CGMA® BRIEFING

BIG DATA

Readying business for the big data revolution

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Two of the world's most prestigious accounting bodies, AICPA and CIMA, have formed a joint venture to establish the Chartered Global Management Accountant® (CGMA®) designation to elevate and build recognition of the profession of management accounting. This international designation recognises the most talented and committed management accountants with the discipline and skill to drive strong business performance. CGMA designation holders are either CPAs with qualifying management accounting experience or associate or fellow members of the Chartered Institute of Management Accountants.

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INTRODUCTION

Businesses and management accountants are always on the lookout for the next big thing – and big data is already making big changes in many sectors.

A business must strive to balance cost containment with investment to develop its competitive position. Striking this balance requires a keen understanding of the drivers of cost, risk and value in the business. Management needs better information. Developments in the use of data are revolutionising management, providing the insights needed for better decision making and performance management. Some early adopters in the use of big data and advanced analytics have already enhanced both their operational performance and their competitive position.

Ensuring that data is harnessed to inform decisions improves performance. Companies that have embraced the opportunities offered by developments in data are three times more likely to rate themselves ahead of their peers in financial performance.[1]

For example, the Intercontinental Hotel Group improved operational and strategic decision making. Intercontinental built a data platform that makes use of a wide range of both internal and external data to improve operational reporting and customer service. They are now better able to predict guests' purchasing patterns and they can proactively identify market trends to guide investment.[2]

Yet a survey of over 2,000 finance professionals conducted by CIMA and the AICPA found that 86% of organisations are struggling to get valuable insights from their data.[3]

Ready for big data?

Nearly 9 in 10 organisations are struggling to get valuable insight from data

Management accountants have an important role to play in ensuring business success in today's data-driven era. They also need to stay abreast of developments to ensure continuing career success.

This briefing provides an overview of the competencies businesses must develop, key roles management accountants can play and the skills they will need.

How big data is driving big changes across sectors

Farming
Tractors with sensors can collect data on seeding rates, crop yield and ground conditions for more accurate prediction of production rates.[4]

Manufacturing
Advanced analytics are used to manage the risk of potential faults in equipment and product anomalies as well as forecasting, inventory management and production planning.[5]

Retail
Forecasting customer demand and understanding preferences is enabling retailers to be more proactive and to create new digital product offerings.[6]

Transportation
Predictive analytics are used to manage costs through preventative maintenance scheduling, inventory parts management and warranty claim management.[7] Airlines use analytics to understand the customer, predict demand and optimise prices.[8]

Telecommunications
Analytics and big data are helping providers to reduce customer acquisition costs, segment target subscriber audiences and rank prospects by propensity to buy.[9]

Financial institutions
Banks and insurance companies are using predictive analytics software for fraud analysis,[10] while credit card companies use analytics to manage credit lines and collections.[11]

Cities
Administrators use big data to understand citizens' needs and plan for future needs in transport, policing, healthcare, etc.[12]

Education
Data from student tests and assessments determine patterns and performance levels, helping to adapt courses and teaching methods.[13]

Health
Analytics are used to identify high-risk patients and simulate patient reported outcomes (PROs) for care quality improvement.[14]

BUSINESS BENEFITS FROM DATA

Businesses across different sectors are using data, whether to improve the efficiency of their operations, for more strategic purposes, or even as the basis of their business model.

Major customer-facing businesses accumulate and use data to inform market segmentation, pricing strategies, capacity planning, fraud prevention and to optimise promotional and advertising expenditure.

Businesses which do not deal directly with consumers do not have the same access to consumer data. Fast-moving consumer goods companies such as Diageo and Unilever analyse operational data to improve the efficiency of their manufacturing processes. They also use public data and buy in data from outlets, distributors and syndicated data suppliers to inform their marketing decisions. They can engage directly with customers through the internet and social media, developing brand loyalty and gaining data that can yield insights into consumer behaviour.

While smaller businesses may not generate large volumes of data, they can access free public data sets. Many businesses offer data services that can be used, for example, to identify the best location for a new outlet or to enable targeted marketing initiatives.

The advanced operating and accounting systems once used only by big businesses are now available economically as cloud-based solutions. Through using these systems, small businesses too are accumulating digital data about their customers and operations.

Data is the basis of the business model of many global internet businesses – including internet service providers (ISPs), search engines and social networks – that offer free value propositions to consumer audiences. These attract traffic that generates data which has value for a business audience.

There are also opportunities for smaller-scale data-enabled business models, including data provision, analytical and consulting services which allow other businesses to benefit from developments in data.

There is much hype about new data-enabled business models, and the potential to explore new forms of big data to derive new insights or 'unknown unknowns' about customer behaviour. For most businesses, the higher priority is to get better at interrogating the more readily accessible enterprise data on their systems. This is needed to report what they must monitor, in order to manage strategic progress and operational performance or 'known unknowns'. But to benefit from data and its analysis, businesses need to develop new competencies.

Examples of business benefits

- Driver-based forecasting and performance management
- Customer segmentation to improve focus and increase revenues
- Improved process efficiency and product quality
- Logistics: tracking shipments, improving routes, supply chain management
- Understanding customers' needs and identifying opportunities to innovate
- Advertising and promotional spend: improving messages and channel effectiveness
- Improved website design based on visitor behaviours
- More effective employee recruitment and retention
- Selling data or analysis services
- New business models

THE DATA COMPETENCIES BUSINESSES NEED

A business needs to have the right data, the ability to analyse it, a culture where the use of data is expected and the skills to ensure that insights are applied to create value.

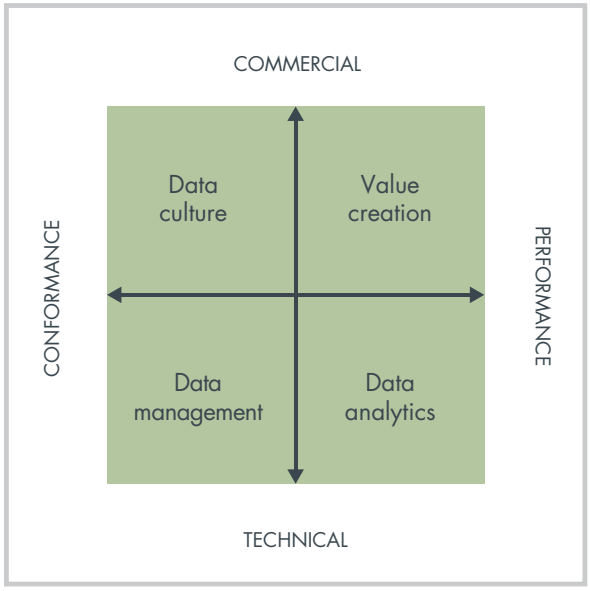
This requires talent development. The competencies required span from technical ability to commercial acumen (see figure 1). They also span from performance management to the abilities needed to ensure conformance to data management standards and the business's data policies.

Data analytics

The scale and complexity of the data sets now available often require a data scientist's advanced levels of analytical skills for data mining, deriving algorithms and predictive analytics. A report from leading business analytics software provider SAS[15] has highlighted the shortage of these skills. In the future, however, advanced data skills may not always be necessary to conduct complex analysis. New software, such as data visualisation tools, may enable business users to analyse data on a self-service basis.

Meanwhile, forming centres of excellence, automating repeated analysis and providing managers with self-service tools for less advanced analysis are necessary steps if data scientists' scarce expertise is to be used efficiently.

FIGURE 1: The range of data competencies which a business must develop



Data management

Data integrity is essential, so businesses need to ensure their systems and processes capture relevant data correctly, first time, and store it accessibly for consistent use in subsequent interactions with internal users, customers and other stakeholders.

Customers must also have confidence that their payment records, contact details or any sensitive data are handled properly and maintained securely. Business managers will also be concerned that commercially-sensitive data is not vulnerable to cyber attack.

As data is captured and managed on systems, such data management needs are usually within the IT professional's area of technical expertise.

Data culture

Leading companies are using big data to outperform their peers. Evidence is growing to suggest leading users of big data are achieving higher returns than their competitors.[16]

To benefit from developments in data and analytics, a business must develop the necessary culture of stewardship and accountability whereby decisions are based on evidence and the business is managed in the interests of stakeholders. Data should be valued as an important strategic asset for improving the competitive position or enabling new strategies.

A business also needs the ambition to use its data and to be innovative. It must be prepared to develop new strategies and make acquisitions to acquire new capabilities or revise its business model.

Value creation

Translating analytical insights into commercial insights and achieving impact requires collaboration between IT professionals, data scientists, finance professionals and business managers. The business acumen to identify an opportunity for creating value is also important.

Relevant data is needed to measure and manage intangibles such as customer relationships, human capital and intellectual property. These are the basis of a business's potential to generate value.[17]

New strategic insights into opportunities to generate extra revenue may get more attention, but managers need to be alert to other sources of value such as increasing efficiency, reducing risk, generating profitable sales and improving cash flow. Often more significant is the cost leadership that drives incremental innovation and continuous improvement in the efficiency of business processes.

Talent for data

Businesses must attract, develop and retain those rare individuals with advanced data analytics skills, providing the working conditions, tools and challenges that they value. However, data scientists are unlikely to have a practical understanding of business operations. Analytical insights are of no commercial value unless other professionals on the business team provide the wider range of competencies necessary to benefit from these developments in data and its analysis.

McKinsey[18] predicts a significant shortage of advanced analytics talent but an even larger shortage of managers and analysts with the skills to understand and make decisions based on the data. They also predict the need for "translators" who can work with IT professionals, data scientists and business managers to interpret analytical insights and convey them as commercial insights in terms the business can understand and implement.

MANAGEMENT ACCOUNTANTS: READY FOR BIG DATA

Big data is part of a wave of digital technology which has the potential to threaten many highly skilled roles.[19] For example, it has become easier and faster to identify potential fraud or diagnose an illness without human input.

Big data may be disruptive for a cohort of workers but it will open new career opportunities in analytics, machine-assisted manufacturing and the service industries.

> The United States alone faces a shortage of 140,000 to 190,000 people with analytical expertise and 1.5 million managers and analysts with the skills to understand and make decisions based on the analysis of big data.
>
> *Big Data: The Next Frontier*
> McKinsey Global[20]

An SAS report,[21] identified that in the UK the uptake of big data analytics will more than double in large organisations. The finance department is the most likely after the IT department to be responsible for big data activity. In many businesses, finance and IT both report to the CFO or COO, necessitating management accountants to be alert to the potential in big data and the roles they could play (see figure 2).

Management accountants are well positioned to provide businesses with many of the competencies they need to realise the potential in data. However, it is as business partners that management accountants have the most potential to help businesses make the most of these developments.

Data scientist

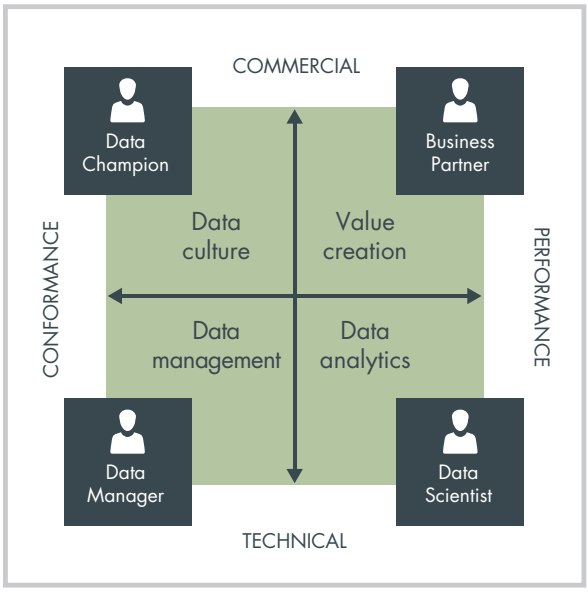
Data scientists are needed to meet the challenges of advanced data analytics. The shortage of data scientists may seem like an attractive opportunity for more quantitative management accountants. As the leaders in the financial planning and analysis arena, management accountants are numerate. However, to become data scientists they must be prepared to invest in further education to complement their accounting skill set with greater expertise in advanced analytical techniques.

An important message for management accountants is that they do not need to feel that the only way to survive in a new era of digital data is to become a data scientist. This is a highly specialised and technical area that is not necessarily in the management accounting space.

Data manager

Many management accountants maintain a good understanding of their business's information systems. As trusted providers of accounting information, they have the professional disciplines necessary to ensure data quality. They can contribute structure and credibility to data projects and they are often best placed to articulate the needs of the business and

FIGURE 2: Potential roles for management accountants



determine the data necessary to inform decisions or manage performance.

Some management accountants may choose to develop their careers in this area as project managers, change managers or IT professionals.

Data champion

Management accountants already provide professional objectivity, making them ideal champions of evidence-based decision making, able to ensure that decisions are properly informed and considered on the basis of the value to stakeholders. They can also help businesses to develop strategies to exploit the value in data. The CFO can influence the business culture at a high level and finance business partners can cascade that influence throughout support functions and to business units.

Finance business partner

As their roles bring them into contact with all aspects of the business, management accountants are well positioned to partner with business managers, IT professionals and data experts to support value creation.

Finance professionals put rigour and credibility around information. Their business acumen and objectivity enable them to articulate business user needs. They can scope projects, challenge assumptions, report results effectively and provide meaningful insight from data.

According to research undertaken by CIMA while updating its syllabus, employers expect management accountants to be champions of evidence-based decision making, translating analytical insights into commercial insights and ensuring these are used to improve business prospects and performance. This means the biggest opportunity for management accountants is in the use of their combination of accounting and analysis skills with business understanding as business partners.

DEVELOPING THE CGMA'S BUSINESS PARTNERING SKILL SET

Business partnering captures the essence of management accounting. It is about being globally and strategically aware but grounded in commercial realities. It combines a core accounting and analysis skill set with a good understanding of business.

Business partnering requires:

- the commercial curiosity to explore how things really work
- the confidence and objectivity to ask the right questions
- the communications skills needed to engage with others so as to achieve an intended impact.

When management accountants combine their accounting and analysis skills with an understanding of the business, they gain professional credibility and a seat at the decision-making table as trusted providers of management information.

If they are to contribute insights that the business values, management accountants need to develop a keen interest in, or even a passion for, their employer's business. As members of a global profession, they should be alert to external developments such as the potential in data. When this is combined with a forensic mindset, commercial curiosity and the professional objectivity to ensure that opinions are supported by evidence, management accountants can contribute informed views about external opportunities and threats or insights into the drivers of cost, risk and value in the business.

This ability to contribute insight is an important enabler, but effective business-partnering relationships also require a further layer of skills. In certain circumstances, a management accountant will need sufficient understanding of data sources and analytical techniques to question a data scientist's analysis. They may also need sufficient understanding of business operations to challenge a business colleague to improve performance in the long-term interests of stakeholders.

Such insights or challenges must be communicated in a compelling format appropriate to the audience. If their analysis and insights are to be applied in decision making or performance management, management accountants must have good working relations with peers in the business, based on mutual respect and shared objectives.

This means that effective business partners also need the communication and leadership skills necessary to influence others and improve business performance. These further competencies must be developed through continuing professional development, including real-world experience.

FIGURE 3: CGMA's business-partnering skill set

Effective business partnering relationships		
Empathy with business	Compelling communication	Preparedness to challenge
Contribute insights into drivers of cost, risk and value		
Passion for business	Commercial curiosity	Professional objectivity
Ability to integrate, apply and communicate		
Business understanding	Analytical skills	Accounting skills

CONCLUSION

Big data is a reality for many businesses around the world, but many more are not yet making the most of their data.

Businesses need to be forward-thinking and innovative to ensure that they develop the competencies necessary to exploit developments in data for survival and success in the digital age.

Likewise, accountants in business must continually develop their skill sets to remain relevant to employers' needs. They must ensure that their continuing professional development enables them to ride the new wave of technology so that their professional skills are recognised by employers and that they are engaged to help their businesses to succeed.

CGMAs are well positioned to help ready businesses to take advantage of developments in big data. As finance business partners, they can work with IT professionals, data scientists and business managers to ensure data is used to inform decisions, improve performance and help develop new business models or strategies.

Management accountants' pathway to big data

Brush up your statistical skills
Statistics are the basis of many analytical models. A good understanding of statistics is very useful when participating in a big data project.

Learn something new
There are many online courses on analytics and big data – sign up for a course or certification programme.

Get familiar with the jargon
It is absolutely critical for management accountants to be familiar with the elements of big data and advanced analytics. Read our *Big Data Jargon Buster.*[22]

Understand the context
Gain a strategic awareness and understanding of your organisation's business model. Read articles and industry white papers to gain relevant understanding of your sector and your organisation's processes. Consider how developments will impact on the role of management accounting in the business.

Be curious
Identify the key questions for the business and the data needed to answer them. Work with those already using big data/analytics in the business to understand the outcomes they wish to achieve.

Build internal links
Establish good relationships with your IT team, data scientists, etc. Gain an understanding of the organisation's data sources and analytical techniques.

Visualise the future
Communicating data effectively is key to implementing big data. Understand the basics of visualisation, what tools are available and how they can be used. Develop your communication skills to present your insights in a compelling way.

Become a big data champion
Become the "go to" person in your team for data analytics. Identify how your team or business function should use big data.

Network
Attend seminars and workshops to learn more about the way data is used and meet other professionals who are using analytics.

Do what you do best
As a management accountant, you have a unique skill set that allows you to understand the business from its strategic context to the granular level of data. This would be valuable to any analytics project team. Develop your business acumen and the ability to recognise opportunities to create value.

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