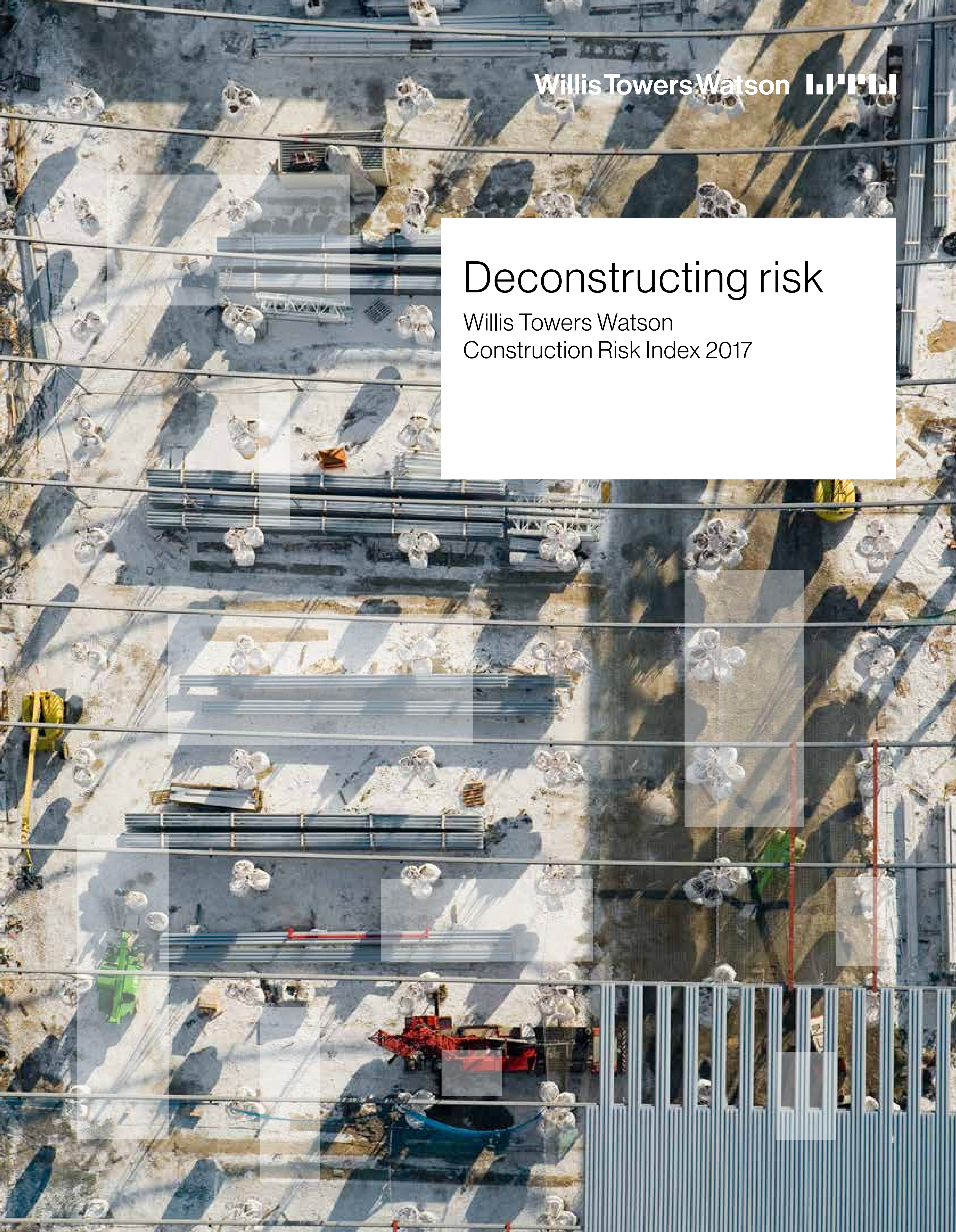

Willis Towers Watson

Deconstructing risk

Willis Towers Watson
Construction Risk Index 2017

Willis Towers Watson

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CUSTOM PUBLISHING

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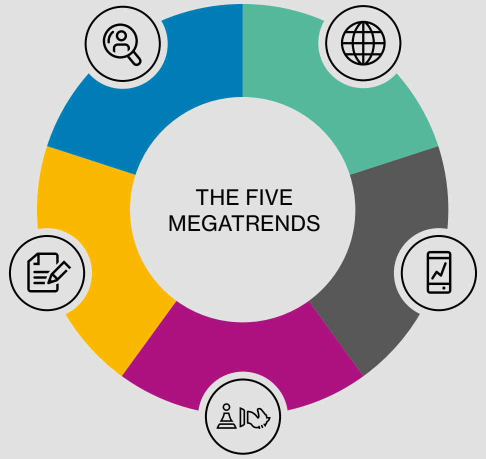
Methodology

The Willis Towers Watson Construction Risk Index was compiled from data and insights derived from personal and telephone interviews with 350 C-suite executives. Survey participants came from a broad cross section of industry subsectors and geographical regions.

The interviews gauged the respondents' perceptions to risk in relation to five megatrends established from declarations in annual reports, to stock exchanges, and through independent qualified research. The senior boardroom executives were asked to rank the megatrends and their associated individual risks across three time frames: the present, the next 12 months and the next ten years. An independent analyst collated the data and Willis Towers Watson supported the analysis.

The megatrends represent constituent categories of individual risk. Individual risk rankings were generated based on a composite score, which combined the perceived severity of the risk's impact, multiplied by ease of management (ie, impact × ease = combined risk score). The higher the score, the greater the perceived risk. A megatrend risk score, independent of the individual risks, ranks each category of risk by the same method.



Geopolitical instability and regulatory change

Navigating a shifting social and political landscape is a constant challenge for construction executives. Political instability and inconsistent policymaking creates stifling uncertainty, while the regulatory environment becomes increasingly burdensome.

Complex operating models in a global business landscape

As projects become global and interdependent in nature, traditional models are becoming strained. Contractors are being forced to adapt both physical and labor operations to respond to a lower margin and more demanding environment.

Workforce management and talent optimization

As the Baby Boomer generation prepares to retire, companies across the construction spectrum are facing skills shortages. With the industry being transformed by advances in technology, the focus of management is shifting away from finding enough people towards finding the right skillsets and backgrounds, and building a workplace environment that retains their most important people in an increasingly competitive marketplace.

Business model and strategy challenges

The pressure is rising on construction executives to build more dynamic business models that are capable of responding to an increasingly volatile global marketplace. Traditional disruptors such as fluctuating foreign exchange and interest rates, the availability of competitive capital and risk of customer default are being joined by new and emerging competitors, adding to industry insecurity about current business models.

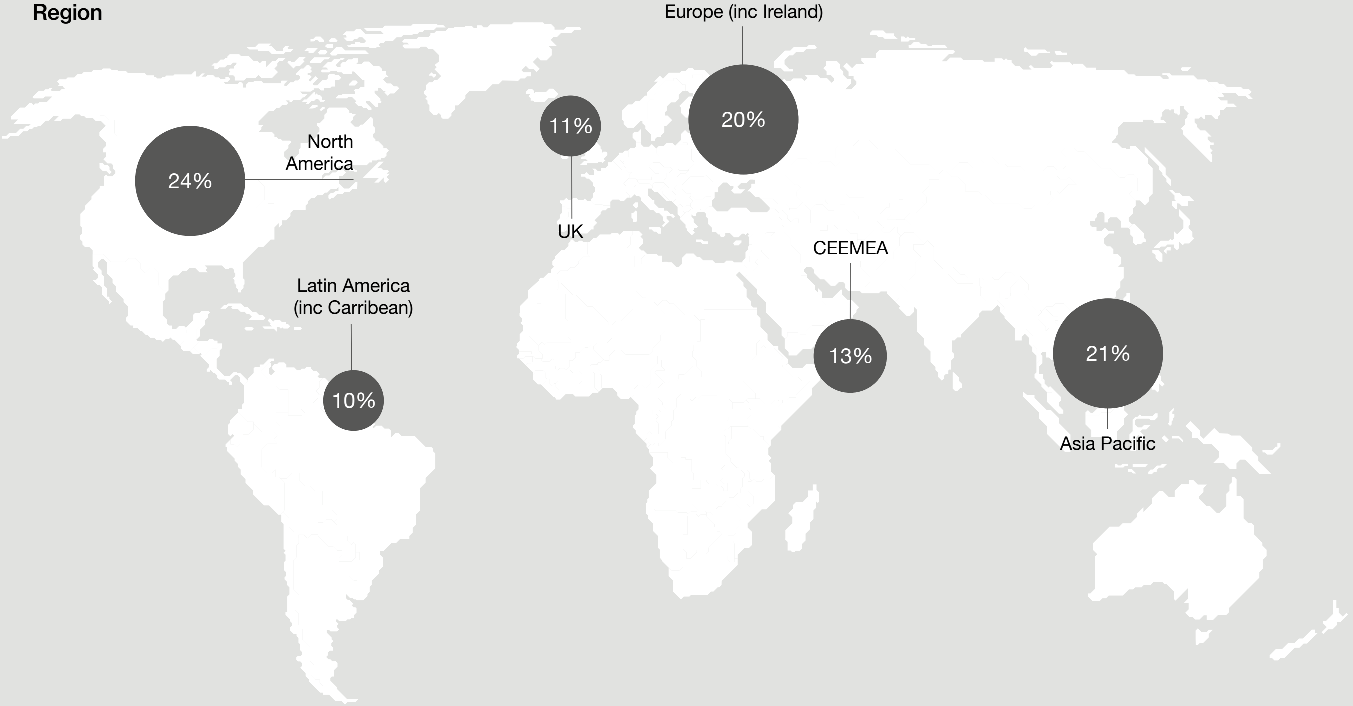
Risks resulting from digitalization and new technologies

The unrelenting pace of digitalization and technological advancement has introduced a whole new dimension of risk. Contractors' entire operations now rely critically on IT infrastructure that is vulnerable to disruption, both incidental and hostile. Simultaneously, contractors are facing a wave of unprecedented liabilities emerging from software and nascent technologies.

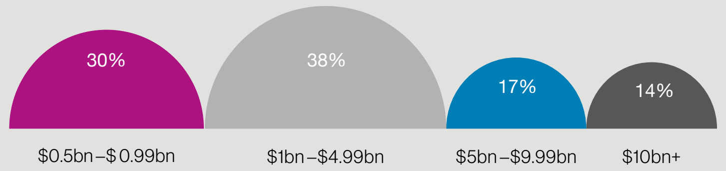
Numerical values in this publication are always represented to a maximum of one decimal place. Calculations in the analysis use two decimal places.

Demographic profile of respondents

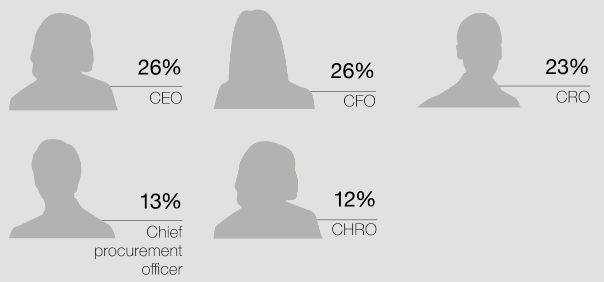
Region



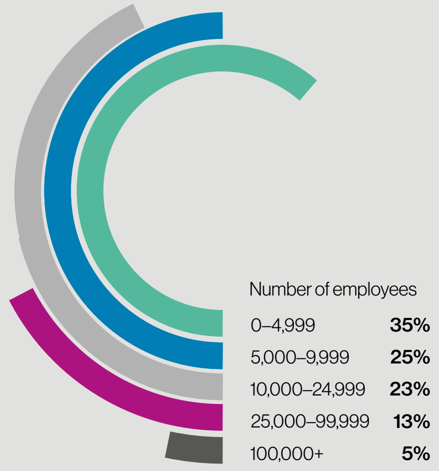
Revenue



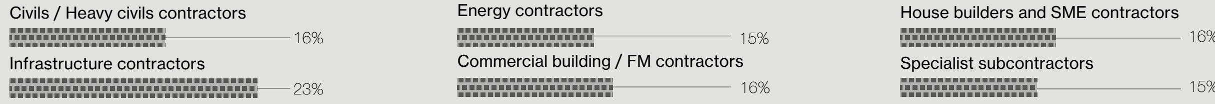
Job role



Company size



Sector



All percentages rounded to the nearest whole number

Foreword

Welcome to Willis Towers Watson's Construction Risk Index, a boardroom view of the industry as seen by 350 senior executives from across the globe. This report gives a deep look into the concerns and expectations of construction leaders and highlights the most significant megatrends that will shape the future of the industry.

An overarching theme of our report is the evolving nature of risks and how the challenges that executives will face over the coming months and years vary significantly from the past. The scale of new projects, together with a continued need for infrastructure development, means construction operations are increasingly complex. Sourcing investment, managing a dispersed workforce, and using new materials and new methods, often in new countries, are but a few examples of the challenges the industry must meet if it is to prosper over the next decade.

Insights from the survey results and from the C-suite executives we interviewed show that the industry overwhelmingly views geopolitical and regulatory risks as being of greatest concern. Construction companies operate in a global business environment, where sudden cuts to government funding are not uncommon and unpredictable politics can transform an attractive new region for investment into a serious threat.

At an operational level, our index reveals both the opportunities and threats posed by the growth of digital capabilities, as well as continued concerns surrounding labor shortages, talent retention and the difficulties in attracting younger generations to the industry. Technological changes across all stages of the construction process will add operational complexities, creating both a need for new skills and an increase in significant risks related to cyber-crime.

But innovation is now driving the emerging changes to productivity in the construction industry. Technological advances are bringing efficiencies, safety benefits and breakthrough design abilities, and are ultimately transforming the way we build. A new approach to talent that focuses on comprehensive reward programs, attractive career paths and a diverse labor pool – and one that incorporates the role of technology – will become an essential way to carve out competitive advantage and drive growth.

There is great optimism in the industry, but it relies on the balance between risk and opportunity. Executives are just as excited by new technologies as they are worried about a cyber-attack; they see the need to diversify their geographic reach, but are hesitant to enter unstable markets. Given the cyclical nature of construction, today's events will shape the future. Dynamic global trends are bringing a new connectivity of risks, requiring a holistic approach to risk management, and challenging strategic partners to bring better solutions to the industry.

The Construction Risk Index has given Willis Towers Watson an enhanced awareness of the issues prevalent in the industry and reinforced our opinion that risk is a path to growth. We feel ready to lead the discussion on embracing complexity and innovation as the key to success.

Paul Becker
Global Industry Leader, Construction
Willis Towers Watson

> “There is great optimism in the industry, but it relies on the balance between risk and opportunity”

Contents

Executive summary

A deeper insight into the risks and challenges facing senior construction executives is crucial to building resilience and creating opportunities

The role of construction has changed dramatically in recent years. Growth in the developing world, increasing numbers of megaprojects, large-scale investments in infrastructure and globalization of the industry are adding complexities to projects. Fragmented and sometimes inadequate workforces, uncertain regulatory frameworks and political climates, and the inescapable rise of technology have resulted in a host of interconnected risk landscapes that impact each other in difficult and unpredictable ways.

To gain deeper insight into to this dynamic risk environment, Willis Towers Watson asked 350 senior executives in the construction industry to rank the greatest threats to their businesses – both today and ten years from now. We asked them about their attitudes toward 50 specific risks from five megatrends. Subsequently, we conducted in-depth interviews to gain greater insight into the challenges they face. Our goal was to understand how the various stakeholders in the industry view their risks, and to use these findings to build better solutions to help our clients prosper in uncertain and changing environments.

The primary risks

The most prominent fears for construction executives are the geopolitical instability and regulatory changes that are manifesting across the globe in a sometimes volatile manner. The top risk, "negative changes to government financing, policies and priorities", illustrates the industry's intimate relationship with public spending and the impact of regulations. Geographically, executives are almost unanimous in their concerns. This risk ranks among the top three in every region except North America, which identifies "capital availability, funding and liquidity" as the greatest threat.

Fig. 1 | Megatrend rank order

Rank order determined by combined risk score (severity of impact × ease of risk management)

	Impact (/10)	Ease of risk management (/10)	Change in impact over next ten years (/5)
Geopolitical instability and regulatory change	7.3	6.8	3.7
Workforce management and talent optimization	6.2	5.9	3.1
Business model and strategy challenges	5.3	5.3	2.9
Risks resulting from digitalization and new technologies	4.9	4.9	2.5
Complex operating models in a global business landscape	5.0	4.8	2.6

The construction industry can only be as effective as its workforce, so it's not surprising that the workforce management and talent optimization megatrend ranks a close second. The industry clearly faces structural challenges related to the workers it employs. Complex contracting decisions and a physically dispersed labor pool add to inherent difficulties in managing people risks.

Our index also uncovers concerns about increasing competition, access to funding and macroeconomic uncertainty. Many executives told us how these factors are forcing them to diversify their business models and operations. Consistent with these worries, the megatrend in third place is business model and strategy challenges. Construction finds itself having to deal with changes that sit outside the current boundaries of the industry, and this is having a profound effect on the way things get built.

One such concern is the impact of technologies. Many construction firms have already made great strides in digitally enhancing their operations, most commonly through 3D printing, drones or Building Information Modeling (BIM). In addition, the promise of increased quality and productivity from emerging uses of modular methods and augmented reality (AR) are just now gaining momentum, and they pose consequential risks that cannot yet be accurately measured. Four of the top ten risks for the industry fall under the risks resulting from the digitalization and new technologies megatrend, indicating that there are challenges as well as opportunities to innovation.

An interconnected world

The rapid growth in populations, continued globalization and increasing scale of megaprojects will be key factors shaping the future of the industry. These changing market dynamics give reason to be optimistic. Many governments appear keen to encourage construction as a driver for economic growth, and funding sources are seeking investment opportunities in construction. But making promises about infrastructure spending and then delivering on those pledges are two very different things. Even the most effective governments can struggle to get projects conceptualized and capitalized.

Emerging markets present the most likely source of growth. Rising competition for projects in more stable countries has forced companies to explore new opportunities in regions with added risks and complexities. And while infrastructure development is crucial in many developing countries, unstable governments and threats to national security can also be prevalent.

As construction companies enter new territories, they may find it more difficult to maintain their working cultures and find the expertise they need. Workforce management remains high on their list of concerns. The industry faces a persistent labor shortage, so key to success will be in both increasing diversity in the current workforce and attracting the next generation of talent.

New technologies will also offer opportunities for progress, with sensors, data and analytics, and AR enhancing operations across the value chain. But as the industry embeds these tools, cyber-security will become a greater issue, forcing construction companies to protect themselves more efficiently.

Clearly, a cohesive, continually updated risk management strategy is a top boardroom priority if construction companies are to protect themselves from emerging risks and build competitive advantage.

Ten-year outlook

Our respondents' assessment of the biggest challenges to their businesses over the next decade focus on a few common themes: government priorities, diversification, talent management and innovation. But the most worrying problem is uncertainty – not being able to predict a political crisis or cyber-attack – making risk management more crucial than ever.

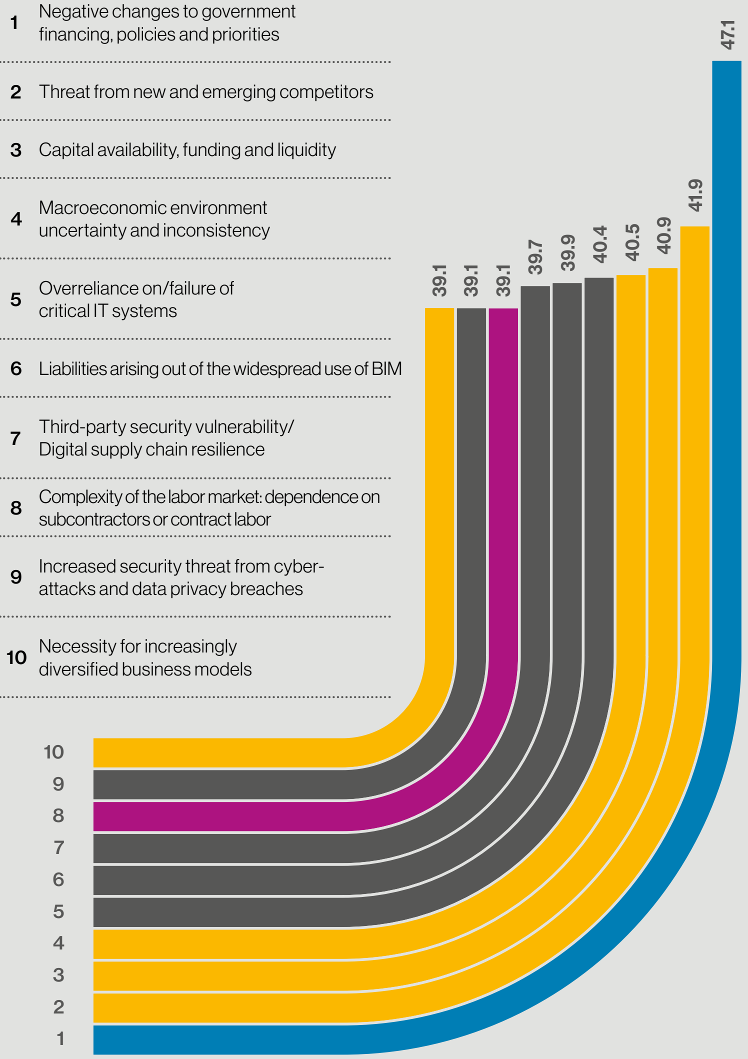
We hope the Construction Risk Index 2017 will help our clients, prospects and strategic partners better understand the complex and connected world we work in, and the risks and opportunities that lie ahead.

"If you look at the industry that we are in, we truly do paint and bend the skyline. If you think of a tangible deliverable over what is a relatively short period of time, it is phenomenal what gets done"

– **Leo Quinn**, CEO, Balfour Beatty

Fig. 2 | Top ten risks across the construction sector

1. Negative changes to government financing, policies and priorities
2. Threat from new and emerging competitors
3. Capital availability, funding and liquidity
4. Macroeconomic environment uncertainty and inconsistency
5. Overreliance on/failure of critical IT systems
6. Liabilities arising out of the widespread use of BIM
7. Third-party security vulnerability/ Digital supply chain resilience
8. Complexity of the labor market: dependence on subcontractors or contract labor
9. Increased security threat from cyber-attacks and data privacy breaches
10. Necessity for increasingly diversified business models



The primary risks

The industry's top threats as seen through the eyes of senior executives

Megatrend

- Geopolitical instability and regulatory change
- Business model and strategy challenges
- Workforce management and talent optimization
- Risks resulting from digitalization and new technologies
- Complex operating models in a global business landscape

> “The biggest thing – and I talk about this regularly with our teams – is the fact that you’ve got all this lack of trust in government, lack of trust in industry, a real trend for change. Whether it’s Brexit or the American election or what happened here in Canada, it’s all over: it’s a global trend”

– **David LeMay**,
President and CEO, Stuart Olson

Geopolitical instability and regulatory change

With political and regulatory upheaval the new normal, construction firms must be adept at creating opportunities in unstable environments

Geopolitical issues are inherently difficult to manage, so it’s no surprise that construction executives rank this megatrend as the most serious threat to their business. Companies that have operations in certain geographies face shifting political headwinds and daily threats of random violence, and the unpredictable nature of geopolitical issues can amplify their negative consequences. The nature of construction work, combined with the industry’s international presence, means geopolitical and regulatory risks cannot be ignored.

But companies in different markets face very different geopolitical and regulatory realities. For example, North America and Central & Eastern Europe, Middle East and Africa (CEEMEA) have very different outlooks on how these risks will affect their business. None of the top ten risks for North America are from this megatrend, while six of the top ten risks for CEEMEA fall under it.

“Negative changes to government financing, policies and priorities – commitment to project pipelines, funding, subsidies, etc,” is the number one risk overall for the construction industry, and also in the UK, Europe, Latin America and Asia. No other risk from this megatrend makes the top ten, however. This suggests that the unpredictable geopolitical situation is more of an overarching factor that raises the likelihood of disruption, rather than being a specific barrier to growth.

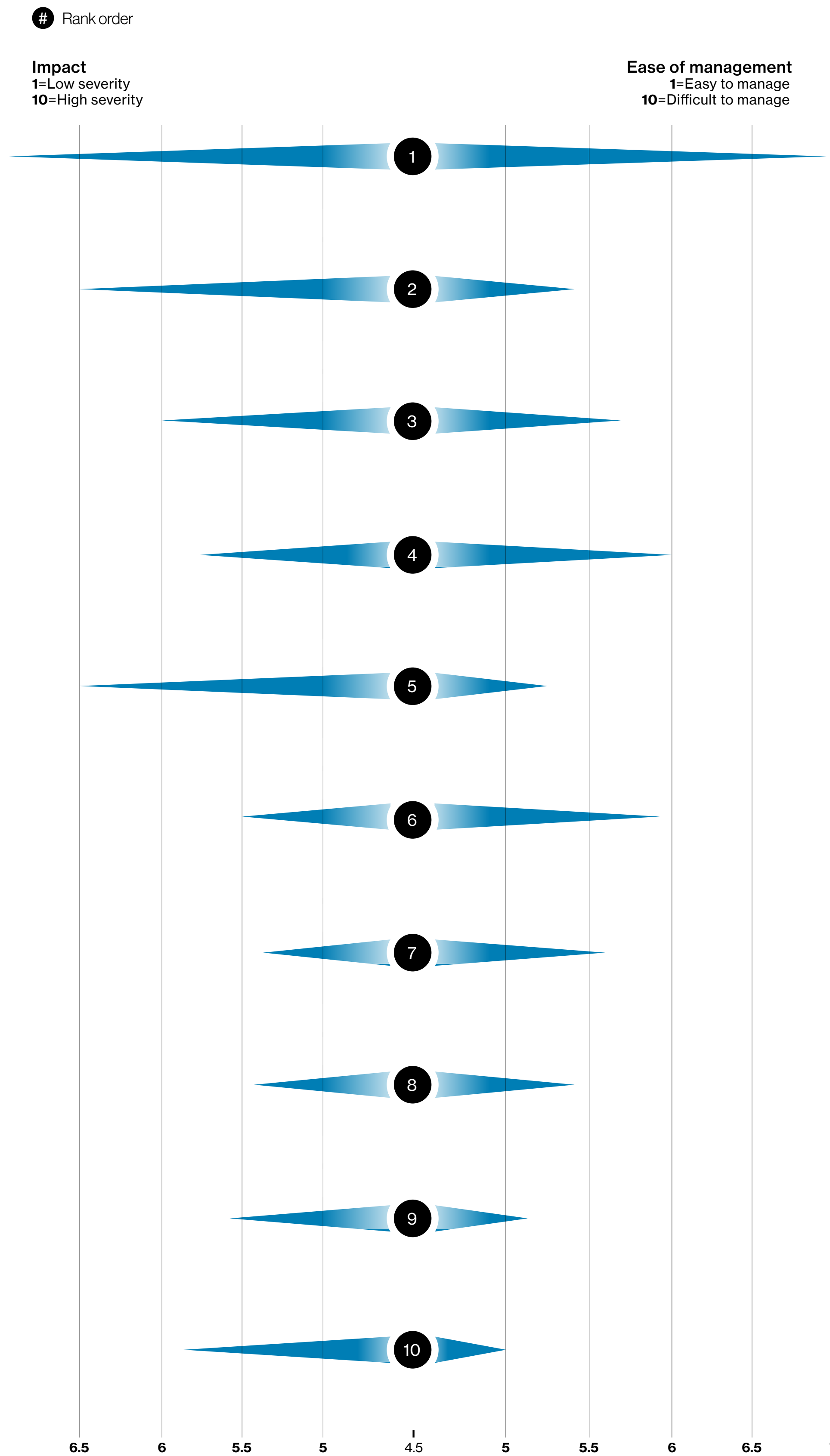
“Constantly evolving regulatory environment” takes second place, and “increased political instability – government instability, disruptions to travel and trade, unpredictable political regimes, Brexit, large-scale democratic influence” is third within the megatrend. The regulatory environment has massive influence on the construction industry, affecting macro factors such as access to capital and internal operations, and often increasing costs and complexities. Political instability is likewise seen as a considerable problem in certain countries, where blocks by the government and dangerous territories create logistical challenges, with little possibility of risk mitigation.

Unpredictable politics
Governmental priorities have always had a real impact on the construction industry. When infrastructure spending is determined by those at the top of the political hierarchy, the fortunes of many companies are closely linked to government financing and investment. A lack of commitment adds to difficulties in planning long-term projects, which can be hit by changes at any stage during the bid process and construction phase. It follows that the top risk across all megatrends is “negative changes to government financing, policies and priorities”.

“Our biggest client is the public sector, so stability in government is of utmost importance for us,” says Peter Wallin, CFO of Skanska. Large-scale infrastructure projects are vulnerable to shifting government financing patterns, making them susceptible to delay

1. Negative changes to government financing, policies and priorities
2. Constantly evolving regulatory environment
3. Increased political instability
4. Intellectual property and patent breaches
5. Environmental regulations / lobbying / protests
6. Lack of government/ PPP expertise
7. Reputation risks arising from social issues such as human rights, corporate citizenship, sustainability and the environment
8. National security threats
9. Compliance risk
10. Increasing government requirements-country risk/sovereign

Fig. 3 | Top risks for geopolitical instability and regulatory change



> **“ Our political risk models assist companies in quantifying their political risk exposures and the potential impact of these on their global investment and trading strategies. This enables the business to evaluate risk mitigation opportunities, including insurance ”**
>
> – **Paul Davidson**, Financial Solutions Chairman & CEO, Willis Towers Watson

or even cancellation. Tim Bowen, director of strategy and business development at Costain, also points out the constraints of working on government contracts.

“Making sure that expenditure has been committed, so that major schemes happen as planned and on time, is one area of concern,” he says. As reflected in geographic rankings, this is a global issue.

“In developed markets, the biggest risk is always the level of activity,” says Ángel García Altozano, corporate general manager at ACS Group. “The public investment policy is what fluctuates the most. When the economy and budget for the government are at a deficit, you have to be careful about the investments you make.”

It’s almost impossible for the construction industry to control or mitigate this risk, and if a government pulls out of a project or places it on hold, there can be little relief for the parties involved. In some circumstances, however, political change can create new opportunities in the industry, and many executives recognize the efforts of governments to put more money in to public spending.

“We are going to see many countries going to elections, so of course there is a huge European challenge to government financing," Wallin points out. "For the time being though, political factors have had a mainly positive impact as there is continued fuel put to the construction market by governments.”

“One of the most effective ways to stimulate an economy is through investment in infrastructure,” Bowen explains. “However, we need to remain mindful of the longer-term ability of the public sector to invest at the levels needed to support the modern infrastructure required by the economy.” He highlights the fine line between risk and opportunity: regardless of potential challenges, government financing can be a key source of growth for the industry.

“One of the major risks that people have highlighted is the risk of negative changes to government financing policies and priorities,” says García Altozano. “But that can go the other way as well: it can be a positive change.” Public projects can generate substantial profits and create additional benefits such as brand awareness. However, with volatility growing even in stable countries, companies will increasingly have to monitor the global political climate and undertake thorough country risk profiling before entering into agreements.

While changes to government commitments affect companies everywhere, geopolitical instability is more acute in some countries than others. Executives in Latin America and CEEMEA ranked geopolitical instability and regulatory change as more of a threat than their peers in other territories, with each scoring six of the top ten risks in this megatrend – a clear indicator of how serious these problems can be.

“Geopolitical risks in the Middle East and Africa, where we operate, are very well known to everyone,” says Mehtap Akkaya, insurance director at STFA. “The whole area is influenced by political risks, which in turn has an influence on the construction market.”

Political hotspots can result in huge economic and human costs and create dangerous working conditions. As a result, construction companies are often hesitant to operate in these locations, even after a conflict has settled. Because construction projects have long lifespans, the industry must be able to predict the long-term outlook for a region. Even a small threat of volatility is treated seriously.

“Developed markets, where you have a stable legal framework and a currency in which people are willing to invest long term – these are the markets where you want to operate,” says García Altozano. “When political situations change, existing plans tend to be reviewed, which normally translates into a lower activity level in infrastructure development.”

Respondents are especially concerned about how the political climate in the CEEMEA region will affect their operations. They scored “national security threats – security concerns, civil or military unrest, war, terrorism, corruption, crime” as their top-rated risk overall.

“In the markets that we are targeting, the main concern would be political risk,” explains Celal Toroglu, general director and board member at Renaissance Heavy Industries. Diversifying into new countries can be one way to spread the risk of political instability. “In order to eliminate the political risk, we are diversifying in these markets and targeting new regions to avoid putting all our eggs in one basket."

The terror threat

Terrorist organizations are active across the globe, and no region has been immune to attacks. Construction executives are unanimous in their concerns about terrorist activities.

“I think terrorism has an effect on all industries, including construction,” says STFA’s Akkaya. “I think companies are becoming more conservative about doing business in certain regions. Terrorism does bring many risks, mainly relating to security. There have been companies that have experienced supply chain problems due to the difficulties with procurement and sending materials to the site because of terrorism threats.”

A few respondents alluded to the terror risk being greater for certain projects. Infrastructure, for example, can be the target of large-scale attacks. Cheryl Yetka, treasurer of The Port Authority of New York and New Jersey, which focuses on the construction of transport facilities, says: “One of the key issues we see, given the nature of our assets, is terrorism. It’s a risk that we are addressing on a daily basis. It is a difficult risk to manage because it is constantly changing.”

Threats are not confined to operations at the job site. Terrorism can cause problems across the entire value chain, and it has both tangible and intangible consequences.

“The political risk mainly affects the cost of financing in the country which makes the projects unfeasible and shrink the market in the long run,” says Toroglu. And with the increasingly random nature of attacks, it is now more important than ever to estimate the cost of potential political risk contingencies on business operations.

Ten-year outlook

Geopolitical risks and regulatory changes will continue to challenge the construction industry over the next ten years. Respondents say that risks in this space are top of mind, with changing regulations in particular being perceived as a significant inhibitor to progress over the coming years.

However, while these risks bring challenges, they can also present an opportunity for the industry. Construction companies with strategic planning processes that account for the shifting regulatory environment globally will be better positioned to venture into new geographies and gain economies of scale.

Complex operating models in a global business landscape

While construction firms relish the opportunities afforded by global markets, managing labor across multiple territories remains fraught with difficulty

The construction industry is a key economic driver and source of growth. As urban population centers boom, huge investments in infrastructure are necessary. New megaprojects are announced virtually every week. Construction companies must ensure their capabilities develop in line with the rate of globalization, and that efficiency remains a top priority. But construction operations take on additional layers of complexity as global networks develop and the workforce is increasingly spread across many sites. The results of our Risk Index show, however, that executives are less worried about risks from complex operating models in a global business landscape compared to the other megatrends.

"The contracts that our customers are awarding are becoming ever larger, more complex and demanding and that is exactly what we seek," says Costain's Bowen. "We deploy our highly professional teams and a controlled environment to deliver the business benefits out of this complexity – this is our unique selling point."

The biggest risk in this megatrend is "complexity in the labor market: dependence on subcontractors or contract labor". It is also ranked seventh for the industry overall and made the top ten for the UK, North America and CEEMEA. Contract labor carries its own set of risks, including increased costs, new areas of safety risks and a potential reduction in overall skills and knowledge. But the construction industry has always relied on subcontractors, and will continue to do so as workforce demands become more volatile, operations remain complex and companies expand in to new regions.

Complexity of the construction labor market

According to Global Construction 2030, the global construction market will reach $17.5 trillion by 2030, with an annual growth of 3.9 per cent. While there are many factors at play, a rise in the urban population leading to increased housing needs, aging demographics and emerging markets have considerably changed the construction landscape. As the scale of projects gets larger, companies face increasingly complicated and difficult demands for labor beyond what is available from a direct workforce.

"Because of globalization, complex operating models are very much linked to talent," says Daniel San Millan, corporate risk manager at Ferrovial. "You have to have a rough balance of how much talent we have to send away to other countries. That's a key issue." He adds that correctly calculating resource demand is a major struggle for companies. And resources go far beyond mere headcount. Getting the right skillsets and skill levels at the right locations are equally critical.

"With the current level of infrastructure work," says a major Australian contractor, "a significant risk is resourcing (capability, capacity and workforce management). When you're in buoyant times, pricing is more difficult with employee and industrial relations risks also back on the agenda."

Subcontracting is a challenge to effective management, making it more difficult to maintain adequate productivity and quality levels and reducing the degree of control over the workforce. The counter argument is that subcontracting can help lay off certain risks, provide short-notice resources and bring in expert capabilities. It allows companies to be more flexible, can make it easier to comply with local regulations, and can provide skills a company may not have.

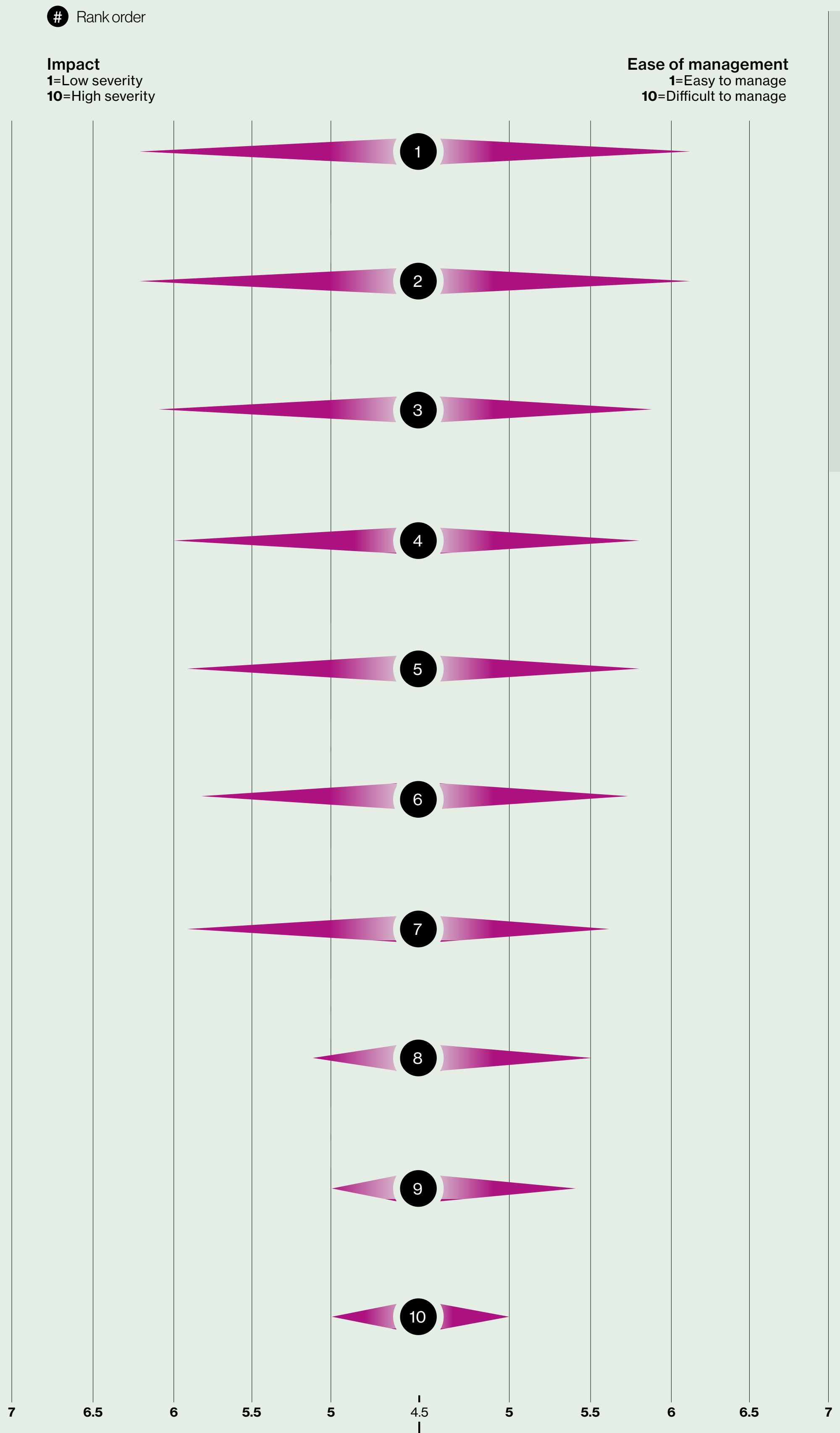
"We try to work with subcontractors, as each subcontractor is a specialist in their own field," says Renaissance's Toroglu. "This is good because you get a specialized workforce for each discipline. We also do direct hiring. Sometimes you need it because you never know if the subcontractor is going to fail during the course of a project. Other than that, we also try to maximize the local workforce in each country that we work. This helps us to transfer our know-how, increase employment and help the economy."

More problematic for construction companies is determining the balance between contract labor and direct hires. "One issue that the industry is grappling with is the degree to which the work is subcontracted or self-performed," says Bowen. "That is a risk, because we have teams of people trained by us, doing tasks repeated throughout the process, so we very much are taking back responsibility for the delivery of the outcome."

As operations gain complexity and the industry becomes more accustomed to using contract labor, the priority for construction players to streamline the management of their workforce has grown.

> "We seek complexity because that's our unique selling point"
>
> –**Tim Bowen**, Director of Strategy and Business Development, Costain

Fig. 4 | Top risks for complex operating models in a global business landscape

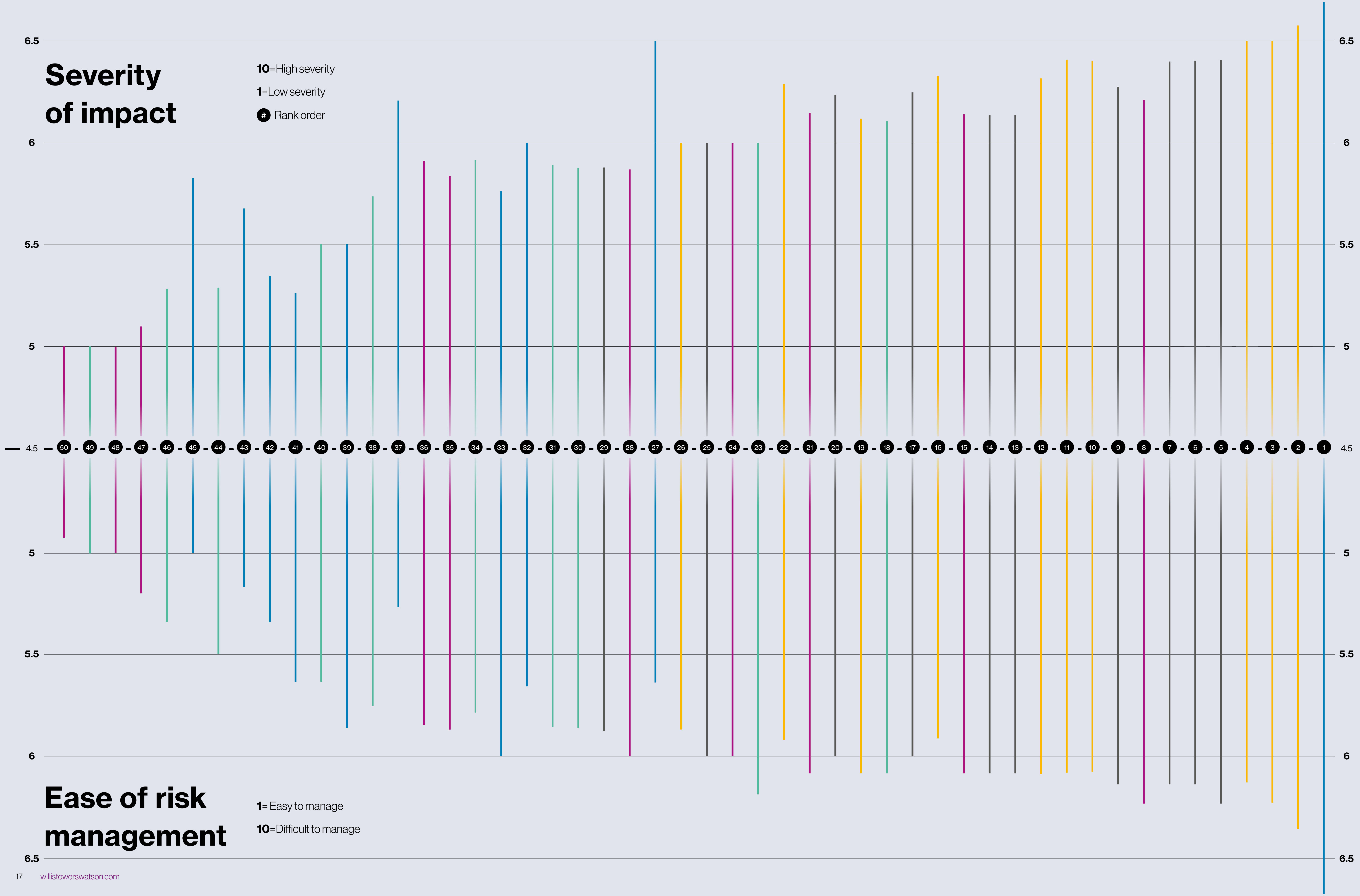


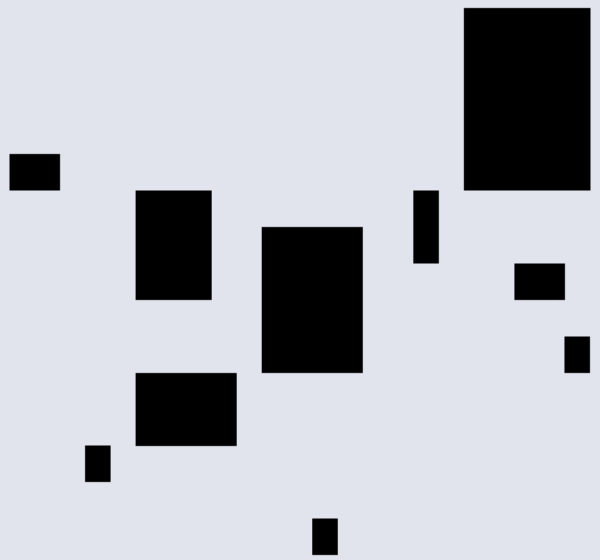
1. Complexity of the labor market: dependence on subcontractors or contract labor
2. Strikes and industrial action
3. Increasingly narrow operating margins
4. Cost and time overruns
5. Design risk exposure
6. Nat cat exposures and epidemics
7. Supply chain vulnerability
8. Project postponement/delay, cancellation or change of scope
9. Workplace safety concerns and protection of workforce
10. Dependence on existing national infrastructure

"Because we are the principal contractor, what happens on-site in its entirety is very controlled," says one executive. "The entire industry looks more and more professional, particularly in the view of clients' procuring teams. Today, quality and capabilities are far more important criteria than price, which has often been the case historically. This is a significant improvement, which, combined with what we call early contractor involvement, enables contractors to get involved right at the front end. There's still great fluidity in terms of applying scope to particular business problems, which in itself very much helps to reduce risk in the delivery phase."

Ten-year outlook

Difficulties arising from operating in changing economies, along with safety and environmental liabilities and supply-chain vulnerabilities, are top of mind for executives over the next decade. As projects become more complex, there will be increased pressures to lower construction costs and reduce build times. The technical challenges of rolling out solutions across construction sites for multiple sectors that are geographically dispersed will remain a difficult task. There will also be a growing demand for environmentally sensitive projects, which will alter traditional techniques and could add to labor complexities.





Geopolitical instability and regulatory change

1 Negative changes to government financing, policies and priorities
27 Constantly evolving regulatory environment
32 Increased political instability
33 Intellectual property and patent breaches
37 Environmental regulations/ lobbying/protests
39 Lack of government/ PPP expertise
41 Reputation risks arising from social issues
42 National security threats
43 Compliance risk
45 Increasing government requirements

Workforce management and talent optimization

18 Limited workforce diversity
23 Difficulty in attracting and retaining key talent
30 Shortage of qualified, experienced staff
31 Escalating duty of care costs and responsibilities to ensure workforce security and safety
34 Increasing difficulty under-standing, following and complying with local employment laws
38 Lack of mobility in workforce due to project location
40 Failure to integrate migratory or transient workforce
44 Increasing pension fund liability
46 Constant challenge to provide competitive and profitable compensation
49 Lack of potential business leaders

Risks resulting from digitalization and new technologies

5 Overreliance on/failure of critical IT systems
6 Liabilities arising out of the widespread use of BIM
7 Third-party security vulnerability/ Digital supply chain resilience
9 Increased security threat from cyber-attacks and data privacy breaches
13 Risks emerging from new technologies
14 Overreliance on technology leading to increased human error
17 Cost and operational impact of IT implementations
20 Inability to capitalize on automation of processes
25 Inability to keep up with pace of change and technological advancement
29 Increased usage of (own) mobile devices (BYOD)/internet of things

Complex operating models in a global business landscape

8 Complexity of the labor market: dependence on subcontractors or contract labor
15 Strikes and industrial action
21 Increasingly narrow operating margins
24 Cost and time overruns
28 Design risk exposure
35 Nat cat exposures and epidemics
36 Supply chain vulnerability
47 Project postponement/ delay, cancellation or change of scope
48 Workplace safety concerns and protection of workforce
50 Dependence on existing national infrastructure

Business model and strategy challenges

2 Threat from new and emerging competitors
3 Capital availability, funding and liquidity
4 Macroeconomic environment uncertainty and inconsistency
10 Necessity for increasingly diversified business models
11 Customer default risk
12 Evolving and increasing supply chain risks
16 Increasing cost of risk mitigation and contractual obligation
19 Challenges to enter new high-growth areas
22 Increased M&A activity and industry consolidation
26 Changing demand impacting cost model

Risks resulting from digitalization and new technologies

A relative latecomer to the digital party, the industry now needs wise heads to ensure it harnesses new technology safely and securely

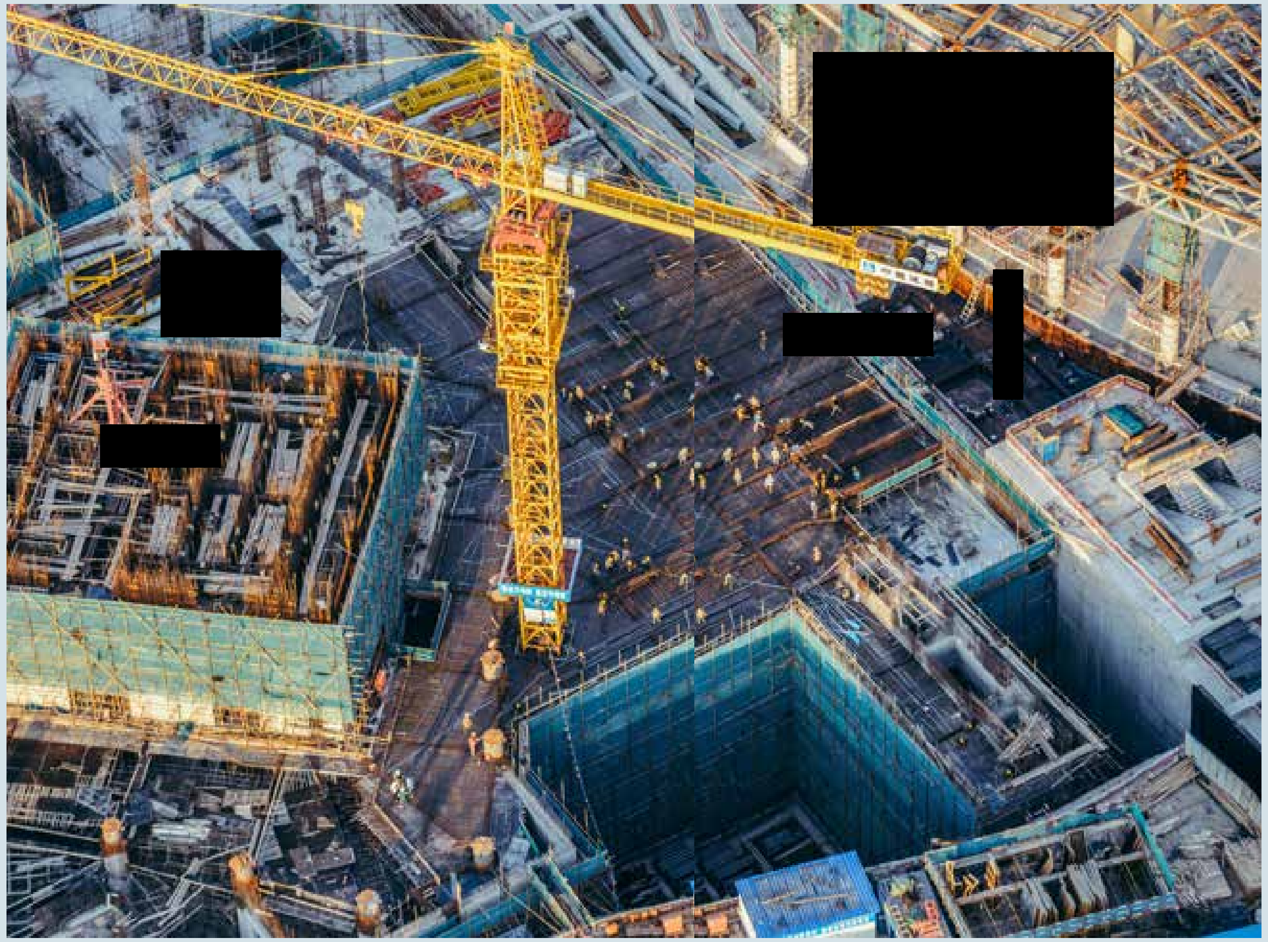
Technology continues to alter the business landscape and change operations across the value chain. While the majority of survey participants see innovation as a necessity to survive, the construction industry has remained slow to integrate digital practices.

"This is an industry where technology moves at a much slower pace than others," says ACS Group's García Altozano. Flat growth has led to a lack of collaboration and minimal knowledge-sharing, which are entrenching silos in an already fragmented industry. Yet construction is showing signs of digital progress, and rising investment in research and development is bringing significant changes to construction methods.

The top ten risk scores in this megatrend are clustered tightly together, indicating that respondents don't yet understand the complexities of technology risk, and likely have not yet singled out the particular threats to their business or ranked them by importance. This doesn't mean that digital risks aren't a high priority: four of the top ten risks for the construction industry fall under this megatrend. And that's not a surprise. Construction is experiencing a much-needed digital revolution, and disruptors such as 3D printing are widespread. While it's easy to focus on the upside of digital efficiencies, our participants reveal tangible and growing concerns – some unique to construction and others prevalent across all industries.

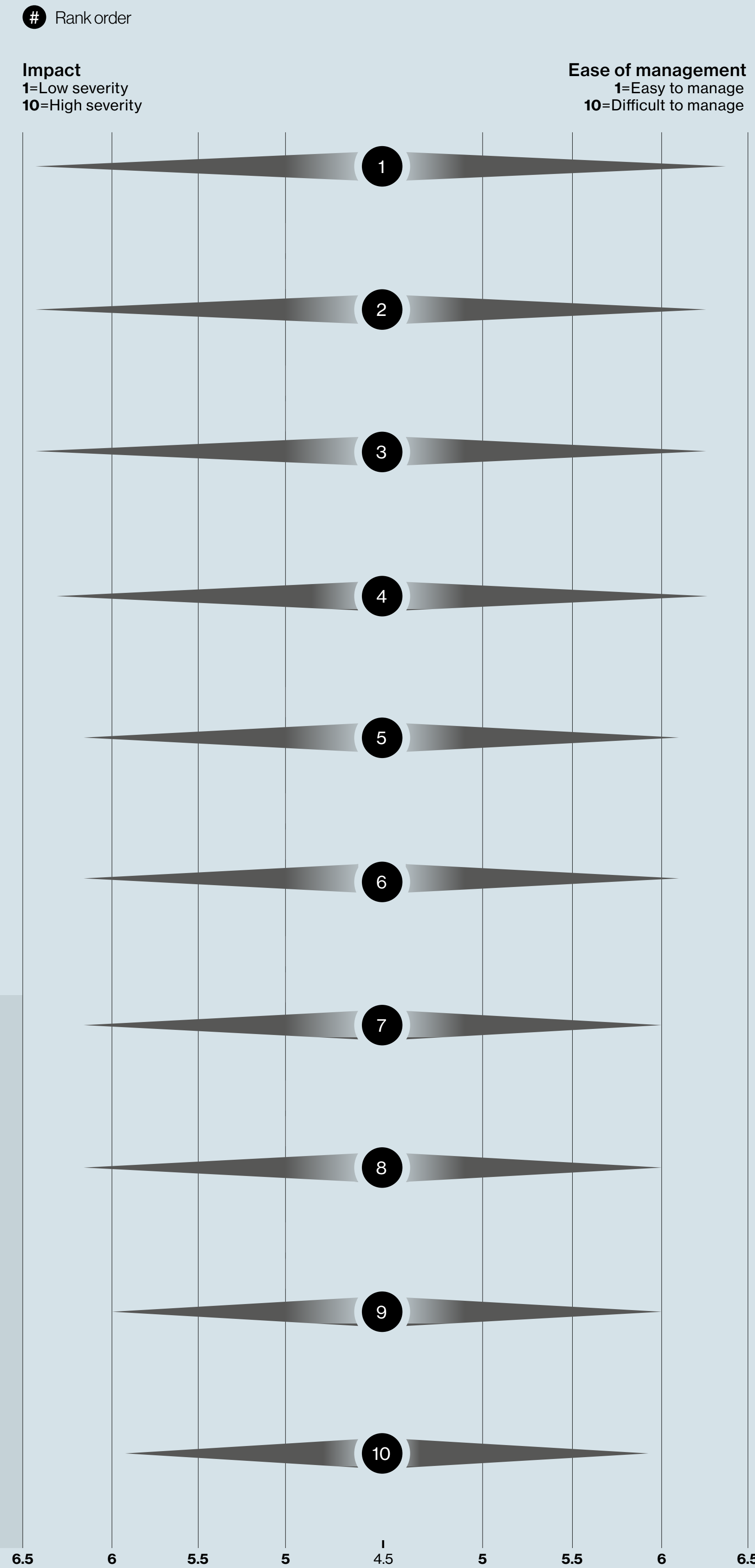
Executives identify "overreliance on/failure of critical IT systems" as the top risk within this megatrend, ranking it fifth for the industry overall. The risk ranks lower in Latin America and CEEMEA than in all other regions, where it ranked among the top ten – possibly reflecting the use of more advanced technology in developed markets. Otherwise, there is little commonality among regions. North America is focused on security issues, while the UK and Europe are concerned about potential malfunctions and overreliance on technology.

"Liabilities arising out of the widespread use of Building Information Modeling, visualization, etc," ranks second, another reminder of the pros and cons that come with emerging technologies. "Third-party security vulnerability, digital supply chain resilience" and "increased security threat from cyber-attacks and data privacy breaches" take third and fourth positions respectively, indicating that executives understand the security lapses that technology and supply chains bring. As Dean Chapman, risk management executive in Willis Towers Watson's Cyber Risk team says: "Business reliance on IT functions grows



> " Cyber-security is something that is constantly on the agenda. We continue to be vigilant and keep up to date with the latest technologies "
>
> **– Major Australian contractor**

Fig. 5 | Top risks for digitalization and new technologies



1. Overreliance on/failure of critical IT systems
2. Liabilities arising out of the use of BIM
3. Third-party security vulnerability/ Digital supply chain resilience
4. Increased security threat from cyber-attacks and data privacy breaches
5. Risks emerging from new technologies
6. Overreliance on technology leading to increased human error
7. Cost and operational impact of IT implementations
8. Inability to capitalize on automation of processes
9. Inability to keep up with pace of change
10. Increased usage of (own) mobile devices (BYOD)/Internet of things

> **“ Digitalization and operational excellence are top of the agenda in terms of developing and safeguarding the business ”**
>
> – **Peter Wallin**, CFO, Skanska

exponentially year on year. Advances in technology present companies, their clients and their customers with unlimited opportunities for innovation, but they also bring another dimension of risk.”

Enhanced productivity

In an increasingly competitive market, construction companies must differentiate themselves. Those that emphasize innovation are in a stronger position, and are more likely to attract top talent and increase operational efficiencies.

“New technologies are transforming the way we do business,” says Brett Phillips, CFO of US-based Structure Tone. “They are changing the workflow across all work streams and affecting all departments.” He adds that investment in research and development can be a great way to enhance productivity.

Technology is assuming an ever-greater role in construction, improving safety, design and efficiency. According to the World Economic Forum, 3D printing promises productivity gains of up to 80 per cent in some applications, and can dramatically reduce build times. As the value added to construction companies increases with digitalization, new channels of growth will open up for the industry.

“Everything from design to the driving of machinery is much more like playing a game with a screen than it was historically,” explains Costain’s Bowen. “It’s helping to change the perception of the industry from one of difficult working conditions to one of being in a hi-tech space.”

An improved image of construction is vital to changing attitudes of the industry. A key influencer is how companies take steps to modernize their business. Some construction companies are partnering with academic institutions to find ways to use innovation to drive efficiency.

“We made an agreement with Massachusetts Institute of Technology (MIT) three years ago, and every year we spend an amount of money to see how technology and digitalization could have a positive impact on construction work,” says Álvaro Echániz, CEO and corporate risk officer of Ferrovial FISA. “Even without MIT we are trying to do a lot of new things with technology.”

Similarly, construction companies can use technology to generate internal wins. “An innovative approach is becoming really important for us because profit margins are under pressure due to new competitors,” says Akkaya of STFA. This is true for many construction companies, which are stepping up automation across operations in an effort to cut costs and streamline the design and execution of projects.

“We are seeing digitalization more and more,” says ACS Group’s García Altozano. “It is building up efficiency across all systems. Even our traditional systems are becoming increasingly digital.” The struggle will be to harness the benefits of technology without jeopardizing productivity.

“Digitalization and operational excellence are top of the agenda in terms of developing and safeguarding the business,” says Skanska’s Wallin. “Of course it is a threat to some extent, but we mostly see it as an opportunity. It’s an opportunity to improve the businesses, but also to make use of the masses of data we have from all the construction projects we have across the world.” This type of forward thinking represents a new attitude in the industry, where companies increasingly blur the lines between risk and opportunity.

New technologies

Construction players are now embracing digital innovation, and technology is shaping the future of the industry in a number of previously unforeseen ways. The concept of smart building is growing, and companies are getting ahead of the game by investing in advanced technology such as 3D printing to generate parts for modular construction, and using drones to check construction sites and to monitor safety and progress. Virtual design capabilities are constantly developing, with applications such as BIM changing the landscape.

BIM is a key enabler for many technologies used in the design, planning and modeling stages, providing a real-time digital representation throughout the project cycle. Applications vary significantly, however, and BIM is used far more in developed regions than in others. Says one of our interviewees: “We’ve got a focus on digital disruption and innovation. For example, BIM technology has come on in leaps and bounds in recent years, and we’ve got a strong BIM component to our business.”

Technological advances are now leading to bolder structures that have been virtually designed and can be assessed at every stage of the build using data and analytics. Automated equipment is seen across many more construction sites and remote monitoring is much more widespread.

“We have heavily invested in virtual design construction and we use BIM modeling,” confirms David LeMay, president and CEO at Canada’s Stuart Olson. “We are investing heavily in it because we see the value. We feel ready for new technology. We have a team focused specifically on building performance, so we are on the cutting edge of all the new building technologies. I see the opportunity in the applications of technology in our industry.”

As many of these technologies are still in the early stages of development, companies may see better results if they are implemented as part of a wider operational strategy.

“With digital change, what it will be and how it will impact the industry is still being played out,” says one leading engineering, contracting and service provider. “We are still trying to get our head around what it might look like and to work out where the change is likely to be so we can get ahead of the game.” Although the development of new digital capabilities drives the business forward, security around these initiatives is often addressed at a later stage, meaning any discussion of technology should include the possibility of cyber risks.

Cyber risks are a top priority

While the progress of automation and technologies continues at pace, recent (and seemingly endless) cyber breaches are widespread. As the rapid development continues and the rush to market by competitors races on, cyber-security is often neglected.

“It is clear that the level of understanding about cyber-related risk is not as high as it needs to be,” says Willis Towers Watson’s Chapman. “The industry is vulnerable, not just in relation to the loss of data but also at the design and technology stage, thanks to an increase in the use of technology – and the results could be catastrophic.”

Taking the ninth spot for the industry overall, “increased security threat from cyber-attacks and data privacy breaches” is clearly top of mind for executives. Indeed, most respondents cite cyber as a management priority. “We talk about cyber in the C-suites. It’s something that five years ago we didn’t think would happen to us,” says Phillips. “But somebody sees we are a $4 billion company and they think that’s an opportunity. It’s a real risk to our business. We are looking for different ways to protect ourselves every day.” Phillips highlights the changing nature of these risks and how they will evolve as technology becomes inbuilt to operations. Reinforcing this attitude, Akkaya says that “cyber risk is very much on the agenda of management”.

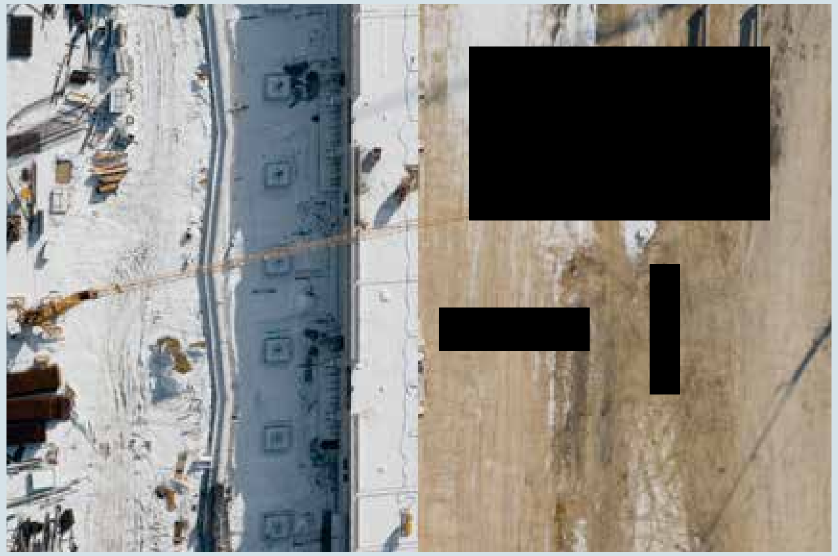
Because the industry is heavily decentralized, with a large number of stakeholders, cyber threats are more difficult to manage.

“Numerous high-profile cyber breaches have shown us that, while your own IT infrastructure is well defended, privileged or unnecessary access granted to a third-party or supplier presents malicious actors with an opportunity,” Chapman explains. As a solution, Wallin suggests a collaborative approach, ensuring the participation of all vulnerable parties to give higher protection across the supply chain. Educating employees is an essential first step in reducing cyber risks, particularly for the construction industry, where communicating effectively with a mobile workforce can be a challenge. As technological uses grow, cyber-threat awareness and training should form part of any cyber-security strategy, and should focus on helping employees identify, report and mitigate an attack effectively.

Ten-year outlook

“A trend over the next five to ten years will be how technology transcends from being back of the house to being in the field,” says Phillips. “How is it going to change how we execute construction and the quality of the drawings that we receive from architects and designers? What happens if the technology fails, if the BIM file is corrupt? It is interesting see how it will play out when we have 3D printing and all other kinds of technology.”

By 2020, technology will be mission-critical for the construction industry, and demand will grow for digital innovations that can enhance the quality of design, production and output. These developments are already in demand from an industry that has historically lagged in digital progression. As dependence on technology grows, new threats will evolve, and many respondents feel that technological advancements will bring new risks over the next ten years. Integrating technology in to the business will therefore require enhanced cyber-security and a new approach to risk management.



Workforce management and talent optimization

Fixing the industry's image problem, especially among younger workers, is key to attracting and retaining talent

Workforce issues within the construction industry can have an effect on all megatrends in the Risk Index. Competition for employees with strong digital skills, coupled with the need for a global employee network and the burden of disparate labor laws have made workforce issues ever more complex. The industry is also saddled with certain preconceptions: an aging workforce, unsophisticated career development frameworks and a traditional image. Its attitude to workforce management and talent optimization has also not kept pace with changing dynamics across global markets. To compete effectively, the industry must act quickly to alter perceptions and attract a new breed of talent.

"The construction industry is probably one of the lower investors in skills," says Balfour Beatty's CEO Leo Quinn. Not surprisingly, construction executives rate this megatrend the second most worrying in our Risk Index, with many executives commenting on the urgency with which it must be addressed. But the cyclical nature of construction work leaves the sector vulnerable to labor issues. Subcontracting, difficulties in forecasting resource demand, and large-scale projects involving thousands of workers are the norm, making 'people risk' inherently difficult to manage in this industry.

> " You need a clear line of sight on how to develop people so that you can keep them. We give workers more opportunities so they can mature faster "
>
> – **Peter Wallin**, CFO, Skanska

The biggest risk identified in this megatrend is "limited workforce diversity (includes ethnic, gender and generational diversity due to lack of apprenticeships)", which reflects the industry's traditional workforce and lack of diversity. "Difficulty in attracting and retaining key talent" and "shortage of qualified, experienced staff" place second and third respectively, pointing to concerns about the future availability of skilled workers. Modernizing talent strategies will clearly become vital if companies want to attract a new generation of experienced labor.

Changing talent strategies

The construction industry is not viewed as an attractive employer. While perceptions vary by country, construction is seen as suffering from limited innovation and a lack of engagement compared to other industries. Contributing factors include perceptions of ineffective employee development initiatives, a lack of diversity in the workforce and low job security. For an industry where just 9 per cent of the workforce is female and employee turnover is close to 30 per cent, it is no surprise that limited workforce diversity is the top risk of this megatrend.

"Diversity in the industry is probably one of the lowest, partly because people don't know what the opportunities are," Quinn adds. "The way to survive the shortfall will be to invest in training and reward programs, meaning companies must become more creative in how they think about attracting and retaining talent.

"We have to ensure people don't walk away from the industry," says Stuart Olson's LeMay. "We need to actively promote what we have to offer. I don't think we do a very good job. It's more than a business risk, it's an industry risk." That being said, some industry-wide initiatives are making significant progress in addressing talent availability.

"As an association, one of our primary missions is to ensure that everyone feels welcome to pursue high-paying careers in construction," explains Stephen E. Sandherr, CEO of The Associated General Contractors of America. "That is why we are committed to taking a lead role in expanding the diversity of the construction industry. To that end, we have established a dedicated task force that is crafting a comprehensive plan for the association and its members to attract, support and nurture greater diversity within the ranks of our member firms and the industry at large." Creating a diverse workforce is an important first step for construction companies to win the war on talent.

"We started something called The 5% Club," says Quinn, "which is a public declaration that 5 per cent of our employees will be made up of apprentices and graduates. It's an employer-led organization around how to effectively bring young people in to the workplace and train them. We are investing in the younger generation. Interestingly, there are 200 member companies, and it is growing fast. It's a question of giving out lifetime skills."

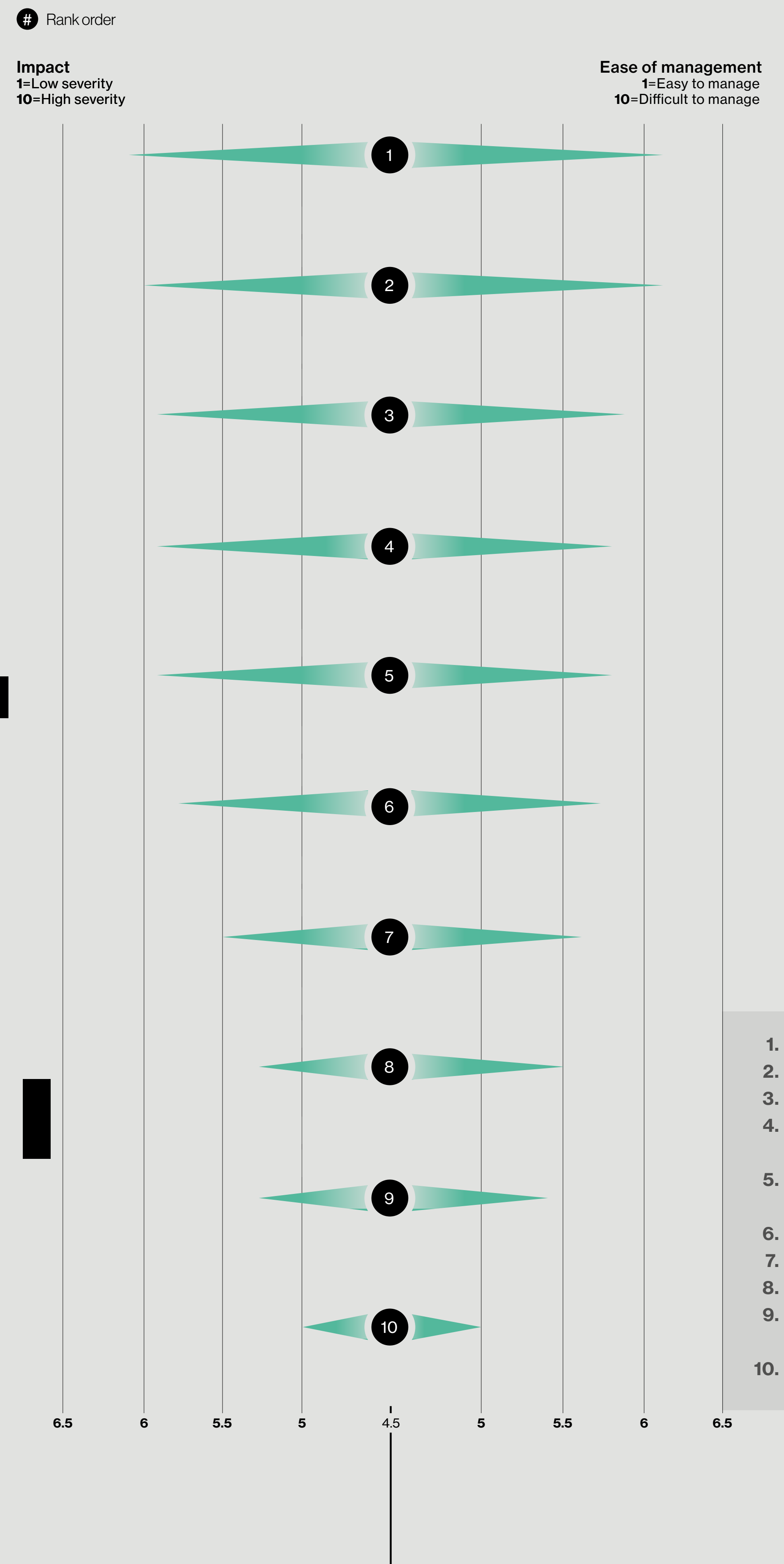
This opinion is shared by many construction executives. Costain's Bowen agrees that, "we absolutely need to up-skill the people we hire, and we also need to attract as many people out of university as we can. We need to make sure the industry is projected into schools and universities in an attractive and exciting way." Changing the perspective of construction work will clearly be a top priority in the years to come, and will rely on the active engagement of employers in the industry.

"You need a clear line of sight on how to develop people so that you can keep them. We give workers more opportunities so they can mature faster," says Skanska's Wallin. Companies must rethink their talent strategy, and incentivize their people through comprehensive benefit packages and by creating clear career paths. In doing so, employers should find they are more able to shrug off lasting stereotypes and promote a working culture that attracts the much-needed labor.

Generational diversity

Demographic shifts have a significant effect on the availability of talent. As the makeup of the population changes, so too do preferences towards certain careers. Accordingly, changes are felt most keenly in developed countries with significant

Fig. 6 | Top risks for workforce management and talent optimization



1. Limited workforce diversity
2. Difficulty in attracting and retaining key talent
3. Shortage of qualified, experienced staff
4. Escalating duty of care costs and responsibilities to ensure workforce security
5. Increasing difficulty understanding, following and complying with local employment laws
6. Lack of mobility in workforce due to project location
7. Failure to integrate migratory or transient workforce
8. Increasing pension fund liability
9. Constant challenge to provide competitive and profitable compensation and reward
10. Lack of potential business leaders

generational diversity. The industry's low investment in people and skills, coupled with its inability to attract younger workers, means that it will likely see substantial labor shortfalls in many markets. The average age of a construction worker is well above those of other industries, so it's no surprise that construction companies have concerns about their talent strategies.

The financial crisis may have been the tipping point for labor shortages. Developed nations were hard hit, construction slowed significantly, and many who lost jobs turned to alternative sources of employment.

"In the US, so many people in their 30s and 40s left the construction industry completely, and when it recovered as the economy picked up, they had gone to different things," explains Structure Tone's Phillips. "The challenge in the next year will be filling that gap. Millennials don't want to be in a field swinging a hammer; they want to be in an office designing things."

Recent geopolitical events aren't helping the labor shortage either. In the UK, the skills gap has taken on new significance since the EU referendum because the industry relies heavily on EU workers.

As Balfour Beatty's Quinn stresses: "We have to bring people in [to the UK] because we don't have the skills." Quinn alludes to the increasing inclination of younger generations to go into dynamic careers, where they can be challenged and valued. A UK government construction report found that construction has low job appeal for millennials compared to other industries and is suffering from an image problem. Company culture and working practices must align to demographic shifts if the industry wants to entice future workers.

But demographic shifts do not produce uniform consequences. Youth in emerging markets are more likely to seek employment in the construction industry, which is often seen as respectable and a stable source of employment. These countries have much lower generational diversity, says STFA's Akkaya.

"We don't suffer from a lack of talented people in Turkey. We don't have that age gap like in Europe and the US. In Turkey, there are a lot of young people, and construction is a reputable industry. So young and talented people are willing to work in construction."

The digital skills demand

The construction industry has been slow to adopt technology, but digital tools, even in construction, are becoming the new normal. However, finding and keeping the right IT talent is a challenge, especially in an industry that faces fluctuating demand for its services.

"The mix of skills that we need in order to deliver the business will change as we more intensively deploy technology-led solutions," says Costain's Bowen. "This is something that we have to be very mindful of going forward." The construction industry will have to call on a whole new talent pool, not just in the future but immediately, and must find innovative ways to navigate these changing talent dynamics.

Willis Towers Watson's 2016 Global Talent Management and Rewards Study, which included 990 construction participants, found that technology has enabled 69 per cent of construction companies to use more non-employee talent.

"The more technology you have, the more millennials you can attract. I think we are going down that road," says Structure Tone's Phillips. "Operations are not only more efficient, but technology is making this an exciting place to work, and we are retaining employees. We are capturing the imagination of the young people and they want to be part of what we are building, which is encouraging."

Ten-year outlook

Workforce issues will likely remain an important issue for the industry over the next ten years. Respondents cite continuing shortages of key talent, high labor costs and reform laws as the top future risks within this megatrend.

Making the industry more attractive to the younger generation is going to be a major challenge. That, coupled with new digital skillset requirements, will likely force companies to rethink their approach to talent. Pursuing the right strategy has never been more important. But technological progress can provide construction with the opportunity it needs to offer a wider array of roles that are more appealing to future workers.

> "Only 38 per cent of construction employees think their organization provides career planning tools and resources that are helpful"
>
> –**Willis Towers Watson**, Global Talent Management and Rewards Study 2016

Rating the megatrends by sector

Across the construction industry, geopolitical and regulatory risk predominates

Sector

- Civils / Heavy civils contractors
- Commercial building / FM contractors
- Specialist subcontractors
- House builders / SME contractors
- Infrastructure contractors
- Energy contractors

- Geopolitical instability and regulatory change
- Complex operating models in a global business landscape
- Workforce management and talent optimization
- Business model and strategy challenges
- Risks resulting from digitalization and new technologies

Rank order determined by combined risk score (severity of impact × ease of risk management)

Business model and strategy challenges

Construction is an industry in flux: ambitious firms pursue growth in new markets, but must also contend with new competitors and risks

The way business is conducted has significantly evolved, and global corporations have altered the macroeconomic environment. To survive, companies must find a favorable position in the shifting landscape. Consequently, construction players must be flexible and focus on efficient operations and new market opportunities.

A distinguishing feature of this megatrend is that the risks are hugely interconnected. "The threat from new and emerging competitors" ranks second overall; "capital availability, funding and liquidity" ranks third; and "macroeconomic environment uncertainty and inconsistency" comes fourth. What's more, their causes and effects are intertwined. These results also show widespread concern: respondents in all geographies feel threatened by these challenges. North America stands out, however, with five risks in the top ten from within this megatrend, and "capital availability, funding and liquidity" in first place overall.

Construction companies are increasingly expanding into new markets to grow and remain competitive, so it's not surprising that "necessity for increasingly diversified business models" makes it in to the top ten risks for the industry overall, and is closely tied with "the threat from new and emerging competitors".

"Challenges to enter new high-growth areas", however, receives a much lower composite risk score. This suggests that industry players are increasingly recognizing the benefits of portfolio diversification. While they are wise to the complexities of taking on new business, there is clearly much to gain from exploring new avenues. In other words, it is often worth the risk.

Access to capital

"Capital availability, funding and liquidity" is ranked highly both by the construction industry overall and in individual regions, demonstrating that access to funding will always be precarious. However, a few respondents report that, for them, the current situation is stable.

"There is a lot of investment and funds coming in. This is good and bad, because on one hand you have more equity left, but on the other we have more competitors," says Ferrovial's San Millan. In fact, the common opinion is that, while cyclical, the financial environment is currently sustainable for many construction players.

"Access to capital is pretty good at the moment," says one executive. "We've got a pretty low interest-rate environment, and the banks are keen to get involved in infrastructure."

Stuart Olson's LeMay concurs: "We have limited issues from a funding perspective with access to capital."

Working in certain regions does bring more struggles, however. In oil-rich countries, the recent downturn in price per barrel has resulted in lower economic activity.

"The availability of capital is linked to the economic slowdown and we see that it's a lot to do with oil prices," says STFA's Akkaya. "The government in this region [the oil-producing Middle East] has difficulties in creating capital availability for new projects, which is why many are on hold."

Diversifying the business model

"The construction market is facing intensifying competition from new and emerging players. Strategy is key," says one respondent. An element of competition is welcome in a market like construction, providing an impetus to grow and diversify. The flip side is that a saturated industry creates many challenges.

As LeMay adds: "Competition is both a risk and an opportunity."

Traditionally, major competitors were like-minded companies, often based in the same country and line of business. As global markets have developed, however, new entrants have appeared and shaken up the industry.

"There is certainly a threat from global competitors. In order to maintain the competitive advantage we have today we need to maintain relevance, and if we do not then it could be a significant threat," says LeMay. Obviously, it is frustrating for companies with a particular focus on domestic operations to be outbid by new players.

Says a major contractor: "Sometimes internationals come in and do not fully understand the local conditions for major infrastructure projects. The risk is that they come in and under-price certain risks and conditions."

> “There are a whole lot of reasons to be very positive about the construction industry over the next two or three years”
>
> –**Brett Phillips**, CFO, Structure Tone

Creating a diverse portfolio is a method often used by companies to grow their business and gain new sources of value. In a commoditized industry such as construction, expanding into new geographies and new markets can be the most efficient means to remain profitable and competitive, however discomforting it might be.

Indeed, geographic diversification is a frequent topic in our interviews with executives. "Diversification makes us more dynamic and more flexible so that it is easy to react to the changes in market conditions," says Renaissance's Toroglu. " In this way, we also substitute business volume reduction in one country by increasing the volume in another one. Furthermore, we are not only diversified in terms of geography, we are also diversifying ourselves in the sectors and services we provide."

> “The most important thing is to make sure that the velocity of our innovation remains always at the vanguard, because great ideas are always going to be replicated at some point in time at any event”
>
> –**Tim Bowen**, Director of Strategy and Business Development, Costain

"Our plan is to double the size of the business over the next five years," says one executive. "That will come from organic growth, increasing competitiveness and perhaps from M&A activity. It will hopefully come from some international expansion." Others suggest that diversification has become a necessity to compete.

"We have taken steps to broaden the diversity of our client base and the geographic locations of our construction," says another respondent. "For the first time in a decade we have to actually consider international strategies."

On the finance side, a varied portfolio can level out profit and loss, providing leeway where it's needed.

"Geographical diversification of your activities tends to soften the cycle effect. You might have a low time in one given area while others are picking up," says ACS Group's García Altozano. Many respondents use this strategy to maintain a powerful balance sheet.

"Diversification across sectors and geographies is the key to try and smooth out the overall results of the business," says another interviewee.

There are of course hazards involved in exploring new lines of business and working with new people. While the underlying tone of conversation on this subject is positive, Yetka of the Port Authority of New York and New Jersey alludes to the fact that wide and varied operations will leave a company vulnerable to a bigger risk profile.

"We are very diverse. Our assets are so disparate and unique in their operations that the way we see risk is that it is constantly emerging and changing – it's dynamic," she says.

Choosing the right markets to enter and people to partner with is extremely important.

Companies often focus on diversifying into areas in which they are already comfortable, or partnering with organizations they already have a relationship with.

"We are creating consortiums and partnerships, but that's another issue because you need to be very secure on choosing and creating partnerships," says Akkaya. "You need to understand each other very well as you have an engagement for a certain period of time." A softer approach, and one that's increasingly common, is to cooperate with local companies, either through joint ventures or mergers and acquisitions. There are many strategic opportunities to be had as emerging markets develop their industry capabilities and invest in infrastructure.

Ten-year outlook

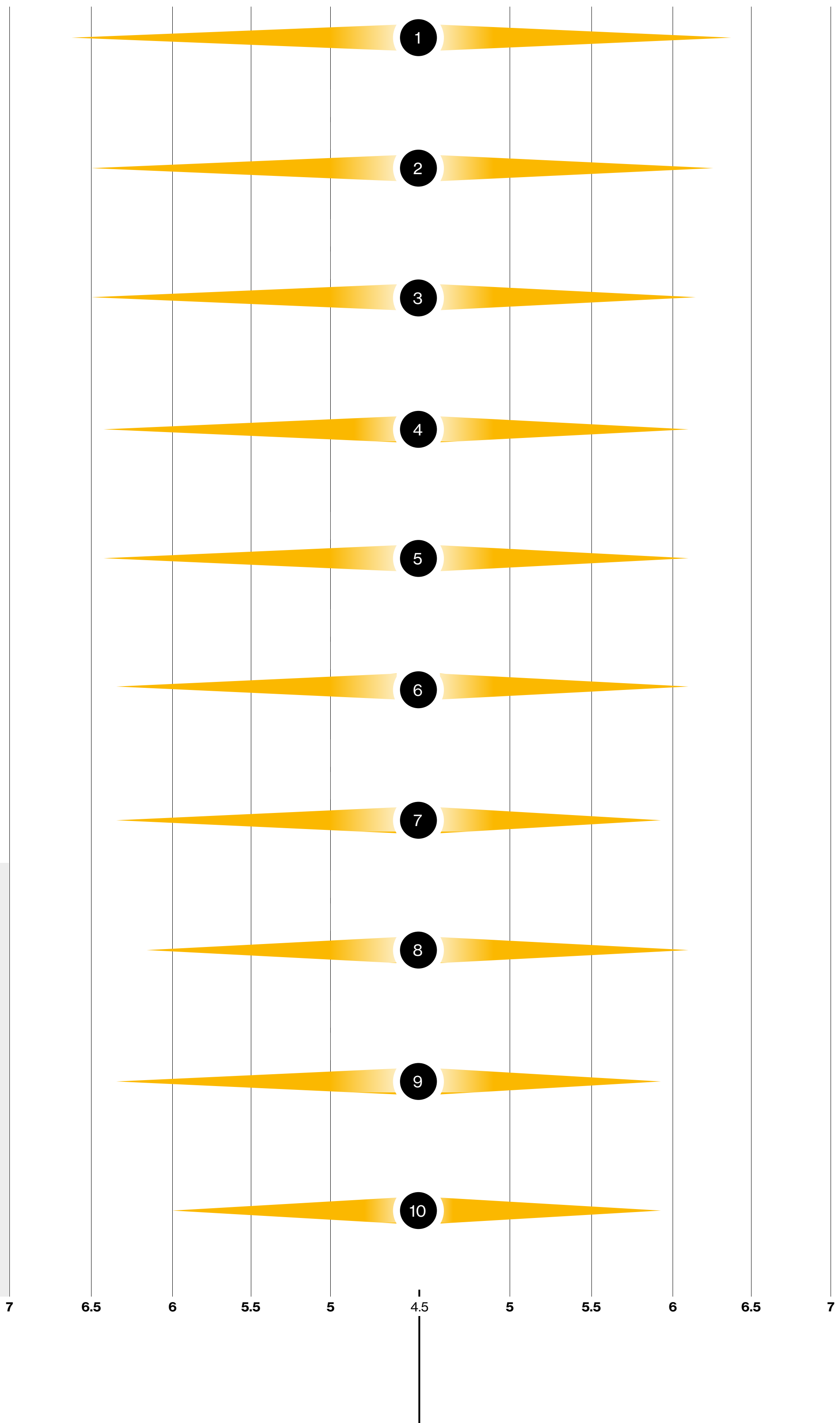
Risks relating to this megatrend are identified by more than half of the executives surveyed as the top three concerns over the next ten years. This indicates that facing up to business model and strategy challenges will become an increasing priority. In particular, financial risks related to macroeconomic conditions, continued capital availability and a lack of investment sources are frequently recognized by industry players. Increased threats from new entrants in emerging markets and lack of opportunities will also continue to prompt companies to seek new avenues of growth.

Fig. 7 | Top risks for business model and strategy challenges

Rank order

Impact
1=Low severity
10=High severity

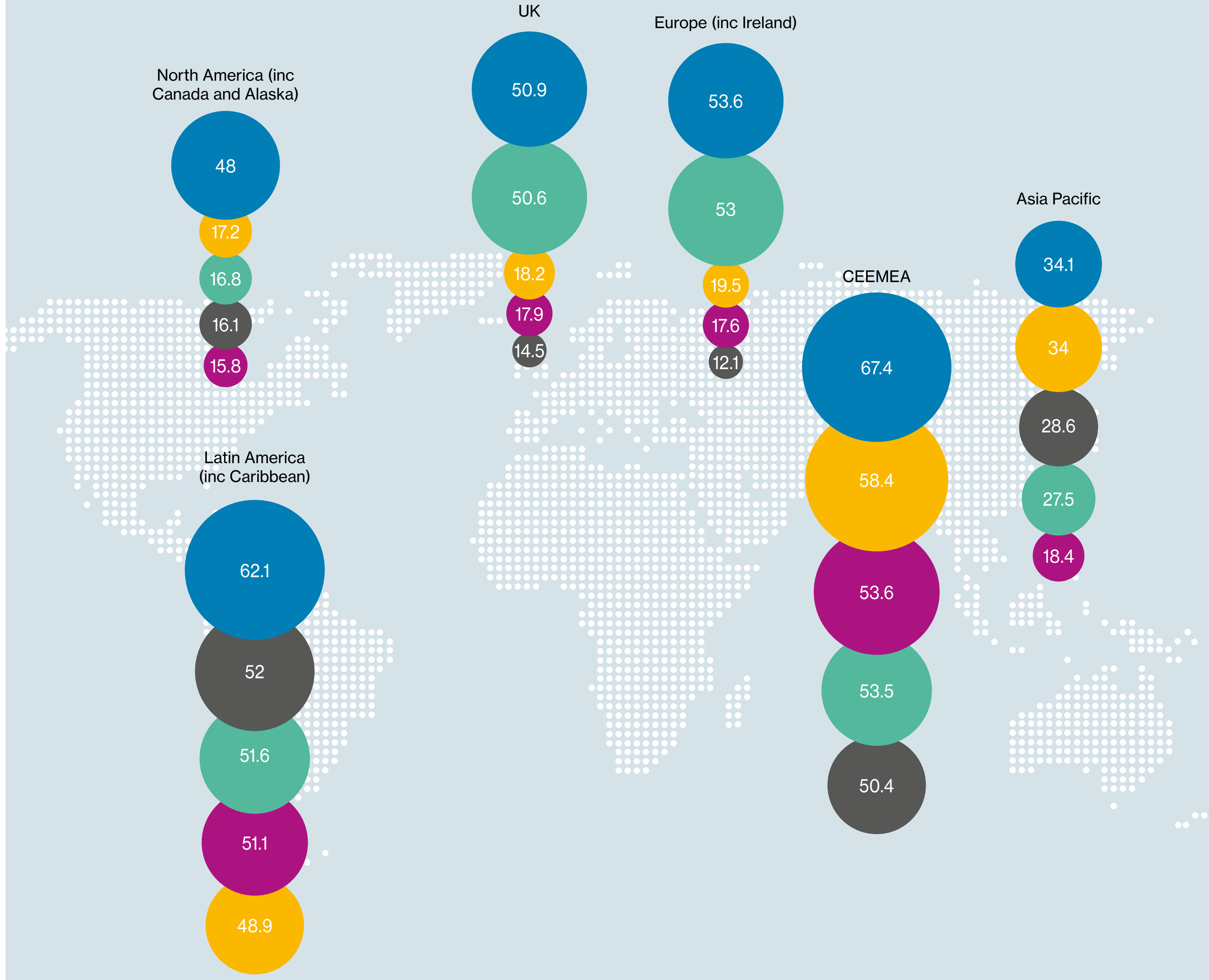
Ease of management
1=Easy to manage
10=Difficult to manage



1. Threat from new and emerging competitors
2. Capital availability, funding and liquidity
3. Macroeconomic environment uncertainty and inconsistency
4. Necessity for increasingly diversified business models
5. Customer default risk
6. Evolving and increasing supply chain (risks)
7. Increasing cost of risk mitigation and contractual obligation
8. Challenges to enter new high-growth areas
9. Increased M&A activity and industry consolidation
10. Changing demand impacting cost model

Rating the megatrends by region

Across the globe, construction leaders are united in their concern for geopolitical and regulatory risk



- Geopolitical instability and regulatory change
- Complex operating models in a global business landscape
- Workforce management and talent optimization
- Business model and strategy challenges
- Risks resulting from digitalization and new technologies
- Combined risk score

Rank order determined by combined risk score (severity of impact × ease of risk management)

Embracing complexity

Just as construction transforms our world, so the industry is transforming itself – embracing the new realities of operating in complex and dynamic global markets

Construction today benefits from enormous opportunities. In both the near and longer term, the industry will have a central role in revolutionizing global trade, rebuilding existing infrastructure and delivering transformational buildings that underpin how we will live and work. But the industry also faces considerable risk. Each project begins in a different location and often with a new workforce, the industry works with multiple parties, and it is impacted by the particular political environment of its setting.

The Willis Towers Watson Construction Risk Index shows that political instability and economic climates are the biggest challenges to the success of construction companies and projects. Yet the vast majority of survey respondents demonstrate an underlying optimism that technology and talent will transform the industry and deliver the efficiencies that have been sought for decades.

This intersection of technological advancements, innovative building delivery methods and transformed talent strategies is key to growth, but will clearly require a new approach to risk management. Risk assessment can too easily become an exercise in setting up defensive measures to protect an enterprise. But construction has always been about creating competitive advantage by finding new ways to manage the industry's risks to deliver better outcomes.

The Risk Index reveals several themes that will become paramount for the industry over the coming years:

Globalization

International companies keep expanding into new territories as infrastructure continues to develop. Megaprojects are now a common feature of the construction landscape. They require scale, financial stability, a global view of alternative delivery methods and the ability to partner in all aspects of the construction process – from conceptualization to financing, design, construction, operations and maintenance. The global nature of construction, coupled with significant diversification activity, suggests that political instability will be of concern, but will likely be manageable given the global need for infrastructure.

People

The need for talent is likely to have the longest-term impact on the industry. Construction companies face a major challenge: making the sector more attractive to the next generation of workers, particularly technologically savvy millennials who want to join companies that value diversity, reward creativity and aspire to be seen as socially responsible, both globally and in local communities.

Innovation

Construction is often viewed as an industry that does not adopt new methods quickly. But the future will demand more efficiency than ever before, and construction companies will have to demonstrate their commitment to exploring new ideas and nurturing a culture that supports innovation – from anticipating emerging needs to supporting risk-taking.

Technology

There have never been more technologies available to construction – from building methods such as lean construction, to digitalization of job processes and collaborative electronic environments such as BIM and 3D and 4D modeling. Equipment will become smarter, and the ability to identify issues and resolve them quickly using technology will enable companies to be more nimble. At the same time, the challenges of working in virtual environments and the emergence of cyber-attacks have created an entirely new class of risk management, requiring proactive measures to ensure operations remain productive and secure. Embracing these changes is not universal and far from consistent, but doing so promises significant cost and planning savings in the future.

Closing thoughts

The construction industry is characterized by an intense sense of optimism, and the ability to combat risks and deliver profitable jobs. The Risk Index shows that construction companies' inherent nature is to embrace complexity and seek out ways to differentiate themselves. Our survey also shows that industry executives have a strong sense of the challenges and risks that will impact their businesses over the next ten years. At Willis Towers Watson, we feel more confident than ever that our ability to deliver industry-specific solutions around people and risk will enable us to be the best partner for our clients, and help them grow profitably in the face of an increasingly complex risk environment.

Willis Towers Watson

Construction group leadership

Global Industry Leader
Paul Becker
+1 615 872 3464
Paul.Becker@WillisTowersWatson.com

North America
William Noonan
+1 404 224 5074
William.Noonan@WillisTowersWatson.com

Karen Reutter
+1 763 302 7113
Karen.Reutter@WillisTowersWatson.com

United Kingdom
John Roberts
+44 20 3124 8431
John.Roberts@WillisTowersWatson.com

Western Europe
Agustin Barrenechea
+44 20 3124 8855
Agustin.Barrenechea@WillisTowersWatson.com

CEEMEA
Bob Peilow
+44 20 3124 8022
Bob.Peilow@WillisTowersWatson.com

Asia
Robert Jones
+65 6591 8043
Robert.Jones@WillisTowersWatson.com

Australasia
Jeremy Read
+61 2 9285 4036
Jeremy.Read@WillisTowersWatson.com

Jon Hetherington
+61 7 3167 8554
Jon.Hetherington@WillisTowersWatson.com

Latin America
Maria Sanchis
+1 305 373 7978
Maria.Sanchis@WillisTowersWatson.com

For further information regarding
this publication please contact:

Global Industry Leader
Paul Becker
+1 615 872 3464
Paul.Becker@WillisTowersWatson.com

Global Construction Strategy
Ana de Moura Martins
+44 20 3124 6524
Ana.Demouramartins@WillisTowersWatson.com

About Willis Towers Watson

Willis Towers Watson (NASDAQ: WLTW) is a leading global advisory, broking and solutions company that helps clients around the world turn risk into a path for growth. With roots dating to 1828, Willis Towers Watson has 39,000 employees in more than 120 countries. We design and deliver solutions that manage risk, optimize benefits, cultivate talent, and expand the power of capital to protect and strengthen institutions and individuals. Our unique perspective allows us to see the critical intersections between talent, assets and ideas – the dynamic formula that drives business performance. Together, we unlock potential. Learn more at willistowerswatson.com.

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