

# The race for relevance

Technology opportunities  
for the finance function



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## About this report

This report explores the opportunities and challenges that technology presents for the future CFO function in the face of extraordinary digital change impacting businesses. The report shares insights from leading executives across the world on the technologies changing the face of the finance function, and examines how finance can harness the explosion in digital capabilities to help drive long term corporate value.



# Foreword

## **From the moment we wake up, to the last thing we do at night, technology is transforming our lives.**

Digital technology is also revolutionising the workplace and reframing the debate on how successful businesses operate. Technology is creating new opportunities for connecting with customers and opening new channels to markets. The businesses that are prepared and able to adapt fastest to this change will be those that reap the rewards.

But what about the finance team? Does this corporate Darwinian imperative apply to the chief financial officer (CFO) too? Take the question a step further: in the face of seemingly bewildering technological possibilities, how should finance chiefs even begin to navigate the tech landscape? Where should they place their digital bets? And how can they take advantage of the significant opportunities that digital may present?

This report shares insights from leading executives in finance and beyond on the opportunities and challenges that emerging digital technologies present to the future CFO. Its chief aim is to explore and demystify six key technologies likely to have a dramatic impact on the modus operandi of the future finance enterprise. Ultimately, it asks a simple question: how can CFOs thrive and not just survive in this brave new world?



# Contents

<b>1. The race for relevance – finance opportunity in the digital revolution</b>	<b>6</b>
1.1 Digitalisation is transforming business	6
1.2 Grasping the opportunity	6
1.3 The CFO imperative	7
1.4 Can technology enable finance?	8
1.5 Where to start?	8
1.6 Appreciating what the CFO needs to know	9
<b>2. Six imperatives for tomorrow's finance function</b>	<b>10</b>
2.1 Align the strategy	11
2.2 Build the business case	15
2.3 Appreciate the value of data	20
2.4 Organisational impact of technological change	24
2.5 Focus on talent and skills	28
2.6 Impact of technology on governance and risk management	31
<b>3. No time for complacency</b>	<b>34</b>
3.1 Change the mindset	34
3.2 Five key takeaways for CFOs	34
<b>Contributors</b>	<b>36</b>



## Spotlight on

<b>Cloud computing</b>	<b>13</b>
<b>Analytics</b>	<b>17</b>
<b>Cyber</b>	<b>22</b>
<b>Social media</b>	<b>26</b>
<b>RPA</b>	<b>29</b>
<b>Artificial intelligence</b>	<b>32</b>





# 1. The race for relevance – finance opportunity in the digital revolution

## 1.1 DIGITALISATION IS TRANSFORMING BUSINESS

Everything that we do leaves a digital footprint: a data record in the vast data pool that humanity is creating. Human societies are living, and benefiting from, a life based on electronic footprints. Businesses talk of automation of the factory floor and the call centre, replacing the people with robots and intelligent tools that can perform tasks with increased efficiency and reduced cost. This creates opportunities but also challenges the basis of our traditional ways of working.

## 1.2 GRASPING THE OPPORTUNITY

Any business leader needs to appraise these trends. To react. To innovate. Leaders need to understand how competitive advantage can be obtained from the insights that the data now available can reveal through effective enterprise performance-management processes. How is the business performing against strategic goals? How can this performance be measured through effective key performance indicators (as discussed in the ACCA/PwC/Reactive Technologies article 'The Ascent of Digital', 2017<sup>1</sup>)? A failure to take

control will result in potential loss of competitive position. It opens the door to disruptors, allowing them to gain market share. Today's business environment is as much about using data to create and sell complementary services that the existing customer needs as it is about growth from extending the customer base.

Whatever the size of the business, technology change is having an impact. In this corporate race for future relevance, recognising the opportunity is essential. The revolution has started and adaptation is critical.

<sup>1</sup> J. Lyon, 'The Ascent of Digital' [online article, 'Professional Insights' series], ACCA, 23 May 2017 <<http://www.accaglobal.com/sg/en/professional-insights/technology/the-ascent-of-digital.html>>, accessed 20 November 2017.





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### 1.3 THE CFO IMPERATIVE

In this race for corporate relevance, the opportunities for finance that digital presents are outstanding, but if it too wishes to remain relevant in this fast-changing world, it must also embrace technology.

Forward thinking CFOs grasp this reality, and see the opportunities for influence at the heart of the organisation. They appreciate that they need to:

- understand how to use the information available to them to provide strategic insight in real time;
- think forwards not backwards and maximise the use of technology to do this;
- ensure they have in place effective and efficient processes that satisfy the overall business requirements of finance, and
- capture, measure, report and predict future performance in a much more agile manner to support better and quicker decision making.

The CFO who fails to take advantage of the opportunities could be removed from the strategic decision-making process and marginalised at the leadership table.

This is not to say that there is one approach; no single model fits all finance teams but there is an overall direction of travel. A failure to follow that direction could risk marginalising the finance function and make it less relevant.

Few would be comfortable with a finance function that reports historic information too late to be of use in a dynamic world: perhaps one in which robotic automation and artificial intelligence have replaced the people.

**The CFO must ensure that there is sufficient governance of the data sources, be these internal or externally generated, to provide insights based upon ‘one version of the truth’.**

‘It’s not enough to become more efficient, explains Holger Lindner, CFO, Global Product Service Division, TÜV SÜD Singapore. ‘Finance has to help the business make decisions on the basis of the right data. We have to play a much more operational role in making our businesses operate faster and more decisively. Many of the tasks that currently take up so much of our time will be covered by Artificial intelligence (AI) and automation’.

#### **1.4 CAN TECHNOLOGY ENABLE FINANCE?**

In part yes. CFOs and finance leaders need to understand how technology can enable them to transform the finance function through the provision of brilliant, timely decision insights for business stakeholders in addition to its existing stewardship and reporting roles.

Yet technology on its own is never the answer to any question. It is always the enabler. It enables us to improve and streamline processes, to improve efficiency and data quality, to provide greater insights in the moment and to look forward as well as back.

Technology provides data but using this will always need people to exercise judgement and provide insight. To turn data into relevant information. The failure to use technology’s benefits will leave organisations vulnerable and finance functions potentially failing to achieve

their potential. No one technology on its own can transform a business: that requires combining relevant technologies to address the unique requirements of each business.

Investments may often be staged according to business need yet it is essential to have a robust roadmap that is inclusive of a comprehensive, yet flexible future vision. While we can appreciate today’s technology landscape, the pace of change of technology is such that we cannot foresee tomorrow.

As James Noonan, vice president finance, CRH Plc, comments: ‘Companies that embrace emerging technologies will be better positioned to gain competitive advantage, providing more opportunities to acquire, consolidate and become a larger player’.

#### **1.5 WHERE TO START?**

The core of any successful business transformation is alignment to the overall organisational strategy and the development of a robust business case. As this report shows, by understanding what the business needs from the finance function, it is possible to develop a strong case for investment in automation to allow finance to develop the additional capabilities needed while retaining the emphasis on recording and reporting, but with an enhanced degree of data accuracy.

As Gerry Penfold, former partner, technology risk, KPMG in the UK says: ‘Clinging to the things that have made them successful while disregarding how things are changing around them is one of the biggest risks for a CFO’.

To achieve the goal of transforming the finance function, the CFO needs an understanding of the emerging technologies and the opportunities available. The CFO must ensure that there is sufficient governance of the data sources, be these internal or externally generated, to provide insights based upon ‘one version of the truth’.

In realising the finance technology strategy, it should be remembered that this is often a partnership between the Information Technology (IT) teams and the finance function. As business partnering has affected the relationship between finance and its customers so the same process can be replicated in the relationship between finance and IT. Executives interviewed for this report claimed that an increasingly fruitful relationship was being developed and while some technologies, such as Robotic Process Automation, can be implemented by finance they still require a partnership with the IT team to be effective.



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#### 1.6 APPRECIATING WHAT THE CFO NEEDS TO KNOW

This report considers six technologies, some more advanced than others, that can benefit the finance function. The technologies represent those that:

- enable enhanced finance processes – cloud, analytics and robotic process automation technologies;
- support the communication of information both internally and externally – social technologies;
- provide protection for information assets – cyber technologies, and
- look to the future while building upon existing technologies – artificial intelligence.

This report has drawn on the experiences of over 50 finance and industry experts to evaluate the trends and demystify these technologies. Each of the interviewees has experience in one or more of these areas, from the perspective of either working with the technologies or advising others.

ACCA has drawn on their lessons learned and this report provides insights into the developmental roadmap, explaining the steps that the finance team needs to take. The report considers each of the technologies and provides perspectives on relevant considerations.





## 2. Six imperatives for tomorrow's finance function

### **New technology requires a leap of faith, but CFOs have no choice but drive the digital transformation in order to ensure relevance.**

In the words of Thomas Zipperle, CFO, SAP South East Asia: 'We have to take the risk of changing a process that might work today but most likely will no longer work in five or 10 years' time – or, even if it does still work, will have cost us competitiveness and relevance as we are unable to adopt to the new reality.'

'I'm going to say I kind of think it's only in the finance function, but I think that also the finance function, at the end of the day, is going to be a commodity, okay?' says Ramon Poch, partner at Business Integration Partners. 'And the financial function is going to be replaced largely by automated processes. So, the sooner that the financial professionals are adopting this change, the better they will adapt into the new way of doing things in the companies.'

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CFOs need to develop a roadmap that enables them to recognise the short-term benefits and the longer-term gains. They need to accept that with these technologies it is often better to fail fast and be able to move on, rather than to not try at all.

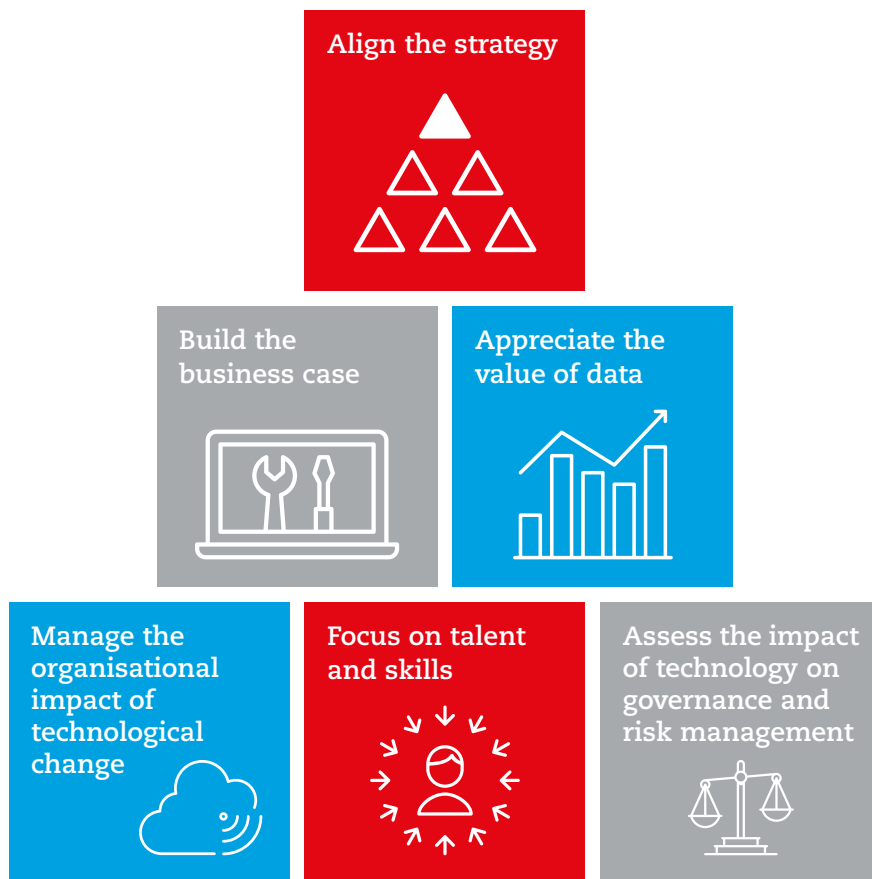
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The core elements of people, processes, technology and data thread through any activity. Addressing each of these within an organisational culture that supports innovation and creativity is important for harnessing emerging technologies.

The ACCA members interviewed for this research urged CFOs to build a coherent and logical programme for technology adoption. Such programmes can be reduced to six imperatives for success.

- **Align the strategy** – understand the organisation's wider goals and how finance, using technology, can best support these ambitions.
- **Build the business case** – identify the business case for using specific tools and solutions.
- **Appreciate the value of data** – explore how CFOs can make better use of data and analytics throughout finance and beyond.
- **Manage the organisational impact of technological change** – identify the organisational change required to embed new technologies successfully.
- **Focus on talent and skills** – equip the organisation with the people and skills base needed to exploit the technology.
- **Assess the impact of technology on governance and risk management** – ensure that investments are made with rigour and that the risks created by new technologies are properly monitored and controlled.





## 2.1 ALIGN THE STRATEGY

### Why is there a need for a technology strategy for finance?

Technological advances are affecting most aspects of organisations, from the use of robotics on the factory floor to the use of customer data through profiling to create additional revenues. A technologically driven organisation is one that needs to understand its business drivers and be able to react rapidly to changes. (The impact of this is discussed in more detail in the joint ACCA/PwC/Reactive Technologies article 'Delivering Profitable Growth – The Role of Finance').<sup>2</sup>

In practice, compared with other functions in the business, finance hasn't always been quick to invest in emerging technologies – a so called 'technology deficit' is created. As a result finance may be unable to provide and act on the insights that are demanded from it.

While there is no case for abandoning prudence, CFOs have a clear opportunity for employing new tools that support their priorities and aspirations. For some, however, this may mean bridging a sizeable gap both now and in the future.

### Mapping the future state

Technology can bring strategy and execution into alignment, but CFOs first need a vision of how finance can create new value in the context of a wider business strategy. That vision forms the basis of the investment case for new technologies and helps finance agree the working priorities it needs to achieve its desired future state.

This process inevitably requires finance to reach out to other functions and to work more collaboratively, an initiative which can be supported by the adoption of cloud technologies. Reaching out to the rest of the business will also be crucial to understanding what data and analytics the business expects from finance.

By aligning finance with the business, CFOs can use technology to inform and actively shape the business's strategic direction. For example, CFOs who use analytics to combine finance data with other data sets will understand market trends better and be well placed to play a more strategic role.

Sanjay Rughani, CEO, Standard Chartered Tanzania, says:

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**'Analytics helps you to look at macro data, human behaviour and your own performance, you combine everything towards good decision making. It enables you to think forward, think strategically, about business goals and solutions'.**

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<sup>2</sup> J. Lyon, 'Delivering Profitable Growth – The Role of Finance' [website article] ACCA/PwC/Reactive Technologies, 2017 <<https://www.pwc.co.uk/services/consulting/finance/delivering-platform-profitable-growth.html>>, accessed 16 November 2017.

As an organisation grows there are crucial points where it is necessary to migrate from one level of software to the next. When these occur, the CFO needs to recognise the impact on the data requirements of the organisation and in turn the impact on the performance-reporting processes.

### Developing the technology roadmap for finance

The opportunities created by the range of emerging technologies require that the finance function develop its own technology roadmap. This should be:

- aligned to the overall organisational goals, and
- facilitate the development and implementation of the tools necessary to support the overall business goals.

The roadmap, of necessity, needs to look forward while recognising that the adoption of technology is often a process of continual change. It involves many components, some of which are more mature (such as analytics) than others (such as artificial intelligence). Yet it should be practical and relevant to achieving the finance function's contribution to achieving the organisational goals.

A roadmap should include the following components:

- identification of the technologies to be used in addressing business needs;
- identification of the critical systems and their targets;
- definitions of the major areas that the technology must address, including market assessment, crosscutting technologies, component development, and system development;
- identification of the technology drivers and objectives;
- assessment of the technology alternatives and their timelines, and
- assessment of the alternatives that could be pursued.

The creation of such a roadmap can often benefit from the input of one or more external parties who possess relevant knowledge and insight and are able to criticise and check the validity of the approach being proposed.

It is important to understand the 'tipping points' in the various technologies as the organisation grows. For example, there are many cloud-based accounting packages in the marketplace. As an organisation grows there are crucial points where it is necessary to migrate from one level of software to the next. When these occur, the CFO needs to recognise the impact on the data requirements of the organisation and in turn the impact on the performance-reporting processes.

ACCA and IMA explored an example of the application of a technology roadmap in their report *The CFO's Guide to Technology Roadmapping*.<sup>3</sup>

<sup>3</sup> IMA/ACCA, *The CFO's Guide to Technology Roadmapping* <[http://www.accaglobal.com/content/dam/ACCA\\_Global/Technical/tech/CFOs%20Guide%20to%20Technology%20Roadmapping.pdf](http://www.accaglobal.com/content/dam/ACCA_Global/Technical/tech/CFOs%20Guide%20to%20Technology%20Roadmapping.pdf)>, accessed 20 November 2017.





## Spotlight on the cloud

### Cloud computing (noun)

– the practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than using a local server or a personal computer.





Compared with an organisation's own legacy physical infrastructure, cloud technologies provide high functionality at a low price point. The associated maintenance costs are also reduced. By their nature, cloud technology costs may be classed as operating expenditure rather than capital expenditure, which some see as creating challenges for the finance team.

There are many varied forms of the cloud and the services that the accountant can use. CFOs need to understand the differences between public and private clouds (in the latter, cloud functionality is provided within the enterprise's firewall) and the range of services offered, from software to platform and infrastructure. Each of these technologies has different advantages and risks.

Given the advantages, finance is likely to find adoption of cloud services increasing across the business, and aligning its own technology with these will enhance connectivity and provide a base for further expansion.

As well as the cost benefits, cloud storage can provide seemingly infinite capacity, with the business only paying for the space that it uses. To leverage

this, however, CFOs can be restricted by the applications on offer. They need to adapt their business models and processes to suit these applications, rather than adapting the applications to suit their business models. Cloud applications offer standardised processes that cannot be modified to suit particular organisational requirements.

Despite this drawback, one benefit of cloud is that it allows employees to work from anywhere in the world, which means that geographically dispersed teams can work on the same project in real time.

'When we've put clients on cloud systems, almost certainly the next meeting we have with them, they ask 'What else can you show me?' People become very data hungry', says Mark Sykes, Head of BDODrive, UK.

### Security

In the past, some companies have questioned the security implications of cloud systems. But this is changing as people become more familiar with this different way of working. 'Private cloud and public cloud have been around for a some time and there are plenty of examples of them delivering value. There are also plenty of lessons

learned. More and more organisations are putting critical data into the cloud, but they have to be aware of the relevant risks and regulations, such as GDPR', says Jens Gladikowski at PwC.

When constructing a business case and designing a contracting process, it is important to evaluate the service being procured and the level of confidentiality offered against the sensitivity of the data to the organisation and other parties. While the cloud providers typically offer a standard service, the CFO needs to ascertain that it is the right service for the organisation. Obtaining the right advice from independent parties is paramount.

Cloud solutions also offer best-practice security – provided the company understands the risks it faces and is willing to pay the vendor extra for the controls required to mitigate these risks.

As Gaston Vankan of Softcrow comments, 'If you use cloud on any level, whether [you] use data centre from someone else, or use a rack from someone else, whether you use software that is on a different location, the big difference is that the company itself is not in charge of taking any measures that could address operational risks.'



**70%**  
 say that technology in  
 the finance function can  
 improve productivity

## 2.2 BUILD THE BUSINESS CASE

Adopting new technology needs to be a high priority for finance. Technology can provide the data that will speed up decision-making and make processes more efficient, and will also help the CFO establish a value case for the function itself.

Nevertheless, building a robust case for technology investments is critical. Above all, it demands a clear evaluation of the benefits that technology will provide.

- What cost savings are available from technologies that automate processes and increase efficiency?
- What revenue opportunities can be unlocked through data and analytics?

### What should a business case consider?

The CFO needs to be the sponsor of the business case, accountable for defining the objectives and for allocating the resources to work on the case itself. The CFO has a clear role in articulating how those objectives are to be achieved and identifying the benefits that will accrue. The overall responsibility for the business case lies with the sponsor.

The business case itself needs to define the following three key components.

- A strategic assessment of the options available and an explanation of how the scope of the proposed business improvement initiative fits within the existing business strategies of the organisation. It should build a compelling case for change in light of the existing and future business and operational needs of the organisation.
- An economic assessment that details the preliminary options and analyses and evaluates each option to arrive at a list of viable alternatives. The economic assessment section must contain qualitative and quantitative analyses of the proposed options.
- An achievability assessment that clearly sets out project or programme management responsibilities, governance and risk planning; if it does not, then the business case is not yet complete, as tactical execution has not been addressed as part of the front-end investment evaluation process.

Antonio Ramos, Partner, Leet Security explains that 'good budgeting or good business cases from the very beginning should need to be done. So, flexible costs, hidden costs, and a very good, well-done business case, so for me those three things [are vital]. Because sometimes cloud is everything and most is Opex [operational expenditure], but sometimes it's good to have some Capex [capital expenditure] and you have to study the business case slowly.'

### Finding the positives

Identifying the strategic benefits of the proposed technology is crucial. At an enterprise level, more than one in two of those interviewed for this research see improving productivity and efficiency as a positive outcome of investing in technology, while just under half cite the ability to create new revenue streams.

In the finance function, the picture looks a little different. The most significant strategic benefit of technology here is its perceived ability to improve productivity, cited by 70%. At the same time, 53% say that technology in the finance function can create new value in the business. A third say that the ability to cut costs is a strategic benefit.

**53%**  
 say that technology in the  
 finance function can create  
 new value in the business

**An eye on hidden costs**

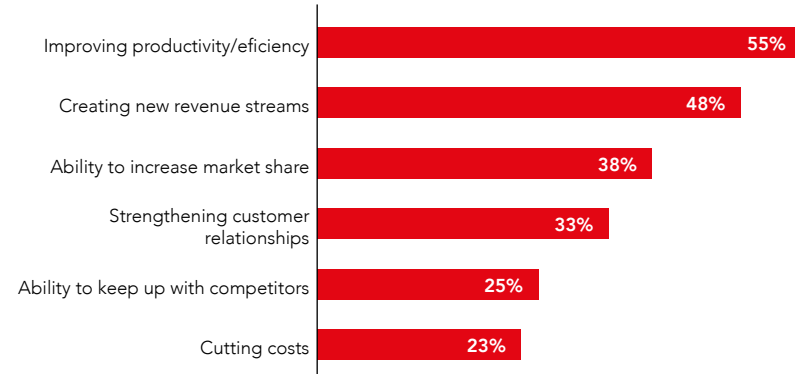
Of course, building the business case doesn't only involve grasping the benefits of technology investment – there will also be cost implications. And out of their 'comfort zone' when investing in new technologies, CFOs will need to work harder than in the past to quantify those costs.

On the one hand, new technologies can help CFOs rethink organisational design and have the potential to reduce headcounts. They may also come at a lower cost than traditional approaches.

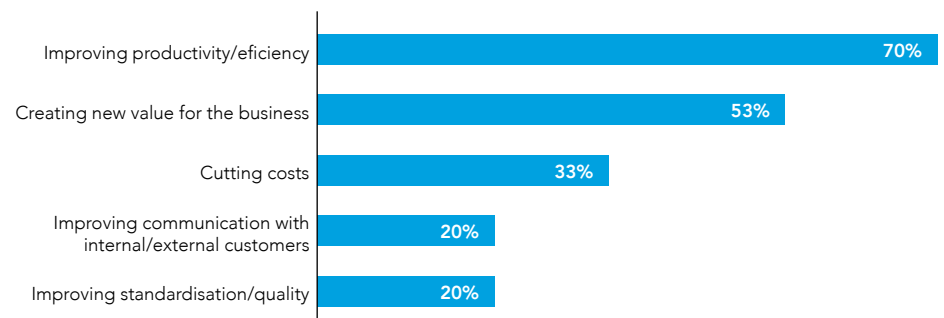
Such savings are attractive, but while the upfront costs of new technology may be lower, indirect costs can also apply. For example, CFOs need to invest in staff training, additional cyber security controls and robust change-management processes.

**Figure 2.1:** The business case for technology investments

**ACROSS THE ENTERPRISE**



**AND IN FINANCE ALONE**



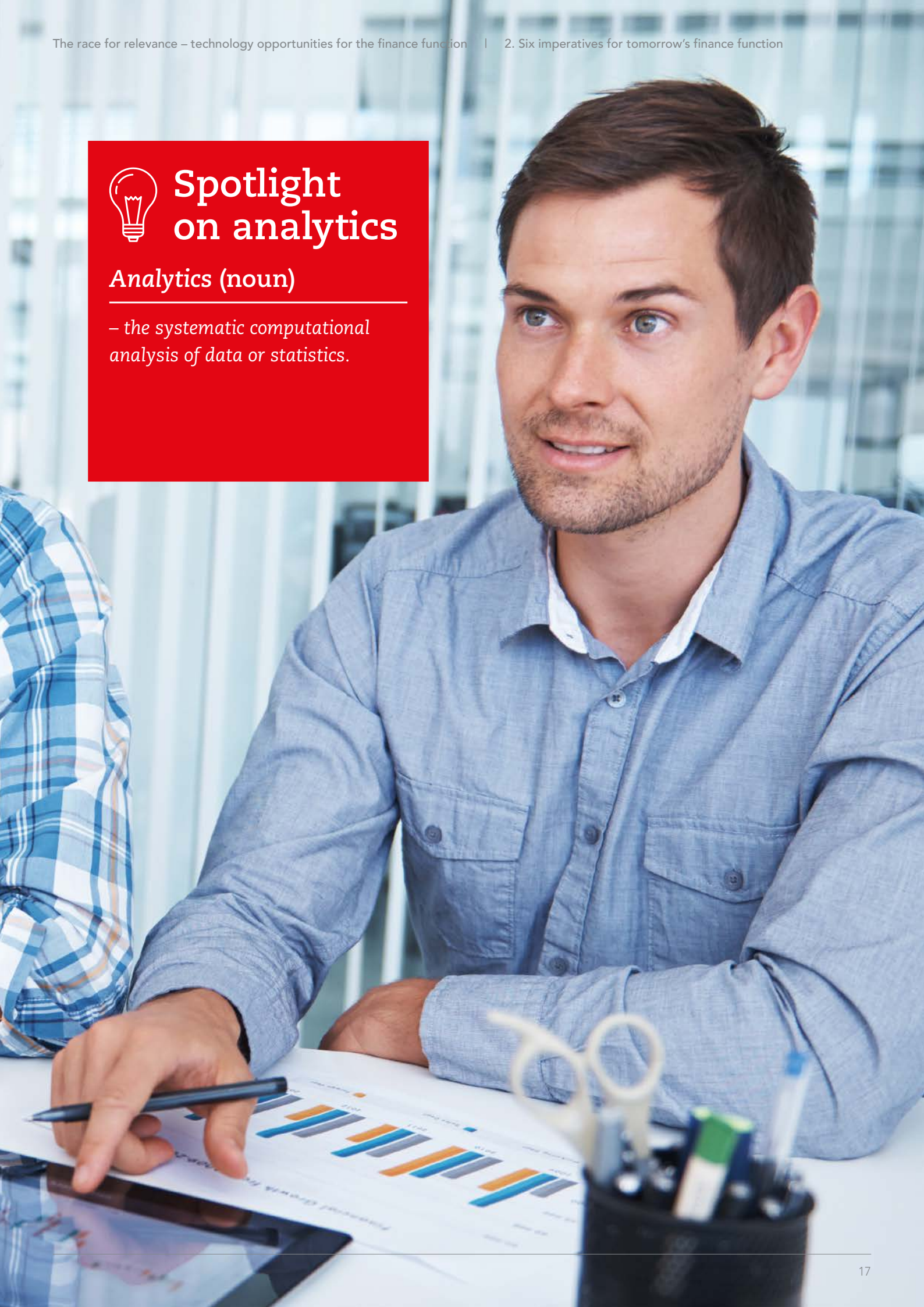




## Spotlight on analytics

### **Analytics (noun)**

– the systematic computational analysis of data or statistics.



Many organisations are going through a three-stage journey with analytics.

- They started with business intelligence warehouses that derived data from core accounting and operational systems.
- They have migrated to today's analytical tools, some cloud-based and some adopted on the premise that they will provide greater visibility of the data and draw on several data sources.
- In the next iteration, artificial intelligence will support the development of enriched analytics incorporating machine-learning algorithms that will give future forecasts greater depth.

Using a variety of data, analytics provides finance with a means of building a business case for new investments – both in technologies for the function itself and across the whole business, providing insights into performance against strategic objectives at all levels of the organisation. There are also other areas, such as fraud detection, in which analytics can be valuable.

The importance of these tools will continue to grow as the data available for analysis also continues to grow exponentially – particularly as the Internet of Things brings data from connected areas into the system. Increasingly, business insight is derived from both financial and non-financial data (such as machine performance data, customer 'likes', weather and traffic information), often in real time.

This can create a change for the IT community, who have traditionally provided reports based upon ledger extracts through business warehouses. Now information is drawn, often using cloud-based applications, from a variety of data sources using powerful desktop analytical tools. This is an area to which the IT department has little input and the rigors control of software development lifecycles are not applied.

'People get so used to their daily jobs that they miss the bigger picture, strategically', explains Hassan Choudhry, CFO at Az-Zour North Power Plant (a JV of ENGIE and Sumitomo Corporation). 'When you invest in analytics, a person can sit back, look at the data independently and make sense of it.'

### The benefits

Analytics can help companies to see patterns in their data that enable them to predict issues and triggers before they happen, instead of being forced to react to them after the event. It speeds up finding answers to problems, eliminating data silos and 'democratising' data itself.

Analytics creates insights that are simple to digest in a short space of time. 'The main benefit is to gain operational as well as financial performance insight', says Bright Amisi at Avante Advisory Services (Pty) Ltd. 'I used to have a problem knowing whether or not we would meet our targets. When I sit with the senior team there is a lot of emotion involved and people use politics to push through issues. My interest in analytics is using insight to help us make better decisions and to advise the business better.'

### Change in mindset

Making the most of analytics requires a change in mindset. Compared with traditional finance, analytics is a fundamentally different way of working.



**Analytics can help companies to see patterns in their data that enable them to predict issues and triggers before they happen, instead of being forced to react to them after the event.**



With so much data available, CFOs need to prioritise – to think about where there is greatest scope for driving business value and how best to unlock that value.

### 2.3 APPRECIATE THE VALUE OF DATA

We are living in the era of the data explosion. According to one forecast<sup>4</sup> the amount of data created and copied annually will reach 44 zettabytes<sup>5</sup> by 2020. Each year, human activities double the data from our activities each year. Nina Tan, Business Intelligence and Analytics says, 'You are making use of something you never knew what to do with before.'

#### Importance of data to an organisation

All data has a value, a relevance, although it may not have been appreciated. The ability to generate revenue from the analysis of data, the monetisation of data (using data to create sales through customer profiling, for example), is becoming significant in a number of industries. It is important to invest in finance teams so that they understand the value of the data assets of the organisation and how these may be used to assist in decision making. Framing the analytics in relation to the problem that you wish to solve is often a challenge.

CFOs need to ensure that their finance teams are best placed to unlock the potential of the data, be that the financial data captured as part of routine processing or non-financial data generated from operational processes or collected from internet-connected devices. This rich picture provides the greatest insight into organisational performance. The data flows need to be usable in supporting the ability of the organisation to monitor its performance against its strategic goals, using an effective and efficient performance measurement process.

The use of analytical tools, often with enhanced data visualisation, opens up more opportunities for achieving value while continuing to undertake stewardship activities. Remember, also, that increasingly organisations can allow key users to self-serve data through analytics tools, rather than relying on IT-generated reports.

With so much data available, CFOs need to prioritise – to think about where there is greatest scope for driving business value and how best to unlock that value.

They also cannot afford to overlook the issue of data security, particularly with the European Union's General Data Protection Regulation (GDPR) just months from coming into force, which will affect not only organisations resident in the EU but also those undertaking business within it.

#### Data quality

With the democratisation of data, more users have access it, allowing them to develop insights through analytics. Data needs to be fit for purpose for the systems in which it is employed. Although data is never perfect – and waiting for it to become perfect can mean missing out on value that is available now – it needs to be of a high standard. Data within an organisation (as far as regulatory requirements permit) needs to be open to all users. Maintaining silos of ownership is a barrier to effective analytics.

<sup>4</sup> Data Growth, Business Opportunities, and the IT Imperatives, IDC April 2014, <<https://www.emc.com/leadership/digital-universe/2014iview/executive-summary.htm>> accessed 20 November 2017

<sup>5</sup> The prefix zetta indicates multiplication by 10<sup>21</sup> in the International System of Units. A zettabyte is one sextillion bytes.



Data mapping is an essential activity, not only for understanding data flows themselves but also assisting in the management of cyber risks and data-protection requirements.

Ensuring data quality is therefore not a one-off exercise before activity begins, but a continuous process. Automation can help organisations improve data quality by reducing error rates in data capture. Increasingly, organisations are appointing Chief Data Officers to oversee and manage the data. Whether or not this is a full-time role will depend upon the organisation's size and requirement but it is important to realise that it is an operational role rather than one within the IT organisation.

The finance team, with its purview of reporting performance, is often best placed to lead the drive for data quality for the benefit of the wide range of users. This does need to be achieved with the support of the IT team within the

organisation. The quality of data, for analytics at least, does not have to be perfect. The CFO should consider the level of quality necessary to make the right decision. Effort expended on a vain hunt for perfection can never be rewarded in improved decision making.

Rajeev Lalwani, technology consulting partner at Deloitte, says:

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**'I think there is a problem of people not getting incentivised for improving data quality, as a result, what some organisations do is have a massive, one-time effort to clean the data'.**

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Such activity could prove to be inefficient as more and more information is made available for analysis, leading to the need for processed data that places a continuous emphasis on quality.

#### **Control and protect**

In the connected world it is important that the organisation understands the flow of data within its own systems and with its business partners. Data mapping is an essential activity, not only for understanding data flows themselves but also assisting in the management of cyber risks and data-protection requirements. CFOs need to ensure that their organisations understand these requirements, as the regulatory and reputational risks can be significant.



## Spotlight on 'cyber'

### Cyber (adjective)

– relating to or characteristic of the culture of computers, information technology, and virtual reality.

A strong programme of cyber-risk management is a crucial part of the governance structure for organisations adopting new technologies. Many organisations see cyber security as their number one risk. CFOs need to accept that it's no longer a question of whether their organisations will be subjected to a cyber attack, but when. It is important to understand how much damage a severe attack could cause. While CFOs are rightly concerned about direct financial loss, the impact of a data breach – and the resulting reputational impact – can be at least as damaging.

#### What does 'cyber' include?

Cyber security is a bigger area than many people realise. Ultimately, it is about protecting the organisation's most critical assets, which includes prevention and planning as well as remediation and responding quickly to any issues that do arise. So, while technological barriers are an important element, cyber issues are just as much about people and processes.

'Cyber changes every day', says Loreta Calero Pérez, International board member at Crowe Horwath. 'No one is completely covered – ever. The idea is that it's something that needs to be updated constantly. You can't get off the bus once you begin; you need to invest and follow the investment forever.'

#### The evolving cybersecurity threat

The cyber security threat itself is evolving as technology evolves. While most of us are familiar with the spam email and are cautious about opening an item in our inbox from an unknown sender, sophisticated AI can mimic the email address and writing style of a colleague – we therefore need to be more risk-aware.

Yet the fundamentals of IT security, such as changing of default passwords, which have long been promoted by standards such as ISO27001, remain fundamental to effective cyber security. The expansion of the connected world into new devices offers more opportunities and, has been demonstrated by large-scale malware attacks, the vulnerabilities arise in the weakest point in that connected world.

Understanding the business risks from the firm's own technology is essential for the forward-thinking CFO.

#### Where should CFOs be focusing?

Investing in cyber-risk management should be viewed as a necessity. Yet many do not appreciate how crucial it is, and investment tends to be concentrated on the technical defences, and less on remediation and recovery following the materialisation of a risk event.

Start with the basics. 'Cyber is about people managing information and systems properly', says Ramon Poch. For most organisations, people represent the greatest source of vulnerability in a cyber-risk context.

As they invest in cyber-risk defences, CFOs need to embed security measures into their business information. They also need to consider their data chains and identify any weak links – particularly at lower levels of their supply chains.

Consider too, how attacks that do make it through the company's defences will be dealt with. Does the company have a response plan in place? 'Some companies spend very little time and money on reacting and recovering', says Gerry Penfold. 'They spend 80% of their budget [for] security on defences, and probably less than 10% each on reacting and recovering. Effective planning to manage the response to an attack (including the social media responses) is essential for organisations to plan for and rehearse.'

#### Wider benefits

Greater confidence in data security and resilience doesn't just reduce the likelihood of a cyberattack. It also supports the development of new business services and improves response times for the finance function.



*'I can look at it positively by saying, "If you get your data protected then you can use the data to enhance customer experience, deliver insights, and provide opportunities for business development"'.  
Max Loh, Managing Partner Asean and Singapore, EY*

```
34.2K #!/usr/bin/env python
34.2K # tag is an utility to rename files according to a set of given tags.
34.2K # Copyright 2012 calendros
34.2K #
34.2K # LICENSE
34.2K # This program is free software: you can redistribute it and/or modify
34.2K # it under the terms of the GNU General Public License as published by
34.2K # the Free Software Foundation, either version 3 of the License, or
34.2K # (at your option) any later version.
34.2K #
34.2K # This program is distributed in the hope that it will be useful,
34.2K # but WITHOUT ANY WARRANTY; without even the implied warranty of
34.2K # MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
34.2K # GNU General Public License for more details.
34.2K #
34.2K # You should have received a copy of the GNU General Public License
34.2K # along with this program. If not, see <http://www.gnu.org/licenses/>.
34.2K # END_OF_LICENSE

import sys
import os
import re
import argparse

import unittest

# Return a list containing tuples where key is a filename and value is the
# list of tags for this file.
def parse_filenames(plain_filenames):
    ret = []
    regex = re.compile('^([a-zA-Z0-9_]+)\.[a-z]*$')
    for fn, org in plain_filenames:
        tags = set()
        dirname = os.path.dirname(fn)
        fn = os.path.basename(fn)
        base, ext = os.path.splitext(fn)
        match = regex.search(base)
        if match is not None:
            base = match.group(1).strip()
            strtags = match.group(2).strip()
            if strtags != '':
                for tag in strtags.split(','):
                    tag = tag.strip()
                    if tag != '': tags.add(tag)
        tags = sorted(tags) # sort + back to a list
        base = base.strip()
        ret.append((dirname, fn), (base, tags, ext))
    return ret

# Return a list containing tuples (filename:tag_list)
# Source filenames list of complex type filenames
def del_tag_filenames, tag):
    tag = tag.strip()
    return [(dirname, fn), (base,
        sortedSet(tags + [tag]), # modify is here: copy + sort + uniq(set)
        ext))]
    for (dirname, fn), (base, tags, ext) in filenames]

# Return a list containing tuples (filename:tag_list)
# Source filenames list of complex type filenames
def del_tag_filenames, tag):
```

Many in the finance function feel threatened that technology adoption will potentially lead to job losses and CFOs will need to confront this issue early in the process.

## 2.4 ORGANISATIONAL IMPACT OF TECHNOLOGICAL CHANGE

For the business to benefit fully from technology, the CFO needs to drive implementation with strong and consistent leadership. It's essential, for example, to engage users early if the CFO is going to gain their buy-in, provide reassurance and expedite change. Many in the finance function feel threatened that technology adoption will potentially lead to job losses and CFOs will need to confront this issue early in the process. The extent of effort in undertaking this should not be underestimated.

The implementation of technologies such as Robotic Process Automation (RPA) will make changes in the way that organisations are structured. People tend to be comfortable with role-based structures but RPA focuses on tasks and this can have an impact on the performance management of individuals, who may need incentives for working with a virtual workforce. It will also challenge the traditional spans of control with which leaders at each level are familiar. These human aspects of technology adoption need to be actively managed.

With new technology come new risks and new procedures. So, staff should undergo additional training, and the finance function's culture and working practices will need to change. A more outward-looking approach to finance will be necessary both internally and beyond the enterprise – social media, for example may play a part in that.

### New working models

Technology helps firms adopt models that might not have been usable in the past. Many organisations have had transformation initiatives in recent years that have focused on cost saving; the advent of new technologies now changes the emphasis to efficiency and effectiveness across the finance function rather than being necessarily a cost issue. Effective use of technology requires a rigour and robustness of processes; if the process is broken technology is not going to fix it without addressing the fundamentals of the process itself.

For example, the cloud allows teams to operate remotely and across geographies, while technologies such as robotic process automation can improve finance employees' experience of work by taking away time-consuming and repetitive processing tasks. These technologies facilitate the increased standardisation of processes across multiple geographies. They can also reduce the complexity of the business models. In adopting a cloud-based application, for example, one often needs to modify the business processes to fit the software model rather than being able to create a bespoke version aligned to the business's tailored processes.

It is often easier to start with finance and administrative processes such as expense management, especially where larger organisations are adopting cloud-based applications. These tend to be less organisation-specific (while permitting the configuration of approval processes, for example) but also offer greater opportunities for enhanced user experience, giving a greater payback, sooner.



Change will also open up new opportunities for those who wish to take them, as finance is able to 'move up the value chain', partnering with operational teams to increase revenue.

Simon Constant-Glemas of Shell explains, 'With the introduction of Market Standard Technology come market standard processes and so our processes will change so that there will be only one way of doing things because that is the only way that you can interface with the system that you have just bought. This kind of technology will begin to force us into having more standardisation at considerably lower IT and business cost'. He adds 'that is far easier than customising the technology or trying to change the culture to have standard processes'.

On the flipside, however, these new technologies can lead to valid questions about job security. The adoption of RPA, for example, frequently leads to the elimination of tasks rather than roles. This can, at least in the short term, mean that headcount reductions are not a given.

Commenting on the impact of AI and RPA technology, Kelvin Musana of Standard Chartered Bank, says:

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**'In the short term, there are possible reassignments, but in the long term, as the process becomes embedded, headcount reduction is a given'.**

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These concerns will need to be handled sensitively and effectively, as part of a considered and effective change-management programme.

Change will also open up new opportunities for those who wish to take them, as finance is able to 'move up the value chain', partnering with operational teams to increase revenue.

'It's a huge shift in the skill set', explains Amber Arnhold of Honeywell Aerospace. 'It's a shift from a very inward and isolated "I do analytics in Excel and send out a report" to "I have to tell a story and explain in business terms for my business partners what I'm seeing in the data"'.



## Spotlight on social media

### Social media (noun)

– *websites and applications that enable users to create and share content or to participate in social networking.*

'Why should you embrace social media?' asks Jens Madrian, CFO at Reactive Technologies. 'Because, by not embracing social media, you are limiting the success of your business. The market and your potential customers out there use social media and you would be missing out if you didn't use it as a way to reach them'.

The range of social media can be baffling and many choose to use none rather than picking the wrong one. There is also a myth that social media are for a 'younger' generation. This is not the case and much of the growth in use comes from more mature users. The reality is that organisations and the individuals who lead them are expected to have an appropriate social media presence.

### The opportunities

CFOs can use social media to communicate their messages clearly to internal and external stakeholders. But this isn't a one-way street: this type of technology also brings considerable networking benefits.

**'Social [media] enables the finance professional to be recognised as a strategic leader, it has enabled me to tap into my peer network. Otherwise I would never have known many people who are doing the same things.'**

**Sanjay Rughani, CEO, Standard Chartered Bank, Tanzania**



### What are the risks of external social media?

Social media strategies are no longer the province of PR departments. Their potential impact and the expectations they arouse mean that they are becoming increasingly a board-level issue. Society expects more instantaneous response across the leading platforms. A balance must often be found between the need to communicate and any legal implications.

It's important to understand that remaining silent on social media can be a risk in itself. With journalists increasingly chasing social media, the failure to act can become headline news when an issue is not resolved. Equally, poor use of social media can

result in reputational damage, so companies must be careful not to use social media recklessly. Organisations need to plan effectively for crises and simulate how to manage reactions. For many, as Tamara Littleton of The Social Element and Polpeo notes, there are painful and revealing lessons that are best learned away from the crisis itself. The wrong statement can have fundamental impacts on the organisation's share price, for example.

### Internal collaboration

Social collaboration within an organisation can often be key to creating a collaborative and innovative culture. This is especially pertinent when many organisations are seeking to create that 'intrapreneurial' spark. To do this

effectively, however, requires leadership from the top to promote an appropriate culture. A leadership removed from internal social media will often stifle the culture that they are seeking to promote.

Hassan Choudhry, CFO at Az-Zour North Power Plant (a JV of ENGIE and Sumitomo Corporation) adds that internal social platforms that enable secure messaging can bring huge benefits for the organisation. '[In the case of] renewable energy, the technology is changing rapidly, and therefore it is important that such technologies are adopted and embedded within the processes of the organisation in order to differentiate the way the power plants will be operated in the near future.'

Finance functions are likely to need different types of talent at different stages of technology implementation. At the same time, CFOs must be aware that skills shortages in certain areas will make it tough to recruit.

## 2.5 FOCUS ON TALENT AND SKILLS

For today's technology-enabled working practices, the finance function needs to equip itself with new skills, whether by 'upskilling', or raising the skill levels of existing employees; 'repainting' finance executives with new skills; or by recruiting externally. Some of these skills, especially those supporting data analytics, may not be among those traditionally associated with finance.

ACCA considered the future skills mix, including the 'digital quotient', in *Professional Accountants – the Future*.<sup>6</sup> This report underlines the importance and relevance of a range of quotients (in addition to the traditional 'intelligence quotient') in the finance function of the future.

To determine the skills mix needed, the CFO needs to be conversant with the available technological options. As the finance leader, the CFO is a core contributor to the firm's evolution and needs to take the opportunity to understand the functionality and application of the tools available. It is not something that should be readily delegated.

The use of technology requires a reassessment of the skill sets of those across the finance function. John Ashworth, SVP Finance Operations, Smith & Nephew, says:

**'Finance is going to have to invest in people, you need to recognise that there are [people with] new and highly prized skills coming onto the market whom you need to go out to acquire – data analysts and data scientists'.**

Think, too, about where future skills in finance are most likely to be found. While experience will continue to be important, it will be increasingly important to listen to junior colleagues and subject-matter experts – as well as to mature employees who are embracing new technologies.

'With innovation and digital technologies, it's the junior employees who are often the subject-matter experts and they could be educating senior employees', says Steve Bailey of Aim Protective.

### Skills shortages

Finance functions are likely to need different types of talent at different stages of technology implementation. At the same time, CFOs must be aware that skills shortages in certain areas will make it tough to recruit. Data scientists and cloud specialists, for instance, are already in high demand. Consideration may be given to the extent to which external advice or crowd sourcing can be applied in particular circumstances.

Even so, rather than repurposing existing staff for these roles, it will often be necessary to cherry-pick the skills required from outside. CFOs need to develop a clear understanding of how their talent needs will evolve in the future as their technology strategy is adopted. An additional complication is that the technologies of tomorrow – such as quantum computing and blockchain – will drive the need for a new wave of skills. Filling the skills gap for today's emerging technologies is essential but is not a one-time activity.

'Talent is the biggest concern', says Alexander Joramsa, CFO Asia-Pacific and China, GE Grid Solutions. 'We can have many different systems, many different technologies, and many different pockets of information, but the key is whether we have the right people driving that information.'

<sup>6</sup> ACCA, *Professional Accountants – the Future: Drivers of Change and Future Skills*, 2016 <<http://www.accaglobal.com/content/dam/members-beta/images/campaigns/pa-tf/pi-professional-accountants-the-future.pdf>>, accessed 19 November 2017.

<sup>7</sup> An explanation of the use of blockchain technology in the finance function can be found in *Divided We Fall, Distributed We Stand: The Professional Accountant's Guide to Distributed Ledgers and Blockchain*, ACCA, 2017 <[http://www.accaglobal.com/content/dam/ACCA\\_Global/Technical/Future/Divided%20we%20fall%2c%20distributed%20we%20stand%20-%20The%20professional%20accountant's%20guide%20to%20distributed%20ledgers%20and%20blockchain.pdf](http://www.accaglobal.com/content/dam/ACCA_Global/Technical/Future/Divided%20we%20fall%2c%20distributed%20we%20stand%20-%20The%20professional%20accountant's%20guide%20to%20distributed%20ledgers%20and%20blockchain.pdf)>, accessed 19 November 2017





## Spotlight on RPA

### Robotic Process Automation (noun)

– software that can be easily programmed to do basic tasks across applications just as human workers do.

The potential for the greater use of robotic process automation and artificial intelligence sits at the heart of the talent question for finance. These technologies present the opportunity to manage an increasing amount of the day-to-day work of finance on an automated basis, freeing up finance staff to perform more value-added activities.

In fact, while these technologies are often talked about in the same breath, they are at different stages in their evolution. Whereas RPA is relatively well established, AI is only just beginning to be incorporated into the technologies used in the finance function. Although often mentioned together, they are essentially complementary technologies, each of which can be implemented singly or, at times, in combination.

#### The benefits

RPA offers considerable benefits to finance functions. It improves the way in which finance is perceived across the business and it can enable the team to become more agile and responsive. This provides an opportunity for finance to play a more strategic role in the organisation.

'Put it simply, think of robotics as a piece of software that can mimic human behaviour within in a process. It takes away tasks that no-one wants to do anyway. The parts of the job that aren't going to be taken over are the elements that we like to do, that are generating value or that are creative' says Silvio Giorgio, *Australia Post*.

The technology also reduces human error, improves reliability and enables finance to support the wider business by speeding up decision making.

### **End user implementation**

In most organisations, the finance professionals implement RPA. It needs to remain part of the overall IT infrastructure and governance structure. This will distinguish the approach to RPA from that to AI. The robots remain owned by the business and therefore form part of the finance team and are used under their management. Effective RPA implementation is a partnership between finance and IT, with a clear vision and end point.

### **Focusing on growth**

Companies are already reaping the benefits of RPA. 'We significantly improved our efficiency and increased our productivity by have more automated processes through less and focused human intervention', says Jawad Jamil, CFO at Gulf Healthcare International. 'It has allowed us to be more customer focused and allocate resources towards growth. It has led us to pursue projects that previously would have required a higher degree of investment costs'.

### **Planning and controls**

With RPA, it is important to plan properly. Simply finding the right technology providers and assessing which platforms offer the best connectivity and solutions can take as long as a year. It's also advisable to appoint a dedicated information security officer who can control data and decide which parties should be given access to specific types of data.

Something else to consider is the importance of having the right control framework in place. The control framework around robotics can be complicated. Robots work faster than people can control.



**CFOs must build structures that reflect the new risks that will emerge through technology adoption, from basic contract questions to the challenges of regulation such as the coming GDPR.**

## **2.6 IMPACT OF TECHNOLOGY ON GOVERNANCE AND RISK MANAGEMENT**

How does new technology in the finance function affect a company's governance and risk management structures?

### **Board level**

The application of technology is often one of the organisation's most significant business risks. At the highest level, governance is needed for the strategy and enterprise risks related to technology investment. So, it's important to have a mechanism for informing the board so that they have oversight. Here, it is important to have people in place who are qualified to advise.

In order to cope with constant innovation and updates in this area, the board members should review their own skill sets and consider bringing in additional resources to enable them to carry out their responsibilities appropriately. This might include appointing non-executive directors who are equipped to assess technology risks and advise on the resulting governance requirements.

CFOs also need to be clear about the legal and procurement risks of new technology, and they will need to have the right resources in place to address these risks. Contracting for these emergent technologies is not always straightforward. Advice should be sought from those with expertise in the technology and the contracting aspects before commitments are made.

### **Risk mitigation**

Scenario planning and simulation are effective tools in managing inherent risks and in identifying changes in procedures and policies, enabling better management when a crisis occurs. Traditionally, planning was undertaken by IT teams focusing on disaster recovery and business resumption planning. The use of emergent technologies and the enhanced risks of evermore sophisticated cyber attacks means that the scenario plans need to be more encompassing and complex. The ability to react appropriately across social media, for example, can limit the impact on the organisation and any direct financial or reputational damage. CFOs, as senior leaders and members of the board, have a responsibility for ensuring that these risks are managed appropriately.

### **Governance of data**

Where data is concerned, governance also means ensuring that the finance function has a single source of truth.

While businesses are focusing, quite rightly, on the efficiency and insight that new technology can give them, it's also vital that CFOs don't lose sight of the importance of internal controls as part of a governance framework. These controls may need to be updated with each new technology. For example, when firms adopt the cloud and analytics, it's important that they identify data owners and establish and monitor the appropriate internal controls.

CFOs must build structures that reflect the new risks that will emerge through technology adoption, from basic contract questions to the challenges of regulation such as the coming GDPR. By identifying and mitigating these risks ahead of time, CFOs will ensure that new tools solve key business problems rather than creating new ones.



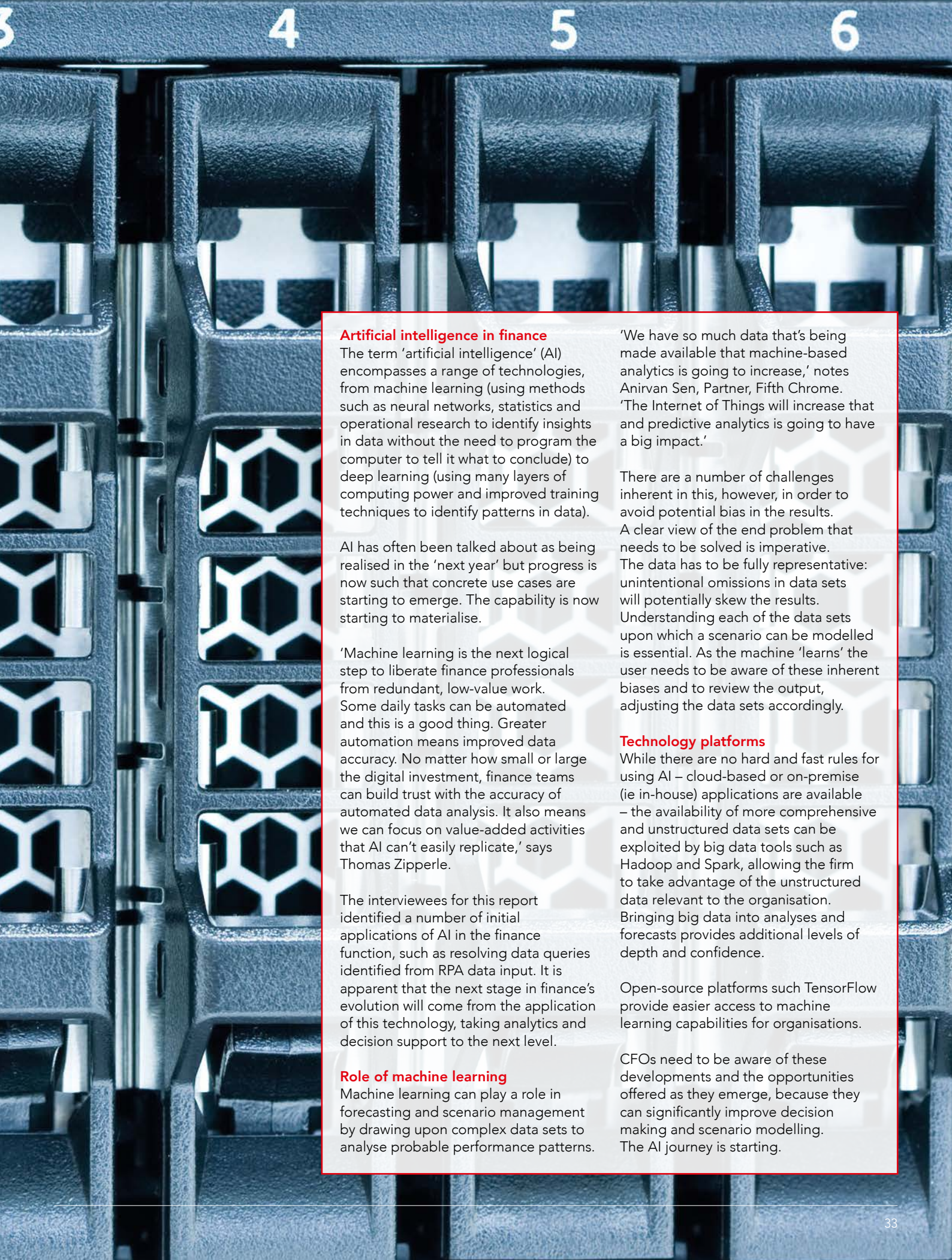


## Spotlight on AI

### Artificial intelligence (noun)

*– the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision making, and translation between languages.*





### **Artificial intelligence in finance**

The term 'artificial intelligence' (AI) encompasses a range of technologies, from machine learning (using methods such as neural networks, statistics and operational research to identify insights in data without the need to program the computer to tell it what to conclude) to deep learning (using many layers of computing power and improved training techniques to identify patterns in data).

AI has often been talked about as being realised in the 'next year' but progress is now such that concrete use cases are starting to emerge. The capability is now starting to materialise.

'Machine learning is the next logical step to liberate finance professionals from redundant, low-value work. Some daily tasks can be automated and this is a good thing. Greater automation means improved data accuracy. No matter how small or large the digital investment, finance teams can build trust with the accuracy of automated data analysis. It also means we can focus on value-added activities that AI can't easily replicate,' says Thomas Zipperle.

The interviewees for this report identified a number of initial applications of AI in the finance function, such as resolving data queries identified from RPA data input. It is apparent that the next stage in finance's evolution will come from the application of this technology, taking analytics and decision support to the next level.

### **Role of machine learning**

Machine learning can play a role in forecasting and scenario management by drawing upon complex data sets to analyse probable performance patterns.

'We have so much data that's being made available that machine-based analytics is going to increase,' notes Anirvan Sen, Partner, Fifth Chrome. 'The Internet of Things will increase that and predictive analytics is going to have a big impact.'

There are a number of challenges inherent in this, however, in order to avoid potential bias in the results. A clear view of the end problem that needs to be solved is imperative. The data has to be fully representative: unintentional omissions in data sets will potentially skew the results. Understanding each of the data sets upon which a scenario can be modelled is essential. As the machine 'learns' the user needs to be aware of these inherent biases and to review the output, adjusting the data sets accordingly.

### **Technology platforms**

While there are no hard and fast rules for using AI – cloud-based or on-premise (ie in-house) applications are available – the availability of more comprehensive and unstructured data sets can be exploited by big data tools such as Hadoop and Spark, allowing the firm to take advantage of the unstructured data relevant to the organisation. Bringing big data into analyses and forecasts provides additional levels of depth and confidence.

Open-source platforms such TensorFlow provide easier access to machine learning capabilities for organisations.

CFOs need to be aware of these developments and the opportunities offered as they emerge, because they can significantly improve decision making and scenario modelling. The AI journey is starting.



# 3. No time for complacency



New technologies are transforming the way businesses operate. To add value, support growth and address current challenges, CFOs need to embrace them. In the competitive global marketplace, this is not a 'nice to have'. The finance function needs to change and adopt new technologies if it is to remain relevant. Finance leaders need to act now if they are to avoid a technology deficit that it will be challenging to overcome.

## 3.1 CHANGE THE MINDSET

Making the best use of new technology requires a significant change in mindset. CFOs need to adjust the way in which they operate – from adopting training and change-management programmes, to revisiting existing governance controls.

CFOs also need to understand that technology, in many respects, is a moving target – throughout ACCA's research, interviewees stressed the importance of continuity; they warned of the dangers of taking a 'one-time approach' to

implementation. While technologies such as RPA are becoming increasingly embedded, new risks and opportunities will arise as developments in AI begin to gain traction. And, in future, we can expect to see radical change as commercial applications running on next-generation technologies such as quantum computing are released into the market.

## 3.2 FIVE KEY TAKEAWAYS FOR CFOs

'I think people in this profession should really go beyond their traditional territory. Simply knowing the existence of finance robotics isn't enough. They should go into these technology companies, and fully understand the benefits of finance robotics and all other technologies. Meanwhile, the traditional finance functions should change their thinking, and think about the application of finance robotics and other emerging technologies from the perspectives of business and output', commented Jerry Shu of Accenture Operations in China.

CFOs who embrace new tools and technologies have a huge opportunity to put finance at the centre of their enterprise's value creation. Failure to do so will risk the future value that finance can achieve.

- **Develop a technology roadmap** that aligns with the overall organisational goals and ensures that finance is best placed to report on performance in relation to these, but that is also aligned with the organisation-wide technology strategy.
- **Create the business case** for technology investments in finance by aligning the benefits with operational requirements for greater insight, often in real time. Investigate which of the range of technologies give commercial advantage and seek to deploy these.
- **Data is an important asset**, the value of which is increasing as its uses extend. The CFO needs to appreciate



CFOs who embrace new tools and technologies have a huge opportunity to put finance at the centre of their enterprise's value creation. Failure to do so will risk the future value that finance can achieve.

the commercial advantages that can be gained from the insights derived. With its value come risks. The CFO needs to appreciate the strategic risks inherent in this valuable data and ensure that they are managed appropriately. Above all, data needs to be open across an organisation, subject to regulatory constraints. Silos constrain.

- **Managing the organisational impact of technological change** can be significant. The implementation of any new technology in the workplace is often associated with significant changes in roles. CFOs need to lead the change management and highlight the new and significant opportunities that emerge while recognising the impact on performance-management processes. The CFO must understand which processes are truly unique to the organisation and which can be adapted to facilitate use of cloud-based applications. The organisation must have robust processes before seeking to automate them.

- **Focus on talent and skills** so as to ensure that the finance team of the future has the right skill mix to be able to embrace the opportunities offered by the technologies.
- **Implications for governance and risk management** can be significant and, as one charged with governance, the CFO needs to ensure that these issues are appropriately addressed.

In so doing CFOs should consider the impact of the following key technologies on finance.

- **RPA** can drive efficiency – the CFO must identify the manual processes that the finance department can automate, today and in the future, in order to drive efficiency, improve data quality, reduce cost and free up resources for value-added work.
- **Cloud** use accelerates decision making and boosts collaboration – the CFO must look at finance's role in the move to cloud across the

enterprise, in order to quantify the potential benefits of migrating applications and infrastructure.

- **Analytics** is the key value driver – interrogating the organisation's data will reveal where there is the greatest potential for finance to unlock the most valuable and actionable insights.
- **Social media** offers a window to the world – as finance moves to become more outward looking, the CFO must think carefully about how to engage through social media, identifying opportunities while mitigating risk.
- **Cyber security** is a critical area – strong cyber-risk-management structures must comply with evolving regulation and protect the organisation from attack.
- **Artificial intelligence** will enable the organisation to take the development of insight and prediction to the next level, but deriving benefits from it requires a foundation in other technologies.

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