost of purchase or setup is the leading concern, ranging from 30% to 45%. Data privacy and cybersecurity, along with their high ongoing costs, are also prominent concerns across these segments. Additionally, factors like new technology compatibility with older buildings, resistance from staff, and the difficulty in procuring smart solutions or identifying useful insights are significant barriers, especially in mixed-use and mission-critical environments.

### **Smart Building Financing Trends**

The survey found varying influences of different roles (C-Suite Officers, Building/Facility Management, Real Estate Portfolio Managers, HR Management, Building/Facility Tenants, and IT Management) on building systems and technology purchases across segments. C-Suite Officers were the most influential in the Commercial Multi-Unit segment but held notably less influence in other segments. Conversely, IT Management plays a significant role in Mission-Critical segments, such as industrial and data centers, reflecting the importance of technology management in these settings.

Building/Facility Management consistently holds an influential position across all segments, highlighting their critical role in decision-making processes related to building systems and technology. Real Estate Portfolio Managers and HR Management also play varying roles, their influence being more prominent in specific segments like Institutional and Mixed-Use environments. This overview underscores that the decision-making landscape for building technology purchases is complex and varies significantly depending on the type of building or facility.

### **Outlook & Solution Development**

Looking ahead, spending on smart building technologies is expected to either remain stable or increase. However, the decision-making landscape is complex and varies by building segment. For example, IT management plays



a crucial role in mission-critical segments such as data centers and hospitals, while C-suite officers are particularly influential in the commercial multi-unit segment. This variation underscores the importance of understanding the specific dynamics of each segment when planning technology investments.

The market for intelligent building technologies is characterized by a strong interest in their potential to deliver substantial ROI. A key driver for adopting smart building technologies is the desire to improve both financial and environmental efficiency. Operational efficiency, which contributes to both cost savings and sustainability, was another critical factor influencing adoption, further emphasizing the dual financial and environmental motivations. However, this enthusiasm is tempered by significant concerns, particularly around cost, implementation, integration, and data privacy.

Despite these challenges, there is a generally positive perception of these technologies, underpinned by their proven track record. For vendors in this space, addressing these pain points effectively and demonstrating the tangible benefits of their solutions could accelerate adoption rates, as organizations seek to leverage smart technologies to meet their operational and environmental goals.

For more information on the survey and related report, please visit ASHB's website at <https://www.ashb.com/>