NAC Executive Insights

Technology Adoption and Deployment - Management Related Risks (Group 2)

Key Points

- The importance of developing a detailed integration plan that outlines objectives, stakeholder engagement, technology assessment, and resource allocation to ensure successful technology adoption in the engineering and construction industry is outlined.
- Effective strategies to manage resistance to new technologies, including stakeholder engagement, education and training, and incentivizing adoption through rewards and recognition are developed.
- Risk management strategies addressing the necessity of conducting risk assessments to identify potential challenges and developing mitigation strategies, including backup plans and alternative solutions, to navigate the complexities of technology deployment are presented.
- The critical role of training programs and continuous learning initiatives to upskill employees, ensuring they are proficient with new technologies and can adapt to changes effectively is emphasized
- A recommendation to implement new technologies in phases to manage risks and allow for adjustments based on feedback, along with establishing mechanisms for continuous monitoring and evaluation to ensure ongoing improvement is highlighted.

Introduction

In Group 1 of this series, we recognized that the engineering and construction industry has lagged in the development and adoption of new technologies. This is reflected in its lower investment in research and development (approximately 1%) as contrasted with innovation leading industries such as aerospace or automotive (3.5 – 4.5%). In large part this lower investment rate in technology and innovation is driven by unfavorable risk/reward ratios. Industry risk, as measured by "business deaths," are 14% higher than all nonfarm industries as a group, while profitability is approximately 45% lower.

The engineering and construction industry, however, faces numerous technology adoption and deployment risks beyond those that can be simply ascribed to this unfavorable risk/reward ratio. In this three-part Executive Insight we will review many of these risks and provide a framework for further assessment and actions. This Executive Insight focuses on the second group of risks, broadly labeled as Management Related Risks.

Top Risks

Table 1, introduced in Group 1 of this series and repeated here, provides a listing of some of the risks that the engineering and construction industry faces in technology adoption and deployment. The discrete risks were summarized in Group 1 and Group 2 risks, Management Related Risks, are repeated here:

Table 1
Technology Adoption and Deployment Risks in the Engineering and Construction Industry
Group 1- Technology Related Risks
Cybersecurity Threats
Technological Obsolescence
Data Privacy Concerns
Interoperability Issues
Vendor Lock-in
Scalability Issues
Intellectual Property (IP) Risks
Group 2 – Management Related Risks
Integration Challenges
Skill Gaps
Supply Chain Disruptions
Resistance to Change
Maintenance and Support
Cultural Barriers
Group 3 – Financial Related Risks
High Implementation Costs
Regulatory Compliance
Economic Uncertainty
Return on Investment (ROI) Uncertainty
Environmental Impact
Market Competition
Customer Expectations

Group 2 – Management Related Risks

- **Integration Challenges:** Difficulty in integrating new technologies with existing systems and processes.
- **Skill Gaps**: Lack of skilled workforce to manage and operate new technologies.
- **Supply Chain Disruptions:** Dependence on global supply chains can lead to vulnerabilities.
- **Resistance to Change**: Organizational inertia and resistance from employees can hinder adoption.
- **Maintenance and Support:** Ensuring ongoing support and maintenance for new technologies.

- **Cultural Barriers:** Differences in organizational culture can affect technology adoption.

In the balance of this Executive Insight, we will take a brief but closer look at each of the Group 2 – Management Related Risks. The discussion of each risk is designed to stand on its own so there will be some repetition of mitigation strategies across several risks.

Group 2 – Management Related Risks

Integration Challenges

Reducing integration challenges in the engineering and construction industry requires a combination of strategic planning, technological solutions, and organizational change management. Each of these represent potentially significant challenges. Some strategies and approaches to address these challenges include:

- **Leadership Support -** Ensure strong support from senior leadership to drive the integration process and to provide the necessary resources and authority to overcome obstacles.

- **Comprehensive Planning** - Develop a detailed integration plan that outlines the steps, timelines, and resources required for successful integration. Comprehensive planning is crucial for successfully adopting and deploying new technologies in the engineering and construction industry. The key components of a comprehensive planning process include:
    - Define Objectives and Goals
        - Identify Business Objectives: Clearly define what the organization aims to achieve with the new technology (e.g., increased efficiency, cost reduction, improved safety).
        - Set Specific Goals: Establish measurable goals that align with the business objectives, such as reducing project completion time by 20% or improving resource utilization by 15%.

- **Stakeholder Analysis and Engagement**
    - Identify Stakeholders: Determine who will be affected by the technology adoption, including employees, clients, suppliers, and regulatory bodies.
    - Engage Stakeholders: Involve stakeholders early in the planning process to gather input, address concerns, and build buy-in.

- **Technology Assessment and Selection**
    - Evaluate Options: Assess different technology solutions based on criteria such as cost, compatibility, scalability, and vendor support.
    - Standardization: Adopt industry standards and best practices to ensure compatibility and interoperability between different systems and technologies.
    - Vendor Collaboration: Work closely with technology vendors to ensure that their solutions meet your specific needs and that they provide adequate support during and after implementation.
    - Scalability Considerations: Ensure that new technologies are scalable and can grow with the organization's needs

- Select Technology: Choose the technology that best meets the organization's needs and strategic goals.

- **Develop an Integration Plan**
  - Integration Strategy: Outline how the new technology will be integrated with existing systems and processes.
  - Phased Implementation: Plan for a phased rollout to manage risks and allow for adjustments based on feedback.

- **Resource Allocation**
  - Budgeting: Allocate sufficient budget for the technology adoption, including contingency funds for unexpected challenges.
  - Human Resources: Ensure that the necessary personnel are available and trained to support the implementation.

- **Training and Development**
  - Training Programs: Develop and deliver training programs to upskill employees and ensure they are proficient with the new technology.
  - Continuous Learning: Promote a culture of continuous learning to keep skills up to date.

- **Risk Management**
  - Identify Risks: Conduct a risk assessment to identify potential challenges and obstacles.
  - Mitigation Strategies: Develop strategies to mitigate identified risks, such as backup plans and alternative solutions.
  - Budget Allocation: Allocate sufficient budget for integration projects, including contingency funds for unexpected challenges.

- **Change Management**
  - Change Management Strategy: Develop a change management strategy to address organizational resistance and ensure smooth transitions. This includes clear communication, support from senior leadership, and incentives for adoption.
  - Communication Plan: Create a communication plan to keep all stakeholders informed about the progress and benefits of the technology adoption.
  - Support Systems: Establish support systems to help employees adapt to the new technology, including help desks and user manuals.

- **Pilot Testing**
  - Cross-Functional Teams: Create cross-functional teams that bring together expertise from different areas to address integration challenges collaboratively.
  - Conduct Pilots: Implement the technology on a small scale to test its effectiveness and identify any issues.
  - Gather Feedback: Collect feedback from pilot users to make necessary adjustments before full-scale deployment.

- **Robust IT Infrastructure**
    - Ensure that the underlying IT infrastructure is capable of supporting new technologies and can handle increased data loads and connectivity requirements.
    - Implement strong data management practices to ensure data integrity, security, and accessibility across different systems.

- **Phased Implementation**
    - Implement new technologies in phases rather than all at once to manage risks and allow for adjustments based on feedback and performance.
    - Training and Development: Invest in training programs to upskill employees and ensure they are comfortable and proficient with new technologies.

- **Monitoring and Evaluation**
    - Continuous Monitoring and Evaluation: Establish mechanisms for ongoing monitoring and evaluation to identify and address issues promptly and to ensure continuous improvement.
    - Performance Metrics: Define key performance indicators (KPIs) to measure the success of the technology adoption.
    - Feedback Loops: Establish feedback loops to gather input from users and stakeholders continuously and make necessary adjustments.
    - Continuous Improvement: Regularly review performance data and make improvements as needed.

- **Documentation and Knowledge Sharing**
    - Maintain Documentation: Keep thorough documentation of the planning and implementation process.
    - Share Knowledge: Promote knowledge sharing within the organization to disseminate best practices and lessons learned.

- **Regulatory Compliance**
    - Stay Informed: Keep up to date with relevant regulations and ensure that the new technology complies with all legal requirements.

- **Customer-Centric Approach**
    - Focus on End-Users: Ensure that the technology adoption enhances the experience for end-users and meets their needs.

Following these steps will aid organizations in creating a robust and comprehensive plan that addresses the challenges and complexities of technology adoption and deployment. This will lead to successful integration and improved business outcomes.

Skill Gaps

The engineering and construction industry faces several skill gaps that impact the management, operation, and adoption of new technologies. Some key areas where these gaps are most pronounced include:

- **Digital Literacy**
    - Basic Digital Skills: Many workers lack fundamental digital skills needed to operate new technologies effectively.
    - Advanced Digital Skills: There is a shortage of professionals with advanced skills in areas such as data analytics, cybersecurity, and software development.

- **Project Management**
    - Technology-Driven Project Management: Traditional project managers may lack experience with digital tools and methodologies such as Building Information Modeling (BIM), digital twins, project management software, and agile methodologies.
    - Systems Thinking: Growing complexity of business and project operations together with increased dynamic influences from the external environment require this critical mindset.

- **Data Management and Analysis**
    - Data Handling: Skills in data collection, storage, and management are often lacking.
    - Data Analysis: There is a need for professionals who can analyze data to derive actionable insights and improve decision-making.
    - Data Scientists: Data scientists determine the questions their team should be asking and figure out how to answer those questions using data. They often develop predictive models for theorizing and forecasting.

- **Cybersecurity**
    - Security Protocols: Many organizations lack personnel with expertise in implementing and managing cybersecurity measures to protect sensitive data and systems.

- **Integration and Interoperability**
    - System Integration: Skills in integrating new technologies with existing systems and ensuring interoperability are in short supply.

- **Automation and Robotics**
    - Operation of Automated Systems: There is a gap in skills required to operate and maintain automated machinery and robotics used in construction.
    - Programming and Maintenance: Expertise in programming and maintaining these systems is also limited.

- **Sustainability and Green Technologies**
    - Sustainable Practices: Knowledge of sustainable construction practices and green technologies is often insufficient.
    - Environmental Impact Assessment: Skills in assessing and mitigating the environmental impact of construction projects are needed.

- **Virtual and Augmented Reality (VR/AR)**
    - VR/AR Applications: There is a lack of expertise in using VR and AR for design, training, and project management.

- **Artificial Intelligence (AI) and Machine Learning (ML)**
    - AI/ML Implementation: Skills in implementing and managing AI and ML applications in construction are scarce.
    - Predictive Analytics: Expertise in using AI and ML for predictive analytics to improve project outcomes is also needed.

- **Change Management**
    - Managing Technological Change: Skills in change management to help organizations and employees adapt to new technologies are often lacking.

- **Regulatory Compliance**
    - Understanding Regulations: Knowledge of regulatory requirements related to new technologies and ensuring compliance is limited.

- **Customer Relationship Management (CRM)**
    - CRM Tools: Skills in using CRM tools to manage client relationships and improve customer satisfaction are needed.

- **Financial Management**
    - Cost-Benefit Analysis: Expertise in conducting cost-benefit analyses for technology investments is often insufficient.
    - Budgeting for Technology: Skills in budgeting and financial planning for technology adoption are also needed.

- **Communication and Collaboration**
    - Digital Collaboration Tools: Proficiency in using digital collaboration tools to enhance teamwork and communication is often lacking.

- **Training and Development**
    - Developing Training Programs: Skills in developing and delivering effective training programs for new technologies are needed.

Addressing these skill gaps is crucial for the successful adoption and operation of new technologies in the engineering and construction industry. Investing in training and development, promoting continuous learning, and fostering a culture of innovation can help bridge these gaps. Several of these areas also represent potential new business opportunities to meet the industry's needs.

Supply Chain Disruptions

Supply chain disruptions pose significant challenges to the adoption and deployment of new technologies in the engineering and construction industry. Barriers arising from supply chain disruptions include:

1. **Material Shortages and Delays**:
    - Challenge: Global supply chain disruptions impact the availability of construction materials including specialized equipment and components. Delays in material delivery can hinder project timelines.

    - Impact: New technology adoption may rely on specific materials and components, such as advanced AI chips, and shortages can stall implementation.

2. **Increased Costs**:
    - Challenge: Supply chain disruptions lead to price fluctuations. Higher costs can strain project budgets.
    - Impact: New technologies often require investments in specialized components or equipment. Cost spikes can affect feasibility and ROI.
3. **Logistical Bottlenecks**:
    - Challenge: Transportation delays and bottlenecks affect lead times for materials and equipment.
    - Impact: Deployment of new technologies may depend on timely delivery. Delays can disrupt project schedules.

Strategies to mitigate supply chain risks include:

1. **Early Scope Definition**:
    - Approach: Define project scope and designs swiftly.
    - Benefits: Early clarity allows timely material and component orders, reducing the risk of delays and cost overruns. Visibility into supplier's key materials and components is essential.
2. **Pre-Ordering Materials and Key Components**:
    - Approach: Work with suppliers to secure material and key component purchases before finalizing designs.
    - Benefits: Locking in prices and securing materials and key components in advance helps maintain momentum.
3. **Redundancy in Supplier Networks**:
    - Approach: Identify backup vendors and onboard them.
    - Benefits: Having alternative suppliers mitigates risks if primary suppliers face disruptions.
4. **Collaboration and Communication**:
    - Approach: Discuss supply chain issues in coordination meetings.
    - Benefits: Effective management of materials and key component deliveries, pricing changes, and schedule impacts.
5. **Design for Common Components**:
    - Approach: Design products using common components.
    - Benefits: Standardization simplifies sourcing and reduces reliance on specific materials and hard-to-get components.

Implementing these strategies allows construction companies to navigate supply chain disruptions, enhance project resilience, and facilitate the successful adoption of new technologies. Remember that agility, proactive planning, and collaboration are essential to overcoming supply chain challenges in the ever-evolving construction landscape.

Resistance to Change

Addressing resistance to change is crucial for the successful adoption of new technologies in the engineering and construction industry. Here are some effective strategies to address this risk:

- **Stakeholder Engagement**
    - Early Involvement: Involve stakeholders early in the decision-making process to gather input and build buy-in.
    - Open Communication: Maintain transparent communication about the benefits and impacts of the new technology.

- **Education and Training**
    - Comprehensive Training Programs: Provide thorough training to ensure employees are comfortable and proficient with the new technology.
    - Continuous Learning: Promote a culture of continuous learning and development to keep skills up to date.

- **Incentivize Adoption**
    - Rewards and Recognition: Offer incentives, such as bonuses or recognition, for employees who embrace and effectively use the new technology.
    - Gamification: Use gamification techniques to make the adoption process more engaging and enjoyable (See Box)

Gamification Techniques

Gamification can be a powerful tool to address resistance to change by making the adoption process more engaging and rewarding. Here are some effective gamification techniques:

1. **Points and Rewards:** Assign points for completing tasks related to the new technology or process. These points can be redeemed for rewards such as gift cards, recognition in company communications, or other incentives.

2. **Badges and Achievements:** Create badges for milestones or achievements. For example, employees can earn badges for completing training modules, using the new system regularly, or helping others learn.

3. **Leaderboards:** Display leaderboards to foster a sense of competition. This can motivate employees to engage more with the new technology to see their names at the top.

4. **Quests and Challenges**: Design quests or challenges that require employees to use the new technology. These can be individual or team-based, encouraging collaboration and exploration.

5. **Progress Bars**: Use progress bars to show employees how close they are to completing a task or learning module. This visual representation can motivate them to keep going.

6. **Feedback and Recognition**: Provide immediate feedback and recognition for accomplishments. This can be in the form of virtual high-fives, thank you notes from leaders, or public recognition during meetings.

7. **Storytelling and Themes**: Incorporate storytelling and themes into the gamification strategy. For example, frame the adoption process as a journey or adventure, with employees as heroes overcoming challenges.

8. **Social Interaction:** Encourage social interaction through team-based challenges or collaborative tasks. This can build a sense of community and support among employees.

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- **Leadership Support**
    - Visible Leadership: Ensure that leadership visibly supports and champions the new technology.
    - Role Models: Identify and empower early adopters within the organization to act as role models and advocates.

- **Addressing Concerns**
    - Job Security: Address concerns about job security by explaining how technology will enhance roles rather than replace them.
    - Feedback Mechanisms: Establish channels for employees to voice concerns and provide feedback, and act on this feedback to make necessary adjustments.

- **Change Management**
    - Structured Approach: Implement a structured change management process to guide the organization through the transition.
    - Clear Vision: Articulate a clear vision of how the new technology aligns with the organization's goals and benefits everyone.

- **Pilot Programs**
    - Small-Scale Pilots: Start with small-scale pilot programs to test the technology and demonstrate its benefits before full-scale implementation.
    - Gather Feedback: Use pilot programs to gather feedback and make improvements before wider rollout.

- **Cultural Shift**
    - Promote Innovation: Foster a culture that values innovation and continuous improvement.
    - Celebrate Successes: Celebrate milestones and successes to build momentum and positive attitudes towards change.

- **Resource Allocation**
    - Dedicated Teams: Allocate dedicated teams and resources to support the technology adoption process.
    - Budget for Change: Ensure that there is a budget allocated for training, support, and other change management activities.

- **External Support**
    - Consultants and Experts: Engage external consultants and experts to provide additional support and expertise.
    - Industry Partnerships: Partner with industry associations and other organizations to share best practices and resources.

By implementing these strategies, organizations in the engineering and construction industry can effectively address resistance to change and facilitate the successful adoption of new technologies.

Maintenance and Support

Maintenance and support risks play a crucial role in shaping the adoption and deployment of new technologies in the engineering and construction industry. Let us delve into these risks and explore their impact on technology implementation:

- **Downtime and Disruptions**:
    - Risk: Unscheduled downtime due to system failures, software glitches, or hardware malfunctions.
    - Impact: Construction projects rely on continuous operations. Any technology downtime disrupts workflows, delays schedules, and affects project efficiency.
- **Vendor Dependence**:
    - Risk: Relying on a single vendor for maintenance and support services.
    - Impact: If the vendor experiences issues (e.g., financial instability, service disruptions), it can jeopardize ongoing project support
- **Skill Gaps and Training**:
    - Risk: Insufficient training for maintenance personnel.
    - Impact: Without skilled staff, technology maintenance becomes challenging. Errors may occur during updates or troubleshooting
- **Legacy System Compatibility**:
    - Risk: New technologies must integrate with existing legacy systems.
    - Impact: Compatibility issues hinder seamless data exchange and increase maintenance complexity
- **Lifecycle Costs**:
    - Risk: Underestimating long-term maintenance expenses.
    - Impact: High maintenance costs can erode the expected ROI, affecting project budgets and profitability
- **Security Vulnerabilities**:
    - Risk: Inadequate security patches or outdated software.
    - Impact: Vulnerabilities expose systems to cyber threats, data breaches, and potential legal liabilities
- **Obsolete Components and Spare Parts**:
    - Risk: Components or equipment becoming obsolete.
    - Impact: Difficulty sourcing replacements can lead to extended downtime or costly retrofits
- **Changing Regulations and Standards**:
    - Risk: Evolving industry regulations and compliance requirements.
    - Impact: Non-compliance due to outdated technologies can result in fines or project delays
- **Scalability Challenges**:
    - Risk: Inability to scale maintenance processes as projects expand.
    - Impact: Overburdened maintenance teams struggle to support larger operations
- **Lack of Documentation and Knowledge Transfer**:
    - Risk: Inadequate documentation of technology configurations and maintenance procedures.
    - Impact: Staff turnover or retirements can lead to knowledge gaps, hindering effective support

Mitigation Strategies

- **Comprehensive Maintenance Plans**:
    - Develop detailed maintenance schedules, including preventive, corrective, and predictive tasks.
    - Regularly review and update plans based on technology performance and evolving needs.
- **Vendor Diversification**:
    - Engage multiple vendors for critical components or services.
    - Avoid overreliance on a single provider for support.
- **Continuous Training and Skill Development**:
    - Invest in ongoing training for maintenance staff.
    - Ensure they stay updated on technology changes and best practices.
- **Lifecycle Cost Analysis**:
    - Consider long-term costs during technology selection.
    - Evaluate maintenance expenses over the entire project lifecycle.
- **Security Protocols and Updates**:
    - Implement robust security measures.
    - Regularly apply patches and updates to address vulnerabilities.
- **Legacy System Transition Plans**:
    - Plan for gradual transitions from legacy systems.
    - Ensure compatibility and data migration during technology upgrades.
- **Standardization and Documentation**:
    - Maintain comprehensive documentation for all technologies.
    - Standardize naming conventions, configurations, and maintenance procedures.

Proactively addressing maintenance and support risks, construction companies can maximize technology benefits, minimize disruptions, and enhance outcomes

Cultural Barriers

Cultural barriers can significantly impact the adoption of new technologies in the engineering and construction industry. Here are some of the key cultural barriers and how differences in organizational culture can both positively and negatively affect technology adoption.

- **Resistance to Change**
    - Fear of the Unknown: Employees may resist new technologies due to fear of the unknown or concerns about job security.
    - Comfort with Traditional Methods: A preference for familiar, traditional methods over new, untested technologies can hinder adoption.

- **Lack of Trust**
    - Skepticism: There may be skepticism about the effectiveness and reliability of new technologies.
    - Trust in Leadership: If employees do not trust leadership, they may be less likely to embrace changes proposed by management.

- **Communication Gaps**
    - Poor Communication: Ineffective communication about the benefits and implementation process of new technologies can lead to misunderstandings and resistance.
    - Language Barriers: In multinational companies, language differences can exacerbate communication issues.

- **Inadequate Training**
    - Skill Gaps: Lack of adequate training and development programs can leave employees feeling unprepared to use new technologies.
    - Training Resistance: Employees may resist training if they do not see the immediate benefits or if it disrupts their routine.

- **Organizational Silos**
    - Departmental Barriers: Different departments may have conflicting priorities and resist changes that do not align with their specific goals.
    - Lack of Collaboration: Poor collaboration between departments can hinder the integration of new technologies.

- **Cultural Misalignment**
    - Diverse Workforces: In companies with diverse workforces, cultural differences can lead to varying attitudes towards technology adoption.
    - Corporate Culture: A corporate culture that does not prioritize innovation and continuous improvement can stifle technology adoption.

Organizational culture can have many positive effects on technology adoption. These include:

- **Innovation Culture**
    - Encourages Experimentation: A culture that encourages experimentation and innovation can foster a positive attitude towards new technologies.
    - Support for Risk-Taking: Organizations that support calculated risk-taking are more likely to adopt and benefit from new technologies.

- **Collaborative Environment**
    - Cross-Functional Teams: A collaborative culture that promotes cross-functional teams can enhance the integration and implementation of new technologies.
    - Knowledge Sharing: Encouraging knowledge sharing and open communication can help overcome resistance and build collective expertise.

- **Leadership Support**
    - Visible Endorsement: Strong support and visible endorsement from senior leadership can drive technology adoption and motivate employees to embrace change.
    - Resource Allocation: Leaders who prioritize technology adoption can ensure that adequate resources are allocated for training, support, and implementation.

Organizational culture can also have many negative effects on technology adoption. These include:

- **Risk-Averse Culture**
  - Fear of Failure: A culture that penalizes failure can discourage employees from experimenting with new technologies.
  - Conservative Approach: Organizations with a conservative approach may be slow to adopt new technologies, missing potential benefits.

- **Hierarchical Structure**
  - Top-Down Decision Making: In highly hierarchical organizations, top-down decision-making can lead to resistance if employees feel excluded from the process.
  - Slow Response: Bureaucratic processes can slow down the adoption and implementation of new technologies.

- **Lack of Vision**
  - Short-Term Focus: A focus on short-term goals and immediate returns can hinder investment in new technologies that may have long-term benefits.
  - Resistance to Change: Organizations that do not prioritize continuous improvement and innovation may struggle to adopt new technologies.

By understanding and addressing these cultural barriers, organizations in the engineering and construction industry can create a more conducive environment for technology adoption and leverage the positive aspects of their organizational culture to drive innovation and growth.

Summary

This Executive Insight places a particular focus on management-related risks, which include integration challenges, skill gaps, supply chain disruptions, resistance to change, and cultural barriers. These factors significantly hinder the industry's ability to embrace innovation and improve operational efficiency.

To address these challenges, the Executive Insight outlines a comprehensive framework for technology adoption that emphasizes the importance of detailed planning, stakeholder engagement, and robust risk management strategies. It advocates for a structured approach to change management, which includes clear communication, training programs, and the establishment of support systems to facilitate employee adaptation to new technologies.

This Executive Insight stresses the need for phased implementation and continuous monitoring to ensure that technology adoption is effective and aligned with organizational goals. By fostering a culture of innovation and continuous improvement, organizations can better navigate the complexities of technology deployment and enhance their overall performance.

Ultimately, the insights provided in this Executive Insight serve as a valuable resource for stakeholders in the engineering and construction industry, equipping them with the knowledge and strategies necessary to overcome barriers to technology adoption and drive successful transformation in their operations.

For Further Reading – Other Executive Insights

- Technology Adoption and Deployment – Technology Related Risks (Group 1)
- Technology Adoption and Deployment – Financial Related Risks (Group 3)
- Industry Structural Deficiencies in Technology Adoption

References

- McKinsey & Company; The new age of engineering and construction technology; July 28, 2017 https://www.mckinsey.com/capabilities/operations/our-insights/the-new-age-of-engineering-and-construction-technology.

About the Author

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