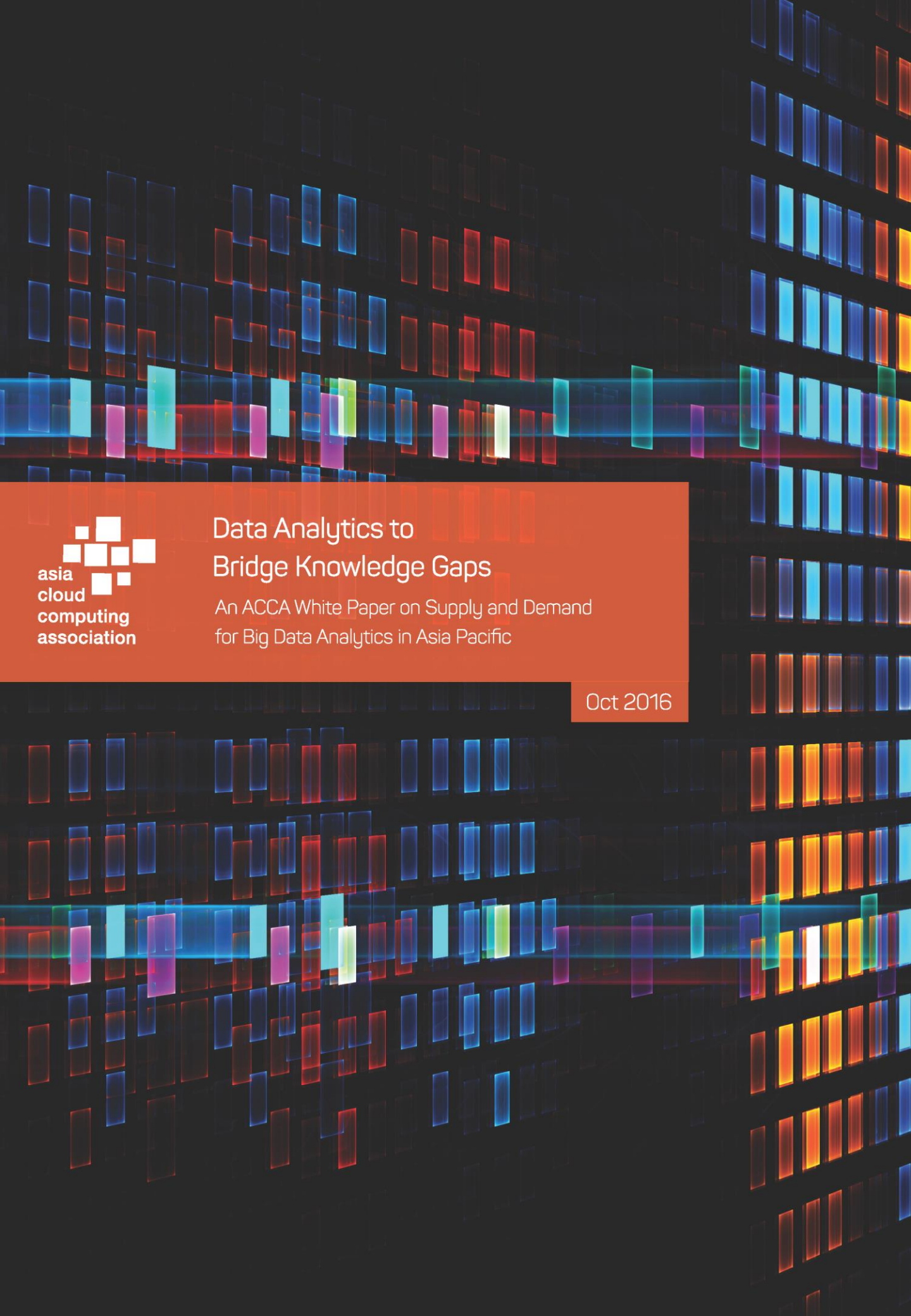

asia cloud computing association

Data Analytics to Bridge Knowledge Gaps

An ACCA White Paper on Supply and Demand for Big Data Analytics in Asia Pacific

Oct 2016

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Table of Contents

Executive Summary

Data analytics is a fast-growing practice area and demand for data scientists and analytics professionals is soaring. This is clear from the noise level around big data and analytics, that this is the new, cloud-enabled frontier for companies capitalise on, to speed up business growth and develop and maintain their competitive advantages.

Through dialogues with industry and users, members of the Asia Cloud Computing Association (ACCA) noted a trend where the demand for data analytics seemed greater than its supply. Sentiments shared with us through dialogues suggested gaps in the market, where the demand for analytics was not met by the current analytics services or skillsets available.

As a result, the ACCA developed this white paper to examine this trend. We make four observations from our findings, and offer four suggestions to plug the gaps.

Finding 1: Users need analytics services to overcome in-house data gaps

Prospective analytics users overwhelmingly indicate that they rely on insights based on data that they do not possess in-house. They understand that analytics services can help them perform better by providing insights based on analysis of the inputs, processes and output of the company. And the majority of analytics services rely on data inputs from the users – in particular related to cost drivers.

Plugging the Gap #1: Analytics providers that can play the dual role of assisting customers in identifying and procuring the right data, along with providing the analytics services – will be best placed to meet demand for analytics services.

Finding 2: Analytics providers must simplify the process of implementing analytics

Analytics users do not perceive their own awareness and skills as major barriers to the use of analytics. While analytics users understand the purpose and use cases of analytics, they do not understand common tools and technologies related to analytics. Our survey found that analytics users are not familiar with analytics technologies, common database management solutions, and processing tools for big data, indicating that analytics customers may lack the technical skills to implement complex analytics models for big data.

Plugging the Gap #2: Analytics providers that offer simple solutions customised to user needs will accelerate adoption of analytics among new users.

Finding 3: Analytics providers must demonstrate the value of their services

The greatest barrier to adoption as perceived by procuring analytics services is cost. Justifying and calculating the return on investment (ROI) in analytics is a somewhat subjective exercise. It is often couched in cost-avoidance terms i.e. “investing in analytics could prevent excess spending in another area”, making it difficult for prospective users like CFOs to justify the expense. A related finding is that analytics providers may overestimate the extent to which users prioritise analytics as critical to the future growth of their companies.

Plugging the Gap #3: Providers that effectively communicate the value of their analytics services through use cases will spur investments into analytics services and are better placed to attract new analytics customers.

Finding 4: Effective analytics is powered by cloud computing

Companies in some industries perceive industry regulation as a barrier to adopting cloud, which is an obvious technological enabler of analytics. As a result, these companies are unlikely to adopt effective data analytics solutions.

Plugging the Gap #4: Facilitating the use of cloud services is an important step to accelerate adoption and innovation in analytics.

Finding 5: Analytics insight is key to staying competitive

The majority of companies surveyed use data analytics. However, less than half of the companies use analytics for finance related decisions – and only one in 20 companies use analytics for human resource decisions. This indicates that, while analytics is mainstreaming, there is great potential for analytics to improve decision-making in many areas. Companies that change their thinking, act on analytical insights and become data-driven businesses are the winners of tomorrow.

Plugging the Gap #5: Access to data is not enough; senior management must use analytics to drive their decision-making and become part of the story of their company.

What's next? Recommendations for unlocking data analytics on cloud

Based on our findings, we offer some recommendations on how to unlock the potential of data analytics on cloud to four stakeholders: analytics providers, regulators and public sector organisations, innovators, and ecosystem players.

Analytics providers

Recommendation #1 – Build and train capacity. To generate demand for their own services, providers should develop more capacity building services, including training and consulting for their clients. This is perhaps the area where providers to date are the most successful.

Recommendation #2 – Simplify data analytics tools. To meet future demand, providers should develop simpler data analytics platforms and real-time analytics software that can be customised to the end user, especially in sectors that have yet to adopt analytics on a meaningful scale. This could further transition to providing end-to-end services to help customers transform their business into a data-driven business through analytics.

Regulators and the public sector

Recommendation #3 – Transparent public education on use of data insights. Regulators should promote privacy regulations that reflect the reality of big data and analytics. Government organisations should facilitate informed use of open data for analytics that can improve citizens' lives and provide insights that help businesses plan for the future. The government should also educate the public so that citizens can make informed decisions on how data collected from their daily lives are used for analytics by third parties.

The innovator

Recommendation #4 – Keep innovating – and show the way for others! Start-ups and innovators fall into two categories of innovations: those that disrupt entire industries through innovative application of new technologies, and those that bring incremental change. The former leverage analytics to defeat traditional business models in different industry verticals. The latter can increase the adoption rate of analytics by bringing analytics services that meet the demand of prospective users.

While there is a mature market for customer and cost driver analytics, there is strong demand for analytics services that enable improved business decisions and increase the analytics users' revenue and profit margins. Innovation in these areas will enable faster adoption of analytics if they are matched with evidence and case studies from the market that articulate the value proposition and approach of the analytics services.

Ecosystem players

Recommendation #5 – Cross-pollinate sectors with analytics. Ecosystem players, including investors, accelerators, incubators and third-party consultants, can accelerate the development as well as adoption of analytics in business. Market disruptions typically take place when analytics and data services are allowed to cross-pollinate with existing products and services to bring a better and more tailored experience to the users of these products and services. This includes disruptions in retail (e-commerce companies), media (music and video streaming services) and transport (taxi- and other ride-sharing apps). Similar disruptions will take place in other sectors – the question is not whether it will happen, but when. Analytics, enabled by cloud computing, will drive this innovation.

A. Introduction

Data analytics is a fast-growing discipline and demand for data scientists and analytics professionals is soaring. This is clear from the wide usage of data analytics as a tool across verticals to speed up business growth and develop and maintain competitive advantages in companies.

This trend implies that demand for data analytics is greater than its current supply of analytics. In other words, the demand cannot be met by the services and skills currently offered by the market.

This white paper examines this trend. It compares the supply and demand of data analytics in Asia Pacific to identify current demand for and supply of data analytics. The paper focuses on analytics use in Asia Pacific, including barriers to increased data analytics use, and points towards where demand for the service will be tomorrow.

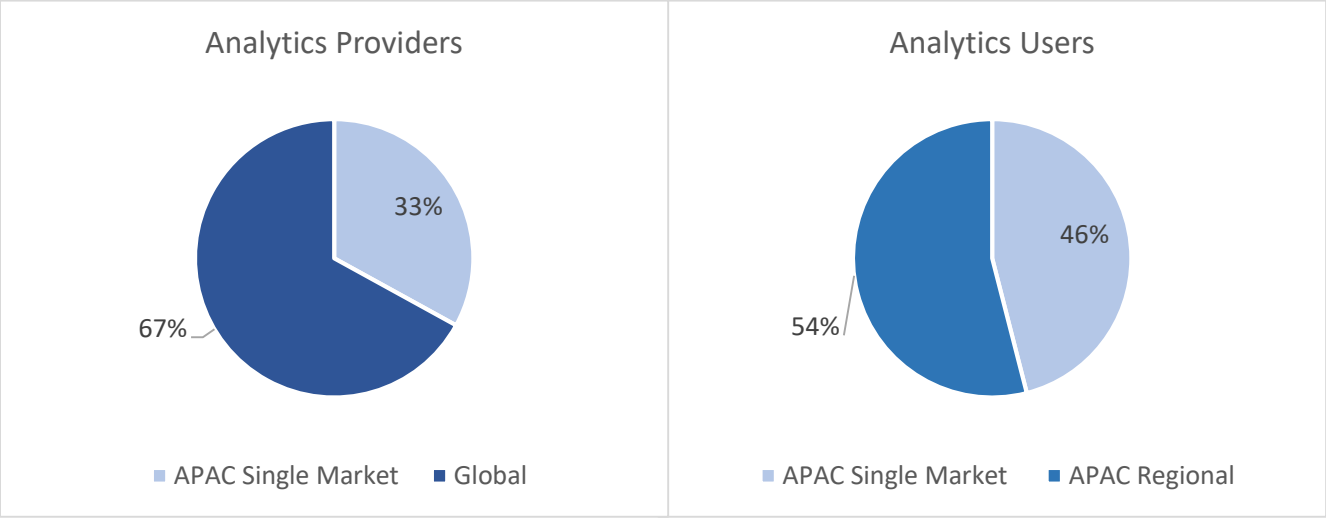
Global trends, Asian insights

The report draws on insights from analytics providers and users in Asia Pacific. Data collected using surveys and interviews provide insight into the supply and demand of analytics in markets that are underrepresented in comparable research. Industry verticals included are advisory, consulting, e-commerce, education, retail and ICT. The report also benefits from insights from both large traditional analytics providers as well as smaller ones that understand the needs of niche users.

The 25 companies surveyed represents a diverse set of analytics providers and users. Interviews and focus group discussions complemented the survey findings.

The majority (67%) of the analytics providers in the study have a global remit and operate across the globe. The analytics users surveyed are companies from Asia Pacific that operate in one (46%) or more (54%) markets in Asia Pacific.

Figure 1 – Survey Response: Breakdown of Analytics Providers and Users



B. Supply and demand of data analytics

We present some key insights in this section. It is important for both analytics providers and users to develop a deeper understanding of each other. The former needs to understand the limitations in analytics skillsets among users and provide simpler and more customised services, while the former needs to communicate their needs and demands in a coherent manner to analytics providers.

Data-driven decision-making has become mainstreamed

Data analytics is becoming a part of decision-making processes, and crucial to companies developing and maintaining competitive advantages. Analytics providers help users better understand their customers, enable customer segmentation and targeting, improve process efficiencies and the quality of services, and inform the development of new products and services. **62% of the companies surveyed currently use data analytics in their daily operations. This is indicative of the mainstreaming of data analytics, and presents a strong potential for growth in the field through targeting new customers.**

Strong demand for customisation

Current and prospective users of analytics demand greater customisation of analytics services and interfaces for their needs. With the exception of e-commerce, companies in most industries find it difficult to leverage analytics for effective customer targeting and predictive analyses that feed into marketing and the development of new products and services. Therefore, **industries outside of e-commerce demand greater customisation of analytics services to meet their specific needs.**

Analytics providers must help users overcome data gaps

All analytics users in the survey indicated that their analytics services draw on data that they do not currently possess. 13% of the companies surveyed rely on analytics services that exclusively analyse third-party data, whereas 75% rely on analytics that utilises both in-house data and third-party data.

This is indicative of the two main challenges for users before taking the plunge into analytics: data management and the know-how to implement data analytics. **Analytics providers must also help customers with their data needs – users know the purpose they want analytics to serve, but they either do not possess the data, or they do not know what data is needed to execute the data analysis.**

Many analytics solutions for customer segmentation and cost drivers

There is a large market for analytics services that help companies understand, segment and target their customers, and also ample supply of analytics to help companies understand their cost drivers. However, **less than a third of prospective analytics users indicate that they are looking for customer analytics services, and only 14% demand analytics to understand their cost drivers. This could indicate that users are either experienced enough in managing and understanding their customer analytics services and cost-driver analytics, or – more likely – are hesitant or ignorant of these solutions.**

Strong demand for analytics that drive strategic decisions

Analytics users indicate strong demand for analytics that can help inform strategic business decision. Companies in Asia Pacific want to use analytics to improve the quality of their existing services, as well as to drive investment decisions but have not used analytics for those purposes. **There is a gap in the market for strategy-focused analytics, which creates a business opportunity for innovators and analytics providers targeting analytics for strategic decision-making.**

C. Data analytics awareness

Analytics users have high awareness of the potential use of data analytics, but do not always know how to implement effective analytics for their data. Data analytics is topical, and all companies know they have to do "something", but struggle with execution.

Knowledge gaps on analytics tools

Current and prospective analytics users have an equally good grasp of concepts such as data mining and predictive analysis as analytics providers do. However, there is a significant gap between analytics providers' and users' knowledge of tools and technologies related to big data and data analytics.

Analytics users have a limited grasp of the technicalities and implementation models for analytics on big data. Users are less familiar with technologies and mechanisms such as SQL and NoSQL. Cassandra, a database management solution for big data across distributed servers, and MapReduce, a model for implementing and processing big data on a cluster, are understood by 0% and 8% of users, respectively.

To overcome the knowledge gaps, analytics providers should focus on customisation and ease of use of analytics services as well as effective articulation of how analytics can create value for the user and how to get started.

D. Barriers to increased use of analytics

If there is unmet demand for analytics services, there must be barriers that are stopping users from employing more analytics services, as well as barriers for providers to deliver the services that are demanded. These barriers must be overcome in order to close the gap between supply and demand for analytics services.

Barriers to adopting analytics could include security concerns related to moving data, such as customer data, to and from the cloud; reputational concerns related to harvesting data from customers to derive commercial benefits; and privacy issues when using data about particular individuals.

Prospective analytics users concerned about costs

On the demand side, **analytics users see the cost of procuring analytics services as the greatest barrier**, followed by concerns about data permissions and centralised data capture. The cost of data collection, analytics implementation, and procurement of analytics services are the key concerns for prospective analytics users. Overcoming these concerns by providing evidence from use cases to show the return on investments in analytics are key to accelerating adoption and analytics use.

Skills gap on data management and security

Users may not know how to execute on their plans and ambitions, and the setup of the required infrastructure and software is seen as cumbersome. Prospective customers also worry that data management and data permissions may hamper their ability to implement analytics services. When customers move to an aggregated "data lake", the data permissions within an organisation may present a barrier.

Companies that have successfully implemented analytics have often needed to employ dedicated data scientists that can incorporate analytics in business and strategic decisions, which may not be an option for SMEs. **To accelerate adoption, analytics providers must help their customers overcome the internal barriers to data management.**

Analytics providers worry about awareness and skills

Analytics providers believe that the greatest barriers to adopting analytics are prospective users' lack of awareness on how to execute analytics services and the lack of skilled employees among potential analytics users. Analytics providers understand that the cost of procuring analytics services, the cost of improving data capture, and the lack of customisation of analytics services are seen as barriers by users, but are more convinced that the benefits outweigh the costs than users are.

Providers disagree on the gravity of some potential barriers. **Analytics providers that are also cloud service providers are more concerned about data permissions and the challenges related to establishing a centralised data capture within an organisation than non-CSP analytics providers**.

Providers and users disagree on barriers

Analytics users are more concerned about the lack of industry standards and data classification systems than providers. The fact that analytics is not a strategic priority for end-users is also seen as a greater barrier by the users than the providers – indicating that **analytics providers may overestimate the extent to which potential analytics users are actively looking to increase the use of analytics services.**

The biggest gap is seen in concerns about awareness of how to implement analytics services, and the availability of employees with the right skills and qualifications. Providers see these as primary concerns, while analytics users clearly see these concerns as secondary to their concerns about data capture, permissions, and the costs associated with procuring analytics services.

E. Comparison across industry verticals

There may not be an industry skew in terms of potential extraction of value from data analytics, but there is an industry skew in terms of adoption.

Banks and financial institutions are very strong on "traditional" data analytics – especially of structured data – with very sophisticated models for areas such as fraud detection, projections and simulations. However, they

have been lagging behind on adopting analytics for unstructured data and on customer segmentation and targeting.

The retail sector, and in particular e-commerce, is leading the way on analytics for inventory management and customer segmentation. E-commerce companies have advanced data analytics for customer segmentation and targeting. The speed at which targeted ads appear online is indicative of their sophistication. Companies in this bracket – including other digital and "born in the cloud" companies such as mobile gaming and streaming services – use data analytics as a means to stay competitive.

Lagging industries are hampered by privacy and data protection concerns – both real and perceived – that stop them from using customer data. In some cases, **regulations may inhibit cloud use and data aggregation, while in other cases companies may believe that industry regulations are a barrier to data analytics – even if that is not the case. This is indicative of the need for regulatory clarity as well as policies and regulations that enable cloud use and data mobility.**

F. Conclusion: Future Demand for Analytics

Unstructured data

Analytics providers largely cater to analysis of structured data. With an estimated 80% of business information consisting of unstructured data, and the volume of unstructured data growing by 62% per year,[1] **unstructured data will be a key drive of analytics demand in the future.**

Alternate commercial models and outcome-based pricing

Mainstreaming of analytics will likely lead to new service delivery and pricing models, including analytics-as-a-service and outcome-based pricing. Given the challenges in illustrating the return on investments into analytics, **analytics providers that are able to sell the results of their analytics services rather than selling data and software services will thrive.**

Public sector and smart societies

Governments are increasingly working to maximise the utility of their data and leverage data analytics in order to create value for their citizens. Cities and national governments are increasingly moving away from treating data primarily as a risk towards championing the use of data as a driver of more effective and innovative public service delivery models. **Smart city and smart nation initiatives will continue to drive demand for new analytics applications.**

Analysis of third-party, social and environmental data

Few analytics providers currently focus on analytics of external social and environmental data. A staggering **75% of analytics users – and 80% of potential users – indicate a desire to adopt analytics services that analyse external social and environmental data**.

There is a potentially huge demand for analytics services that look into the social and environmental performance of organisations. This includes analytics that cover aspects such as human capital development within an organisation and the external environmental impact of a company's products and services.

[1] Deloitte, 2014, Technology in the mid-market http://www2.deloitte.com/content/dam/Deloitte/us/Documents/Deloitte%20Growth%20Enterprises/us-dges-deloitte-techsurvey2014-081114.pdf

Appendix A: Methodology

This report is based on two phases of research:

Phase 1

The first phase was based on interviews with a taskforce consisting of data analytics providers and cloud industry experts in Australia, Hong Kong and Singapore. Interviews were conducted in two steps:

1. Taskforce participants were sent a questionnaire via email for them to provide input on:
    a. Customer awareness of analytics;
    b. Different uses of analytics by industry verticals;
    c. Initiatives and technologies that enable greater use of analytics; and
    d. Key analytics champions in different industries.
2. The taskforce was then interviewed either in person or over the phone to provide context and more detail on their responses to the questionnaire, as well as to solicit input from the taskforce on the questions for the survey in the second phase of the research.

Phase 2

The second phase mapped the data analytics landscape across 14 countries in Asia Pacific, and pointed to where demand for data analytics will be tomorrow. Using an online survey, data was collected from a broad set of providers and users of data analytics, with a view to identify:

1. Gaps between demand and supply of analytics services;
2. Gaps between providers' and users' understanding of analytics capabilities; and
3. Gaps in providers' and users' perception of barriers to greater use of data analytics.

The survey was disseminated in a strategic manner to achieve three objectives:

1. Direct engagement of analytics providers to ensure high response rate of senior decision-makers / CXOs for the supply-side analysis;
2. Direct engagement of analytics users in healthcare and finance sectors to ensure high response rate of senior decision-makers / CXOs for demand-side analysis in two priority industries; and
3. Wider, general outreach to potential analytics users across a broad range of industries to compare the responses of potential analytics users with those of senior decision-makers in the two priority industries.

Analysis and validation

See Appendix B for the survey questionnaire. Responses were analysed to evaluate differences in the demand for and understanding of analytics in the different markets and industries.

Findings from the survey were validated with the taskforce participants from Phase 1 and socialised with the members of the ACCA. Their input formed part of the analysis in the final report.

Appendix B: Data Analytics Questionnaire

The survey respondent sees different questions depending on whether he is an *analytics provider*, *analytics user*, or a *prospective analytics user that currently has no significant analytics activities*.

Questionnaire: Analytics PROVIDER

Q1. What do your data analytics services aim to offer your clients? Please select all that apply.	Better understanding of our clients' customers; Better segmentation / targeting of our clients' customers; Better understanding of our clients' cost drivers; Improve quality of our clients' existing services; Analytics / research for our clients to develop new services; Other (Please specify) _____.
Q2. What sources of data do you capture and analyse for your customers? Please select all that apply	Supplier data; Operations data; Customer profiles; External social and environmental data.
Q3. What constructs of data do you capture and analyse for your customers?	Structured data; Unstructured data.
Q4. What frequency of analysis do you deliver? Please select all that apply.	Data for ad-hoc deep analysis; Data for automated and/or real-time analysis.
Q5. How familiar are you with the following tools and technologies related to big data and analytics?	Cassandra; Data mining; Hadoop; Machine learning; MapReduce; Predictive analysis; SQL / NoSQL; Tableau.
Q6. What do current and potential data analytics users see as the biggest barriers to increased adoption of data analytics? Please rank all that apply.	Computing power / speed of analysis; Concerns about vendor lock-in; Concerns about security and/or data privacy; Data analytics is not a strategic priority; Data analytics services are not customised to our needs; Data permissions / no centralised capture; High cost of improving data capture and data management; High cost of procuring data analytics services; Lack of awareness of how to implement data analytics; Lack of industry standards, data classification systems, or standardisation.
Q7. Which countries or regions do you currently serve with your analytics services?	[FREE TEXT]
Q8. What is your role as an analytics provider in helping customers adopt data analytics? How successful do you think you are at doing this?	[FREE TEXT]

Questionnaire: Analytics USER

Q1. Do you see the use of data analytics as critical to the future growth and competitiveness of your organisation?	YES/NO
Q2. Who is responsible for data analytics at your organisation?	Separate dedicated Data Analytics department / team; Data Analytics is a function of an existing department (i.e. not a separate department).

Q3. Do you use open-source services such as Hadoop or OpenStack for data analytics?	YES/NO
Q4. Who do you believe is best placed to be your data analytics provider? Please rank the below options.	Our telecommunications provider; One of our software vendors; A cloud service provider; A solution integrator.
Q5. What is your motivation for using data analytics?	Better understanding of our customers; Better segmentation / targeting of our customers; Better understanding of our cost drivers; Improve quality of our existing services; Analytics / research for our clients to develop new services; Other (Please specify):
Q6. What sources of data do you want to capture and analyse? Please select all that apply.	Supplier data; Operations data; Customer profiles; External social and environmental data.
Q7. Ownership and control of data: Please select which types of data you rely on in your data analytics?	Only in-house data? (i.e. data that you collect and own inside your organisation); Only third-party data? (i.e. data that you procure from third-parties / do not own); Both in-house and third-party data?
Q8. How familiar are you with the following tools and technologies related to big data and analytics?	Cassandra; Data mining; Hadoop; Machine learning; MapReduce; Predictive analysis; SQL / NoSQL; Tableau.
Q9. What do you see as the biggest barriers to increased adoption of data analytics? Please rank all that apply.	Computing power / speed of analysis; Concerns about vendor lock-in; Concerns about security and/or data privacy; Data analytics is not a strategic priority; Data analytics services are not customised to our needs; Data permissions / no centralised capture; High cost of improving data capture and data management; High cost of procuring data analytics services; Lack of awareness of how to implement data analytics; Lack of industry standards, data classification systems, or standardisation.
Q10. Which countries or regions do you currently operate in?	[FREE TEXT]

Questionnaire: Prospective analytics users that currently have no significant analytics activities

Q1. Do you see the use of data analytics as critical to the future growth and competitiveness of your organisation?	YES/NO
Q2. Who do you believe is best placed to be your data analytics provider? Please rank the below options.	Our telecommunications provider; One of our software vendors; A cloud service provider; A solution integrator.
Q3. What is your motivation for using data analytics?	Better understanding of our customers; Better segmentation / targeting of our customers; Better understanding of our cost drivers; Improve quality of our existing services; Analytics / research for our clients to develop new services; Other (Please specify) _____.

Q4. What sources of data do you want to capture and analyse? Please select all that apply.	Supplier data; Operations data; Customer profiles; External social and environmental data.
Q5. How familiar are you with the following tools and technologies related to big data and analytics?	Cassandra; Data mining; Hadoop; Machine learning; MapReduce; Predictive analysis; SQL / NoSQL; Tableau.
Q6. What do you see as the biggest barriers to increased adoption of data analytics? Please rank all that apply.	Computing power / speed of analysis; Concerns about vendor lock-in; Concerns about security and/or data privacy; Data analytics is not a strategic priority; Data analytics services are not customised to our needs; Data permissions / no centralised capture; High cost of improving data capture and data management; High cost of procuring data analytics services; Lack of awareness of how to implement data analytics; Lack of industry standards, data classification systems, or standardisation.
Q7. Which countries or regions do you currently operate in?	[FREE TEXT]

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The ACCA is a leading industry association comprising the stakeholders of the cloud computing ecosystem in Asia. The ACCA works to ensure that the interests of the cloud computing community are effectively represented in the public policy debate. Our primary mission is to accelerate the growth of the cloud market in Asia, where we promote the growth and development of cloud computing in Asia Pacific through dialogue, training, and public education. Through regular meetings, we also provide a platform for members to discuss implementation and growth strategies, share ideas, and establish policies and best practices relating to the cloud computing ecosystem.

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