1 Executive Summary
On its eighth edition, the BCI Supply Chain Resilience Report is one of the most comprehensive industry studies focusing on the origins, causes and consequences of supply chain disruption worldwide. Produced in association with Zurich Insurance Group, this study also benchmarks business continuity arrangements which raise the levels of resilience within organizations’ supply chains. The highlights in the 2016 report include:

- 66% do not have full visibility of supply chains
- 70% experienced at least 1 supply chain disruption
- 41% of disruptions occur at Tier 1
- 40% do not analyse the source of disruption

### Frequency and Origins of Disruption

- 526 respondents
- 64 countries

### Causes of Disruption

#### Top causes of disruption
- Unplanned IT or telecommunications outage (60%)
- Loss of talent or skills (45%)
- Cyber attack or data breach (39%)

#### The following drop out of the top 10
- Product quality incident (8th to 11th)
- Business ethics incident (9th to 21st)
- Lack of credit (10th to 17th)

#### Other sources of disruption emerge
- Currency exchange rate volatility (20th to 7th) – back in the top 10 since 2012
- Act of terrorism (11th to 9th) – first time it has appeared in the top 10 since study began
- Insolvency in the supply chain (14th to 10th) – back in the top 10 since 2012

Unplanned IT and telecommunications outage remains at top spot for the fifth year running

Currency exchange rate volatility is the biggest gainer at 7th from 20th last year
Consequences of Disruption

- Loss of productivity (68%) – up 10%
- Customer complaints received (40%) – unchanged
- Increased cost of working (53%) – up 14%
- Damage to brand reputation or image (38%) – up 11%
- Service outcome impaired (40%) – up 4%
- Loss of revenue (37%) – down 1%

Economic Impacts of Disruption

- 34% report cumulative losses of at least €1 million
- 9% report losses of at least €1 million due to a single incident
- 43% do not insure supply chain losses at all

Horizon Scanning Risks

The top three causes of disruption (unplanned IT and telecommunications outage, loss of talent or skills, cyber attack and data breach) remain as the biggest threats in the short- (12 months) and long-term (5 years)

- Insolvency in the supply chain (8th) emerges as new threat in the short term (12 months)

- Acts of terrorism (10th) figure as new threat to look out for in the long term (5 years)
Almost three-quarters of organizations report having business continuity arrangements for their supply chains. However, 14% of organizations do not identify key suppliers—up from 9%. Additionally, 27% of respondents report high top management commitment to supply chain resilience—down from 33%.
Supply Chain Disruption
Frequency and Origins

Ensuring the full visibility of supply chains remains a challenge that has been consistently tracked in previous editions of the BCI Supply Chain Resilience Report. The percentage of organizations lacking firm-wide reporting of supply chain incidents still remains high at 66% (Figure 1). This figure does not however discount the progress made in raising awareness about supply chain visibility as historical tracking shows that organizations practicing firm-wide reporting have significantly increased in the last five years (Table 2).

![Figure 1. Question 7. Do you record, measure, and report on performance-affecting supply chain disruptions? (N=434)](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Firm-wide reporting</th>
<th>Reporting within certain departments</th>
<th>No reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>34</td>
<td>38</td>
<td>28</td>
</tr>
<tr>
<td>2015</td>
<td>28</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>2014</td>
<td>27</td>
<td>40</td>
<td>33</td>
</tr>
<tr>
<td>2013</td>
<td>23</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>2012</td>
<td>25</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

*Table 1. Levels of reporting supply chain disruptions, in % (2012-2016)*
Supply chain disruption remains commonplace as 70% of organizations report at least 1 incident occurring in the previous 12 months (Figure 2). It is interesting to note that organizations reporting more than 20 incidents have significantly increased from 3% to 13%. This may be attributed to improved incident reporting or greater awareness within some organizations which may cause recorded incidents to rise.

Another key metric in the report involves tracing the sources of supply chain disruption, more importantly from an organization’s external inbound supply chain. Results reveal that more than a third of organizations (34%) attribute at least a quarter of their disruptions from their external inbound supply chain (Figure 3). This is a significant increase from 15% reported last year. Moreover, organizations attributing the majority of disruptions from the external inbound supply chain rise from 9% to 24%. This underscores the strong dependencies of organizations to their suppliers which may prove to be a point of failure if left unmanaged.

**Figure 2. Question 8.** How many supply chain incidents would you estimate your organization experienced in the past 12 months that caused a significant disruption? (N=445).

Another key metric in the report involves tracing the sources of supply chain disruption, more importantly from an organization’s external inbound supply chain. Results reveal that more than a third of organizations (34%) attribute at least a quarter of their disruptions from their external inbound supply chain (Figure 3). This is a significant increase from 15% reported last year. Moreover, organizations attributing the majority of disruptions from the external inbound supply chain rise from 9% to 24%. This underscores the strong dependencies of organizations to their suppliers which may prove to be a point of failure if left unmanaged.
For the second time, the survey also attempted to measure the predominant origins of supply chain disruption. While disruptions arising from Tier 1 continue to dominate (41%), more organizations report incidents arising from lower levels (Figure 4). Tier 2 and 3 disruptions combined increase from 29% to 31%. It is worrying however that 40% of organizations still do not analyse the source of disruption to supply chains. This is an increase from 31% recorded last year.

*Figure 3. Question 6. Looking back at the disruptions experienced by your organization in the past 12 months, what proportion would you calculate originated in your external inbound supply chain? (N=437)*

For the second time, the survey also attempted to measure the predominant origins of supply chain disruption. While disruptions arising from Tier 1 continue to dominate (41%), more organizations report incidents arising from lower levels (Figure 4). Tier 2 and 3 disruptions combined increase from 29% to 31%. It is worrying however that 40% of organizations still do not analyse the source of disruption to supply chains. This is an increase from 31% recorded last year.

*Figure 4. Question 9. Considering the supply chain incidents you are aware of in the last 12 months, which of the following apply in your experience? The predominant source of disruption across all events was… (Multiple responses allowed, answers are expressed as percentage, N=411)*
Causes of Disruption

Another key metric that has been consistently tracked in the report is the impact of various disruptions to an organization’s supply chains. Unplanned IT and telecommunications outages (60%) remain the top cause of supply chain disruption for the fifth consecutive year. The loss of talent and skills jumps three places from fifth in 2015 (33%) to second this year (45%)\(^1\). This is at its highest ranking yet from placing fourth in 2012. Cyber attacks and data breach meanwhile drop one place from second in 2015 to third this year. Nonetheless, the percentage of respondents who expressed that cyber attacks and data breach had a ‘high impact’ on their supply chains have increased from 14% to 17%. Figure 5 summarises the results below. It must be noted that responses to this question were voluntary which explains the variance in the results.

\(^1\)Percentages come from respondents stating that a particular cause presented ‘high impact’ or ‘some impact’ on their supply chains.
Currency exchange rate volatility registers the biggest jump in the 2016 survey, rising 13 places from 20th to seventh. Respondents reporting that it had ‘high’ or ‘some’ impact to their supply chains have increased from 21% to 28%. This result mirrors the ongoing turbulence in the foreign exchange markets leading to the British referendum on European Union membership\(^2\). In fact, almost half (49%) of respondents in the United Kingdom and Europe report volatility in the currency markets affecting their supply chains\(^3\).

Acts of terrorism also figured in the top 10 (ninth in 2016) for the first time since the survey began. This coincides with recent attacks and lingering political instability in many countries. Insolvency in the supply chain also makes a comeback in the top 10 (tenth in 2016), having last appeared in 2012 (sixth). Outside of the top 10, industrial disputes jump six places from 19th to 13th. The following causes of disruption meanwhile drop out from the top 10: product quality incident (eighth to 11th), business ethics incident (ninth to 21st) and lack of credit (10th to 17th).

The pervasiveness of cyber attacks and cyber crime may also contribute to the spike in organizations reporting both physical and non-physical disruption to their supply chains (up from 36% to 49%) (Figure 6).

\[\text{Figure 6. Question 11. What has been your experience of physical and non-physical disruption in your supply chain? (N= 369)}\]

The role of social media discussions related to supply chain disruptions have also been the focus of the survey in its recent editions. It is interesting to note the increase of negative social media discussions pertaining to these incidents, rising from 15% to 24%, matching their 2014 levels (Figure 6). Nonetheless, there was also a slight increase in positive social media discussions from 7% to 9%. This result affirms the growing influence of social media\(^4\) and the need for organizations to monitor and engage these channels as a part of reputation management.

\(^2\)The survey was conducted during May to July 2016.
\(^3\)This figure includes ‘high impact’ and ‘some impact’ responses.
\(^4\)In the BCI Horizon Scan Report 2016, 63% of organizations report the growing ‘influence of social media’ as a trend that needs to be followed more closely in terms of their business continuity implications.
Consequences of Supply Chain Disruption

Another key metric in this report involves tracking the consequences of supply chain disruption. Findings reveal that organizations commonly report loss of productivity (from 58% to 68%), increased cost of working (from 39% to 53%), customer complaints (unchanged at 40%), impaired service outcomes (from 36% to 40%), damage to brand reputation / image (from 27% to 38%) and loss of revenue (from 38% to 37%) (Figure 8).

**Figure 7. Question 12. Did external social media discussions play any role in the supply chain incidents you experienced? (N=370)**

**Figure 8. Question 13. Which of the following impacts or consequences arose from the incidents / disruptions experienced in the last 12 months? (Multiple Responses allowed, answers are expressed as percentage, N=347)**
It is crucial to note that the percentage of organizations reporting reputational damage as a result of supply chain disruption is at its highest level since the survey began. As this coincides with greater media scrutiny and social media discussions related to organizations, this result might be a good opportunity to reflect on reputation management and how supply chain disruptions might translate into adverse publicity for a given organization.

**Economic Impacts of Disruption**

The report also tracked the costs of supply chain disruption as a function of aggregated losses and a single incident. The survey asked respondents to estimate loss of revenues and the increased cost of working due to supply chain disruption. This year, more organizations report cumulative losses to supply chain disruptions of more than €1 million (14% to 34%) (Figure 9).

![Figure 9. Question 14. What would you estimate the cumulative cost to your organization of supply chain disruption has been over the past 12 months? (N=372)](image)

However, the percentage of organizations reporting at least €1 million in losses due to a single incident slightly remained unchanged at 9% (Figure 10).
We have also tracked supply chain insurance uptake for the third consecutive year. Findings reveal that the percentage of organizations whose supply chain losses were entirely uninsured dropped from 56% to 43%. However, organizations who are fully insured against supply chain losses also fell from 10% to 4% (Figure 11). Small and medium sized enterprises (SMEs) are more likely to be uninsured than large organizations (62% compared to 39%). These variations in insurance uptake may indicate a need to revisit business continuity arrangements and risk transfer strategies pertaining to supply chain disruptions.

Figure 10. Question 16. What was the approximate financial cost of your most significant supply chain incident in the last 12 months? (N=372)

Figure 11. Question 15. How much of the financial impact was insured? (N=364)
Horizon Scanning Risks

Organizations were also asked during the survey to look forward and assess how various drivers of supply chain disruption figure into their horizon scanning activities. For the third consecutive year, respondents were asked to select which risks and threats they are most concerned about in the short (12 months) and long term (5 years) (Figure 12 & 13).

In the short term, the top 3 drivers of supply chain disruption (unplanned IT and telecommunications outages, cyber attack and data breach, loss of talent and skills) remain as a source of concern to organizations. Adverse weather also figures in the top five. Insolvency in the supply chain at eighth now emerges as a new threat in the short term.

Figure 12. Question 18. Looking ahead, what you see as the biggest risk(s) to your supply chain in the next 12 months? (Multiple responses allowed. Answers are expressed as percentage. N=359)

Unplanned IT or telecommunications outage 66
Cyber attack and data breach 61
Loss of talent / skills 50
Adverse weather 43
Transport network disruption 40
Outsourcer failure 39
Currency exchange rate volatility 38
Insolvency in the supply chain 33
New laws or regulations 32
Human Illness 32
Health & Safety incident 29
Act of terrorism 22
Product quality incident (e.g. product recall) 21
Industrial dispute 21
Energy scarcity (i.e. loss of supply or rapid price increase) 16
Lack of credit 16
Fire 16
Business ethics incident (e.g. human rights, corruption) 15
Civil unrest / conflict 15
Intellectual Property violation 14
Earthquake / tsunami 12
Environmental incident (e.g. pollution, waste management) 10
Animal disease 3
Cyber attack and data breach now emerge at the top of concerns listed in longer term horizon scanning. Acts of terrorism also figures in the top 10, possibly reflecting lingering concerns about security. More organizations also include new laws and regulations in their long term horizon scanning (41% compared to 32% short term). A significant example involves the recent British vote to leave the European Union. This may impact on the flow of goods and services as part of a single market which is at the moment governed by European regulation.\(^5\)

Figure 13. Question 18. Looking ahead, what you see as the biggest risk(s) to your supply chain in the next 5 years? (Multiple responses allowed. Answers are expressed as percentage. N=359)

\(^5\)A recent BCI discussion paper entitled ‘Brexit: Analysing the Impact of Change’ explores the impact of the UK’s vote to leave the European Union on supply chains and relevant regulations.
Case Study

Skills supply risks makes company think again
Tim Astley MBCI

A global renewable energy company was involved in the development of a European windfarm project. In order to secure finance, it needed to conduct a detailed supply chain risk analysis. This was initiated during the development phase. The company followed a structured approach, looking at political, economic and geographical threats to the project as well as threats arising as a result of the nature and state of the supply market itself. Having identified exposures, the company set about determining areas of weakness in the overall management of its supply chain that might increase the impact of a disruption event were it to materialise.

The risk analysis determined two things. First, the biggest financial threat was a delayed start-up. This was not wholly unexpected. The second key finding was perhaps less obvious. The supply of equipment for the construction of the windfarm (towers, turbines, blades, etc) was relatively low risk. Associated challenges such as logistics, supplier relationships, visibility of Tier 2 supplies and contingency arrangements were, if not 100% secure, at least pretty well understood and broadly under control.

The biggest risk to the project was in fact associated with the availability of skilled contractors at the critical final erection and commissioning phase. Changing government regulation which involved the elimination of state subsidies for windfarms, had led to a rush of similar projects all due to complete at around the same time to beat the end of subsidy deadline. The firm realised that they would all be competing for the same small pool of specialist talent. It therefore determined that the skilled labour required in the final phase to make the project a success needed to be closely monitored and possibly even secured ahead of time. Even though this would involve extra cost, it was felt that the benefits of doing so were worthwhile in the context of timely project start-up.

Without a detailed and systematic review of the supply chain risks, the company may not have determined the criticality of the timely supply of skilled labour, exposing it to a potentially large negative cash flow effect.

The case illustrates the benefits of a multi-functional perspective in assessing supply chain risk, taking into account all aspects of business, not just the physical flow of goods.

Tim Astley MBCI is Regional Practice Leader in Strategic Risk and Business Resilience at Zurich Insurance. He is a seasoned risk management specialist with a focus on enterprise risk, supply chain, business continuity and business interruption. He is also part of the BCI 20/20 Think Tank, the Institute’s global thought leadership group.
Top Management Commitment

Top management commitment is one of the key drivers of supply chain resilience. In the previous edition of the report, the presence of top management commitment is seen to coincide with other behaviours consistent with good practice. As such, the decline in the high levels of top management commitment (from 33% to 27%) challenges organizations to step up their awareness and advocacy efforts (Figure 14).

Figure 14. Question 19. How would you assess your organization’s top management commitment to managing supply chain risk? (Answers are expressed as percentage. N=348)

High top management commitment is also noticeably greater in SMEs compared to large enterprises this year (35% compared to 25%). SMEs generally outperform large enterprises in this metric. This is an opportunity for supply chain and business continuity professionals in SMEs to champion the implementation of good practice and further a virtuous cycle that promotes greater resilience.

Top management commitment is also observed to coincide with increased supply chain visibility as expressed by firm-wide reporting. Organizations who report high top management commitment are almost three times more likely to have firm-wide reporting in place than those organizations with little or none (55% to 19%). This gap has considerably widened from last year (43% to 20%). This shows how top management commitment is crucial in implementing practices that contribute to greater supply chain resilience.

81% of SMEs report top management commitment is at least at a ‘medium’ level compared to 67% of large enterprises.
Business Continuity Arrangements

The percentage of organizations reporting the presence of business continuity arrangements for supply chains rises to 73% (Figure 15), arresting a relative decline in the last 3 years (Table 2).

![Figure 15. Question 20. Does your organization have its own Business Continuity arrangements in place to deal with supply chain disruption? (N=358)](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>58%</td>
<td>25%</td>
<td>17%</td>
<td>442</td>
</tr>
<tr>
<td>2013</td>
<td>75%</td>
<td>19%</td>
<td>6%</td>
<td>405</td>
</tr>
<tr>
<td>2014</td>
<td>72%</td>
<td>22%</td>
<td>6%</td>
<td>375</td>
</tr>
<tr>
<td>2015</td>
<td>68%</td>
<td>25%</td>
<td>7%</td>
<td>323</td>
</tr>
<tr>
<td>2016</td>
<td>73%</td>
<td>25%</td>
<td>7%</td>
<td>358</td>
</tr>
</tbody>
</table>

Table 2. Tracking supply chain business continuity arrangements, 2012-2016

This is a positive finding as organizations with business continuity arrangements for their supply chains are likely to engage in other behaviours that promote resilience. Organizations with business continuity arrangements are more than twice as likely to engage in firm-wide reporting (seen as an indicator for increased supply chain visibility). These organizations tend to insure supply chain losses and are also four times as likely to exhibit high top management commitment (Table 3).
Table 3. Comparing practices between organizations with or without supply chain business continuity arrangements

It is interesting to note this year that SMEs and large businesses exhibit similar levels of business continuity uptake (Figure 16). This contrasts with last year’s findings which indicate SMEs lagging behind large enterprises in terms of this metric (54% to 74%).

Figure 16. Question 20. Does your organization have its own business continuity arrangements in place to deal with supply chain disruption? (Answers are expressed in percentage, SMEs=107, large enterprises=419).

In terms of behaviours or indicators associated with good practice, SMEs seem to outperform large enterprises except in terms of insuring supply chain losses (Table 4). It would be interesting to find out whether this forms part of a changing trend. Further tracking is required and would be the focus of future studies.

Table 4. Comparing practices between SMEs and large enterprises (SMEs=107, large enterprises=419)
Supplier Business Continuity Information

The results affirm the growing complexity of global supply chains. 43% of organizations report having more than 21 key suppliers, with 3% claiming more than 1,000. It is worrying to note however that 14% of organizations do not identify key suppliers, rising from 9% last year (Figure 17).

![Figure 17. Question 21. How many key suppliers do you have based on business impact? (N=358).](image)

Identifying key suppliers is an important indicator of other good practice which lead to supply chain resilience (Table 5). As such, it is essential for organizations to identify their key suppliers as part of their supply chain continuity and resilience efforts.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Identifying key suppliers (Q21)</th>
<th>NOT identifying key suppliers (Q21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm-wide reporting of supply chain disruption (Q7)</td>
<td>37%</td>
<td>18%</td>
</tr>
<tr>
<td>Insuring supply chain losses (Q15)</td>
<td>58%</td>
<td>47%</td>
</tr>
<tr>
<td>High top management commitment to supply chain resilience (Q19)</td>
<td>30%</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Table 5. Comparing practices between organizations as to identification of key suppliers*
63% of organizations ask their key suppliers (new or existing) regarding their business continuity arrangements, a slight increase from 60% last year (Figure 18). Once more, this behaviour coincides with other good practice (Table 6). These findings affirm the importance of building an organizational culture conducive to supply chain resilience.

The presence of business continuity arrangements among suppliers continues to be variable at best. Findings reveal that 47% of organizations claim that at least half of their suppliers have business continuity arrangements. Only 6% of organizations say that all of their suppliers have business continuity in place (Figure 19). As the lack of business continuity among suppliers might cause negative knock-on effects, organizations should encourage their key suppliers to make their operations more resilient.
Figure 19. Question 23. Considering your key suppliers, what percentage of them would you say have Business Continuity arrangements in place to address their own needs? (N=353)

Seeking Assurance from Key Suppliers

Findings show the growing awareness of organizations about the role of business continuity in ensuring supply chain resilience. 54% of organizations seek assurance from their key suppliers by looking at their business continuity management programmes. This is higher than last year’s figures of 43%.

Almost half of organizations (46%) seeks assurance through evidence of alignment to standards such as ISO 22301. More than a third (35%) looks at compliance with recognised good practice such as the BCI Good Practice Guidelines. The following summarises the most popular ways in which organizations seek assurance from their key suppliers (Figure 20).
Supply Chain Resilience and Business Continuity

A BCM program not just a business continuity plan
Alignment to a recognised standard (e.g. ISO 22301)
A program that is relevant to the product / service we are buying
Compliance with recognised good practice (e.g. BCI Good Practice Guidelines)
The scope of their BCM program (i.e. whether it is appropriate)
Certification to a recognised standard (e.g. ISO 22301)
Where responsibility for BCM is held in the organization
Credentials of those who run the BCM program
A business continuity plan ONLY

Figure 20. Question 24. What information do you seek in order to better understand the Business Continuity arrangements of key suppliers? We look for… (Multiple responses allowed, answers are expressed as percentage, N=282)

Organizations report different ways of obtaining this assurance. Almost half (49%) provide their key suppliers with self-assessment questionnaires. It is concerning however that a quarter of organizations (25%) do not collect any information at all (Figure 21).

Figure 21. Question 25. How do you collect this information? We… (Multiple responses allowed, answers are expressed as percentage, N=296)

Assessing Effectiveness of Supplier Business Continuity

Another key metric in this report involves benchmarking validation of business continuity arrangements among suppliers. Previous editions of the report have mentioned validation as one of the continuing gaps which hinder supply chain resilience. This year’s findings are no exception as a majority of organizations (57%) do not check or validate their suppliers’ business continuity arrangements (Figure 22). They outnumber organizations who perform validation by a margin of almost three to one. This is a clear area for improvement and organizations should be more proactive considering the knock on effects of supplier disruption to their business.
Figure 23. Question 26. How have you checked / validated that key suppliers’ Business Continuity arrangements might work in practice? We… (Multiple responses allowed, answers are expressed as percentage, N=300).

There are variations in approach as to reviewing the effectiveness of business continuity arrangements. Half of organizations (50%) review supplier business continuity during contract renewal, up from 38% last year. 30% schedule regular review meetings with key suppliers, a substantial rise from 19% in 2015. Nonetheless, 16% never review their key suppliers’ business continuity arrangements (Figure 24).

Figure 24. Question 27. How often do you review your Business Continuity requirements with key suppliers and their capability to meet them? (Multiple responses allowed, answers are expressed as percentage, N=299)

The report also tracked the attitudes of responding organizations’ clients in terms of supplier assurance. Only 22% of organizations report that at least majority of their clients require assurance when tendering for new business. 35% of organizations say their clients rarely or do not ask for assurance at all (Figure 25).
Almost a third of organizations do not discuss business continuity with their suppliers as part of contractual discussions, up from 27% last year (Figure 26). As findings abundantly show how business continuity enables supply chain resilience, this is a worrying development. This is a call to business continuity and supply chain professionals to improve their coordination and engage their suppliers in order to improve resilience within their supply chains.

**Figure 25. Question 28.** When tendering for new business clients over the past 12 months, how often have you had to provide assurance to clients that your own Business Continuity arrangements are sufficient? (N=330)

**Figure 26. Question 29.** Does Business Continuity feature as part of your supplier contractual discussions? (N=324)

- **YES, it is an integral part of the procurement process from the start**
- **YES, but only where the contract risk is deemed high**
- **YES, but after the purchase decisions have essentially been taken**
- **NO**
Case Study

Helping to overcome the skills and resources gap with technology and big data

Nick Wildgoose FCA FCIPS

A global food company was involved in the sourcing of critical products from many different parts of the world. It faced significant challenges in being able to understand the multitude of interconnected risks that it faced around critical supply chains. The company followed a structured and multi-functional approach, based around the value at risk from the critical suppliers and supplies to understand the key areas that it needed to focus on. It gathered together risk datasets such as those related to flood, quake, windstorm, economic and corporate social responsibility.

These risk factors were then scored on the same relative basis to enable them to be appropriately compared and aggregated. The visual analytics that were available through the technology platform made it much easier to understand the elements of the supply chain that should be focused on, through the use of maps and bar charts that were designed to drive actionable risk insights for the relevant members of the supply chain team to act on.

These actionable risk insights included:

• An accumulated overexposure at a number two key ports, one in the US and the other in Asia Pac, logistic routes were therefore adjusted.
• A prioritised resilience program based around those suppliers that presented the biggest exposure, to enable limited procurement resources to hold appropriate inventory and test out Business continuity programs.
• An ability to source new suppliers in a way that took account of not only the individual risks that came from them, but also the impact it would have on the company’s overall supply chain picture.
• The ongoing monitoring and updating of the risk picture through such sources as social media, enabled changes in the underlying risk to be understood and mitigation actions to be taken before issues actually hit the supply chain.

The case illustrates the benefits of making use of technology and big data in assessing supply chain risk, without these it is difficult to have the resources and skills to understand your exposures even just around critical supply chains. It is also impossible to adequately track the risk mitigation actions and to perform the ongoing risk monitoring that is required.

Nick Wildgoose FCA FCIPS is the Global Supply Chain Product Leader at Zurich Insurance. He is a qualified accountant and supply chain professional. He served on the Board of the Chartered Institute of Purchasing and Supply and as a specialist advisor to the World Economic Forum on the topic of systemic supply chain risk. He was also Chairman of the Supply Chain Risk Leadership Council, a select group of multinational companies looking to improve supply chain risk.
4 Conclusions
Conclusions

For the last eight years, the BCI Supply Chain Resilience Report has provided valuable insight into supply chain disruption and benchmarked the business continuity arrangements of organizations in this area. It has also demonstrated how specific key behaviours reinforce good practice and build an organizational culture contributing to supply chain resilience. The following summarises some insights from the research.

1. **Top management commitment is required in driving supply chain resilience.**

   Findings affirm how leadership input can significantly influence good practice and build an organizational culture conducive to resilience. It is important for organizations to reflect on the current input provided by their top management to supply chain issues and encourage ‘champions’ at that level who will advocate for greater attention to the supply chain.

2. **Business continuity is a key discipline in building supply chain resilience.**

   The presence of business continuity arrangements for supply chains is an indicator of other good practice such as reporting disruptions firm-wide and insuring supply chain losses. These findings challenge business continuity professionals to improve their engagement with their supply chain counterparts and coordinate their efforts in building greater resilience.

3. **Ensuring supply chain visibility remains as one of the biggest challenges to organizations.**

   Data has shown the increased dependencies between suppliers and downstream organizations. It has also demonstrated how the latter is susceptible to knock on effects of supplier disruption and the growing proportion of incidents occurring at lower Tiers. This reinforces the need to understand an organization’s supply chain in more depth, identify key suppliers and improve reporting of disruptions.

4. **Supply chain disruptions, more than ever, affects company reputation as much as the bottom line.**

   More organizations now report brand or reputational damage as a result of supply chain disruption. This may be driven by negative social media discussion as much as traditional media coverage. Organizations should consider reputational issues when dealing with supply chain disruptions and possibly involve communications staff as necessary.

5. **Business continuity arrangements for the supply chain should be ensured through improved supplier assurance and validation.**

   One of the perennial challenges raised in previous editions of the report includes engaging with suppliers in order to maintain the robustness of business continuity arrangements. Business continuity should be an integral part of the relationship between an organization and its suppliers, ideally discussed from tender onwards.
1. Demographic information
   a. Functional Role of Respondents

Question 1. Which of the following best describes your functional role? (N=526)

Supply chain respondents report the following:

- For the fifth year in a row, unplanned IT & telecommunications outages form the top cause of disruption with one third of the respondents (33%) reporting it as a high impact disruption. Loss of talent / skills ranks second in 2016, up from fifth in 2015, according to roughly one in four practitioners. Cyber attacks and data breach follow closely at number three.

- When asked to perform a horizon scan for the next 12 months, supply chain professionals mention unplanned IT and telecommunications outages (66%), cyber attacks and data breach (61%) as likely drivers of disruption.

- Meanwhile, a horizon scan for the next five years reveals that cyber attacks and data breach top the list of drivers (62%), while IT & Telecom outages drop to number two (59%).

- Loss of talent / skills rank third in horizon scanning the next twelve months (50%) and five years (53%). This could be due to respondents anticipating a possible break-up of the UK from the European Union and fearing possible barriers in terms of staff availability7. Segmenting data geographically reveals that the loss of talent / skills is ranked second in the UK (20%), Europe (22%) and North America (20%).

- Supply chain professionals asking for evidence of business continuity management programmes from their suppliers rise from 43% to 54%. However, 57% do not check or validate business continuity arrangements.

7This survey was conducted during the build-up to the UK referendum on the European Union membership and carried on shortly afterwards.
b. Geographical base

Respondents were based in 64 countries and the data summarises the responses per region.
c. Industry Sector
There were 526 respondents working in 15 SIC industry sectors.

Question 3. Please indicate the primary activity of your organization using the SIC 2007 categories (Answers are expressed in percentage, N=526).
Question 4. Approximately how many employees work at your organization? (Answers are expressed in percentage, N=526)

e. Approximate Annual Revenues

Question 5. If you are working in a private sector organization, please let us know the approximate annual revenues of your business. (Answers are expressed in percentage, N=401)
2. Causes of disruption*
   a. by Region / Country

<table>
<thead>
<tr>
<th>Rank</th>
<th>Europe</th>
<th>North America</th>
<th>Australasia</th>
<th>CALA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT/Telecom outage (31%)</td>
<td>IT/Telecom outage (35%)</td>
<td>IT/Telecom outage (35%)</td>
<td>Transport network disruption (38%)</td>
</tr>
<tr>
<td>2</td>
<td>Loss of talent/skills (22%)</td>
<td>Loss of talent/skills (20%)</td>
<td>Adverse weather (13%)</td>
<td>IT/Telecom outage (29%)</td>
</tr>
<tr>
<td>3</td>
<td>Cyber attack and data breach (20%)</td>
<td>Transport network disruption (15%)</td>
<td>Outsourcer failure (13%)</td>
<td>Product quality incident (29%)</td>
</tr>
<tr>
<td>4</td>
<td>Transport network disruption (12%)</td>
<td>Cyber attack and data breach (14%)</td>
<td>Insolvency in the supply chain (9%)</td>
<td>Currency exchange volatility (29%)</td>
</tr>
<tr>
<td>5</td>
<td>Outsourcer failure (12%)</td>
<td>Adverse weather (12%)</td>
<td>Cyber attack and data breach (9%)</td>
<td>Energy scarcity (29%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>MENA</th>
<th>Sub-Saharan Africa</th>
<th>Asia</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Outsourcer failure (16%)</td>
<td>IT/Telecom outage (30%)</td>
<td>IT/Telecom outage (49%)</td>
<td>IT/Telecom outage (30%)</td>
</tr>
<tr>
<td>2</td>
<td>Energy scarcity (16%)</td>
<td>Adverse weather (15%)</td>
<td>Adverse weather (27%)</td>
<td>Loss of talent/skills (20%)</td>
</tr>
<tr>
<td>3</td>
<td>Lack of credit (16%)</td>
<td>Fire (15%)</td>
<td>Transport network disruption (27%)</td>
<td>Cyber attack and data breach (16%)</td>
</tr>
<tr>
<td>4</td>
<td>Currency exchange rate volatility (11%)</td>
<td>Currency exchange volatility (15%)</td>
<td>Cyber attack and data breach (24%)</td>
<td>Transport network disruption (13%)</td>
</tr>
<tr>
<td>5</td>
<td>Act of terrorism (11%)</td>
<td>Health &amp; Safety incident (15%)</td>
<td>Outsourcer failure (22%)</td>
<td>Outsourcer failure (10%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>US</th>
<th>Australia</th>
<th>Canada</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT/Telecom outage (39%)</td>
<td>IT/Telecom outage (44%)</td>
<td>IT/Telecom outage (20%)</td>
<td>IT/Telecom outage (50%)</td>
</tr>
<tr>
<td>2</td>
<td>Loss of talent/skills (25%)</td>
<td>Adverse weather (17%)</td>
<td>Adverse weather (20%)</td>
<td>Cyber attack and data breach (29%)</td>
</tr>
<tr>
<td>3</td>
<td>Cyber attack and data breach (18%)</td>
<td>Outsourcer failure (17%)</td>
<td>Industrial dispute (15%)</td>
<td>Loss of talent/skills (21%)</td>
</tr>
<tr>
<td>4</td>
<td>Transport network disruption (15%)</td>
<td>Insolvency in the supply chain (11%)</td>
<td>Outsourcer failure (15%)</td>
<td>Transport network disruption (21%)</td>
</tr>
<tr>
<td>5</td>
<td>Adverse weather (10%)</td>
<td>Act of terrorism (6%)</td>
<td>Transport network disruption (15%)</td>
<td>Outsourcer failure (21%)</td>
</tr>
</tbody>
</table>

*Figures reported in this section only include responses which indicate that a particular disruption had a ‘high impact’ on an organization.
### b. by Region/Country

<table>
<thead>
<tr>
<th>Rank</th>
<th>Financial &amp; Insurance Service</th>
<th>IT &amp; Communications</th>
<th>Professional Services</th>
<th>Public Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT/Telecom outage (46%)</td>
<td>IT/Telecom outage (47%)</td>
<td>Loss of talent/skills (25%)</td>
<td>IT/Telecom outage (35%)</td>
</tr>
<tr>
<td>2</td>
<td>Cyber attack and data breach (32%)</td>
<td>Cyber attack and data breach (31%)</td>
<td>IT/Telecom outage (22%)</td>
<td>Loss of talent/skills (15%)</td>
</tr>
<tr>
<td>3</td>
<td>Loss of talent/skills (27%)</td>
<td>Loss of talent/skills (27%)</td>
<td>Cyber attack and data breach (16%)</td>
<td>Transport network disruption (15%)</td>
</tr>
<tr>
<td>4</td>
<td>New laws or regulations (15%)</td>
<td>Transport network disruption (18%)</td>
<td>Transport network disruption (9%)</td>
<td>Adverse weather (12%)</td>
</tr>
<tr>
<td>5</td>
<td>Adverse weather (13%)</td>
<td>Adverse weather (18%)</td>
<td>Currency exchange rate volatility (8%)</td>
<td>Industrial dispute (12%)</td>
</tr>
</tbody>
</table>

### Rank

<table>
<thead>
<tr>
<th>Rank</th>
<th>Manufacturing</th>
<th>Health &amp; Social Care</th>
<th>Retail &amp; Wholesale</th>
<th>Energy &amp; Utility Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT/Telecom outage (26%)</td>
<td>IT/Telecom outage (21%)</td>
<td>Transport network disruption (56%)</td>
<td>IT/Telecom outage (25%)</td>
</tr>
<tr>
<td>2</td>
<td>Outsourcer failure (18%)</td>
<td>Outsourcer failure (15%)</td>
<td>Outsourcer failure (31%)</td>
<td>Adverse weather (12%)</td>
</tr>
<tr>
<td>3</td>
<td>Product quality incident (18%)</td>
<td>Cyber attack and data breach (15%)</td>
<td>IT/Telecom outage (25%)</td>
<td>Energy scarcity (12%)</td>
</tr>
<tr>
<td>4</td>
<td>Transport network disruption (18%)</td>
<td>Human illness (15%)</td>
<td>Currency exchange volatility (25%)</td>
<td>Cyber attack and data breach (12%)</td>
</tr>
<tr>
<td>5</td>
<td>New laws or regulations (18%)</td>
<td>Loss of talent/skills (12%)</td>
<td>Product quality incident (16%)</td>
<td>Outsourcer failure (12%)</td>
</tr>
</tbody>
</table>

### c. by Size of Business

<table>
<thead>
<tr>
<th>Rank</th>
<th>SMEs</th>
<th>Large Enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT/Telecom outage (15%)</td>
<td>IT/Telecom outage (37%)</td>
</tr>
<tr>
<td>2</td>
<td>Transport network disruption (12%)</td>
<td>Loss of talent/skills (20%)</td>
</tr>
<tr>
<td>3</td>
<td>Adverse weather (10%)</td>
<td>Cyber attack and data breach (19%)</td>
</tr>
<tr>
<td>4</td>
<td>Outsourcer failure (9%)</td>
<td>Transport network disruption (15%)</td>
</tr>
<tr>
<td>5</td>
<td>Loss of talent/skills (9%)</td>
<td>Outsourcer failure (15%)</td>
</tr>
</tbody>
</table>
About the Authors

Patrick Alcantara DBCI (BCI Senior Research Associate) wrote this report. He is a senior research practitioner with extensive publication, project management and public speaking experience. He has delivered research projects for organizations such as Zurich, BSI and the UK Department of Business Innovation & Skills. He is also part of the Editorial Board of the international, peer-reviewed Journal of Business Continuity & Emergency Planning. He obtained a Diploma in Business Continuity Management from Bucks New University and was awarded a Distinction for a Masters by the Institute of Education (now University College London) and Deusto University.

He can be contacted at patrick.alcantara@thebci.org.

Gianluca Riglietti carried out research and drafted the Annex of this report. He is a Research Assistant for the BCI. He recently finished his MA in Geopolitics, Territory and Security from King’s College London. His previous professional experience includes working for the Italian presidency of the Council of Ministers in the European Union.

He can be contacted at gianluca.riglietti@thebci.org.

Acknowledgements

The BCI is grateful for the efforts of the Chartered Institute for Purchasing and Supply (CIPS) for promoting the 2016 Supply Chain Resilience Survey.

We would also like to thank Zurich Insurance for supporting this research for the eighth year running.

We also acknowledge the support given by the following individuals during the survey fieldwork. Nick Wildgoose, Hassan Karim (Zurich Insurance) and Trudy Salandiak (CIPS) assisted in disseminating the survey. Tim Astley MBCI and Nick Wildgoose (Zurich Insurance) provided case studies. Kuniyuki Tashiro MBCI (Business Continuity Institute) translated the survey questionnaire in Japanese. Andrew Scott CBCI (BCI Senior Communications Manager) reviewed this report.
About the BCI

Founded in 1994 with the aim of promoting a more resilient world, the Business Continuity Institute (BCI) has established itself as the world’s leading Institute for business continuity and resilience. The BCI has become the membership and certifying organization of choice for business continuity and resilience professionals globally with over 8,000 members in more than 100 countries, working in an estimated 3,000 organizations in the private, public and third sectors.

The vast experience of the Institute’s broad membership and partner network is built into its world class education, continuing professional development and networking activities. Every year, more than 1,500 people choose BCI training, with options ranging from short awareness raising tools to a full academic qualification, available online and in a classroom. The Institute stands for excellence in the resilience profession and its globally recognised Certified grades provide assurance of technical and professional competency. The BCI offers a wide range of resources for professionals seeking to raise their organization’s level of resilience and its extensive thought leadership and research programme helps drive the industry forward. With approximately 120 Partners worldwide, the BCI Partnership offers organizations the opportunity to work with the BCI in promoting best practice in business continuity and resilience.

The BCI welcomes everyone with an interest in building resilient organizations from newcomers, experienced professionals and organizations. Further information about the BCI is available at www.thebci.org.

To enquire about membership, certification and partnership please email bci@thebci.org.

Contact the BCI

Andrew Scott CBCI
Senior Communications Manager

10-11 Southview Park
Marsack Street
Caversham RG4 5AF
United Kingdom

+44 (0) 118 947 8215
research@thebci.org
About Zurich

Zurich is a thought leader in supply chain risk management. It has developed supply chain risk assessment tools and an innovative and award winning supply chain insurance product. The company has extensive experience of working with clients to help them make their supply chains more resilient.

Zurich Insurance Group (Zurich) is a leading multi-line insurance provider with a global network of subsidiaries and offices in Europe, North America, Latin America, Asia-Pacific and the Middle East as well as other markets. It offers a wide range of general insurance and life insurance products and services for individuals, small businesses, mid-sized and large companies as well as multinational corporations. Zurich employs about 60,000 people serving customers in more than 170 countries. Founded in 1872, the Group is headquarteried in Zurich, Switzerland. Zurich Insurance Company Ltd (ZURN) is listed on the SIX Swiss Exchange and has a level I American Depositary Receipt program (ZFSVY) which is traded over-the-counter on OTCQX. For further information about Zurich, go to: www.zurich.com.

Contact Zurich

Nick Wildgoose
Global Supply Chain Product Leader

Zurich Commercial Insurance
70 Mark Lane
London EC3R 7NQ
United Kingdom

+44 (0) 20 7648 3066
nick.wildgoose@uk.zurich.com