asia cloud computing association

SMEs in Asia Pacific

The Market for Cloud Computing

Contents

Introduction

Small and medium-sized enterprises represent well over 90% of all businesses in Asia, across the 14 countries under review they employ some 1.02 billion people and contribute around $10.9 trillion directly into the economies in which are based (49.1% of total GDP for the region, see Table 1 and Figure 1). They also spend significantly as a group on ICT. While the vast majority of the ICT spend is on traditional communications services such as mobile voice, fixed-line and broadband, the growth is increasingly in cloud, virtualization, remote and applications services.

According to analyst estimates, SMEs will spend about $2 billion on cloud services in developed and emerging Asia Pacific in 2014, with the growth rate for cloud services for emerging Asia Pacific running at around 42%. But these statistics all appear to underrepresent and underplay both the opportunity and the impact of cloud computing services on the SME landscape across Asia.

Remote desktop solutions for example are increasingly important for SMEs because they support three key trends: mobile access, remote working and bring-your-own-device (BYOD). Such services help employees that work from locations other than a central office because they enable them to receive remote IT support by inviting a third party (either in-house or external) to control or view their screen. In addition, employees that wish to use their personal devices for work are able to use these devices to access their work computer, with full access to files and software available to that computer.

Table 1: Asia Pacific SME Statistics

Economy	No. of SMEs	SME Employment	SME Contribution to GDP
Australia	2,076,068	7,241,000	55.70%
China	40,478,200	651,984,000	60.00%
Hong Kong	316,432	1,296,003	54.00%
India	36,200,000	101,200,000	6.20%
Indonesia	56,534,591	107,657,510	23.20%
Japan	4,115,830	65,280,000	53.00%
Malaysia	645,136	8,460,971	32.70%
New Zealand	468,100	584,000	42.00%
Philippines	816,759	3,872,406	35.70%
Singapore	407,298	2,460,000	50.00%
South Korea	3,351,404	13,059,372	47.30%
Taiwan	1,306,729	8,484,000	30.23%
Thailand	2,913,167	10,995,997	36.60%
Vietnam	242,453	32,505,242	40.00%

SMEs, as all other business entities do, exist and operate to earn profit. However, their needs and activities are usually comparatively simpler than larger corporations, with the majority of financing going to working capital for the core operations of the business, followed by improving and upgrading their production process and then followed by the purchase or lease of equipment, machinery, vehicles and computers. These purchases will primarily be used to finance core operations of their businesses.

While maximizing profits is the key objective of SMEs, minimizing costs can also be a way for them to increase profits. However, this is often not an intuitive message for SMEs or one that is easy for them to hear and act on. Indeed, there are three messages that come through loud and clear in this report and cut across all economies and all cultures.

Cloud computing – and cloud computing technology – has the potential to be the 'great leveller' for both SMEs and developing economies. This is because cloud offers the prospect of both the access to enterprise grade tools on a pay-per-use basis making them immediately accessible and affordable, and the ability to scale up and down such access as required (elasticity of use). In other words, upfront capex requirements go down substantially.

However, SMEs do not spend money to save money; SMEs – focused as they are on revenues and revenue margin – spend money to make money. This is a very different mentality from large corporates and it means that the messaging around cloud technologies and services for SMEs to date has been misplaced. The initial attraction of cloud computing for the larger corporates lies in the cost savings and efficiencies it enables. But for SMEs it will be all about greater reach, greater speed, and greater flexibility in acquiring or serving a customer.

Achieving growth without assuming all the risk involved in scaling a business — such

as expanding the workforce, acquiring more office space, and adding sales channels — has long been the dream. Many SMEs are now looking at doing precisely that with the help of the built-in automation, economies of scale, and flexibility afforded by cloud.

The impact of cloud technology shifts as it is adopted by businesses. It starts out with an initial focus on efficiency gains, then goes on to stimulate entire new business models. Advantages to smaller businesses come on a number of fronts, such as making it cheaper and easier to start and scale a business, enhancing customer acquisition, service and support, and providing access to enterprise-grade technologies.

Adoption of new technologies such as cloud computing thus come with an apprehensive outlook – as with every other new technology. Operators must therefore provide customer support tools to aid the transition of SMEs from on-premises solutions to cloud solutions. One of the largest challenges SMEs have is the lack of technology support. Even fairly sophisticated SMEs rarely have enough IT staff to effectively choose, test, implement and manage their IT solutions – and in most cases, they don't have any such staff.

Examples of success stories go a long way to relieve these worries, especially when such stories are local, and visible to the SME, for example, a neighbour, or someone in the same city. Ease of use, and free trial packages are also a good way to help SMEs get started. It is for this reason that we have dedicated a section of each country chapter to looking at institutional support – including cloud financing options that are provided in the various markets. These are thus three requirements when making available cloud services to SMEs.

Education and awareness creation – Carefully created educational and awareness tools that effectively explain the value of cloud services to SMEs, including simplified comparisons of total cost of ownership; marketing descriptions of the business value; and simple guides to product features.

Implementation – A dedicated SME cloud implementation team to facilitate the

Figure 1: SMEs and Employment

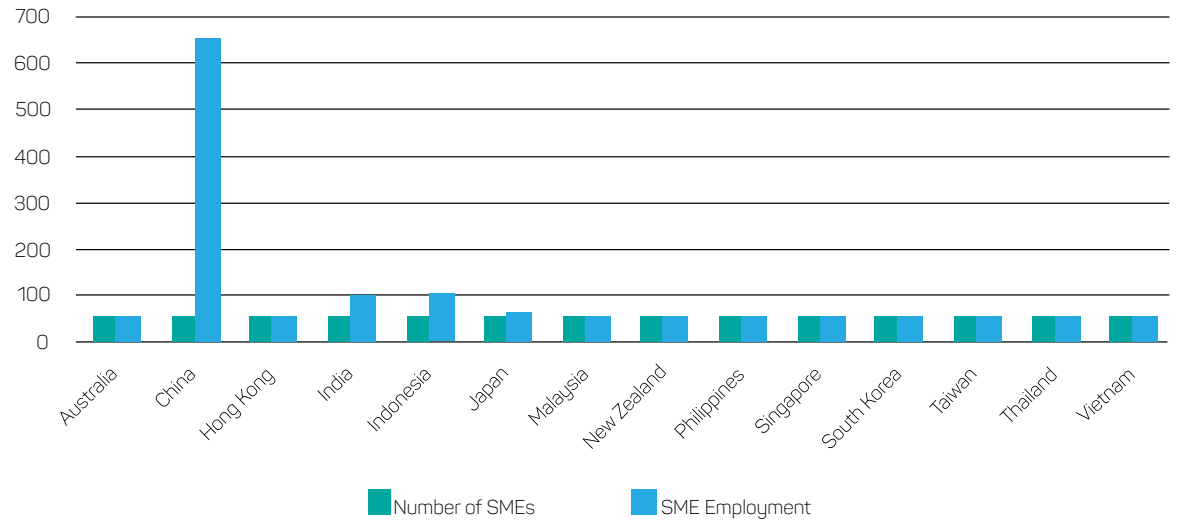


Table 2: Cloud High and Low Prices by Market (% of GDP/capita)

Economy	SaaS		PaaS		IaaS	
	High	Low	High	Low	High	Low
Australia	3.20%	0.18%			7.70%	3.50%
China	22.00%	0.70%			46.20%	41.10%
Hong Kong	4.10%	0.33%	3.90%	0.00%	1.44%	0.00%
India	62.98%	4.84%	234.57%	14.53%	70.73%	14.23%
Indonesia	43.00%	1.73%	82.00%	5.17%	47.25%	5.00%
Japan	4.20%	0.15%	0.62%	0.27%	4.48%	0.68%
Malaysia	18.19%	1.46%	47.58%	5.69%		
New Zealand	3.50%	0.28%	30.10%	1.00%	0.20%	0.16%
Philippines	58.58%	1.80%	217.00%	6.25%	59.28%	11.98%
Singapore	2.72%	0.22%	7.10%	0.85%		
South Korea	4.20%	0.05%	0.30%	0.00%	1.00%	0.20%
Taiwan	7.21%	0.05%			28.00%	6.80%
Thailand	4.30%	2.30%	31.00%	10.80%	31.00%	10.80%
Vietnam	78.50%	6.28%	205.00%	56.00%	56.00%	27.50%

implementation process of transitioning an SME to a cloud-based solution. Given SMEs will often want to do it themselves – which is a requirement for mass scalability – support services must be available for the first 30-90 days of the cloud service to answer questions and provide guidance.

Selling ancillary services – Successful providers will have a dedicated SME cloud team available to contact SMEs when new services are offered and provide extensions to the existing cloud services.

Again, the impact of cloud technology shifts as it is adopted by businesses. It starts out with an initial focus on efficiency gains, then goes on to stimulate entire new business models which need to scale up and/or evolve.

Population is, not surprisingly, the most telling factor in the size of an SME market and hence the Indonesian, Chinese, and Indian markets all remain strongly appealing for their immense size. But as also shown, per capita GDP is not an indicator of a vibrant SME market – i.e., richer people are not quicker to start a business. Although the sheer size of the Indian and Indonesian markets can seem tempting for cloud entrepreneurs, these are two of the harder markets to approach successfully. Cloud computing requires a relatively stable and sophisticated IT infrastructure, which is still problematic in a number of the Asia Pacific emerging economies. Likewise, cloud business services that are currently being offered may prove to be too expensive for lesser-developed countries (Table 2).

Both India and Indonesia have highly innovative tech firms and strong developer communities. Both have rapidly growing mobile populations and are showing an enormous appetite for cloud computing solutions. But to successfully access and

enable these markets cloud service offerings will need to take on more affordable, more accessible, more flexible frameworks.

The value of each SME market differs greatly by size. Somewhat counterintuitively, SME markets in the developed world, despite having lower numbers, often have a much larger role in the economy as a whole. Developed countries like Australia, Hong Kong and Japan all have over half of their GDP contributed from SME activities (Table 1). These wealthier SMEs have a greater potential to be able to afford cloud computing solutions.

Thus, the current sales pitch, encouraging the adoption of cloud computing so as to reduce IT costs may well be ignored in much of the developing world. Instead, focusing the capabilities of software and making cloud computing more user-friendly may have stronger results. For example, in Indonesia, cloud computing will increase IT costs for the average firm, but with ICT adoption relatively low, focusing on reducing workloads in painful administrative areas, such as with business management software, and improved marketing reach will likely have stronger results.

For both demand drivers and obstacles to cloud computing adoption, similar topics appear repeatedly across economies (Table 3). Reducing costs is regularly cited, but what reducing costs means is different depending on the country. For example, businesses in Hong Kong are likely to already have business IT infrastructure in place. Here cost means upgrades and replacing old hardware; businesses managers in developed IT environments are more likely to know what they want and how much the current processes cost them. By contrast, for countries with low IT penetration in the business sector, reducing costs means improving the efficiency of workers by giving them new tools for their jobs. For those situations, business managers need to know what cloud can do for them. And this is a nearly universal obstacle to cloud uptake broadly amongst SMEs: ignorance of cloud solutions.

In Indonesia, *only 3% of business owners understood the basics of what cloud computing was about*. Surprisingly, the figures for more technologically well-informed countries weren't much better. In Japan, 30% of companies were familiar with cloud solutions. In Hong Kong, four out of the top five obstacles to cloud computing uptake had to do with not understanding cloud: uncertainty about what solutions were available, uncertainty about what to buy, lack of IT skills, and unfamiliarity with cloud computing. Considering that the overwhelming majority of SMEs in the

Table 3: Cloud Computing Adoption Drivers by Market

Australia	Accessibility	Flexibility	Quality of service
Hong Kong	Reduced capex	No IT upgrades	Elastic capacity
India	Reduced costs	Monthly Payments	Remote access
New Zealand	Remote access	Data security	Remote access (for employees)
South Korea	Improving efficiency	Improved governance	New routes to market
Taiwan	Easy to install/maintain	Off-site backup	Reduce IT expenses
Thailand	Access	Costs	Sector-Specific Application

Table 4: Top Three Potential Sectors for Adopting Cloud Computing by Market

Economy	No. 1	No. 2	No.3
Australia	Financial and Insurance Services	Property and Business Services	Professional, Scientific and Technical Services
China	Manufacturing	Information Transmission, Computer Services, Software	Wholesale and Retail
Hong Kong	Information and Communications	Real Estate Activities	Commerce
India	Wholesale and Retail Trade	Manufacturing	Textile and Accessories
Indonesia	Financial Institutions	Wholesale and Retail, Restaurants and Hotels	Transportation, Warehousing, Communications
Japan	Information and Communications	Transportation	Wholesale and Retail Trade
Malaysia	Transportation and Storage	Wholesale and Retail Trade, Repair of Motor Vehicles	Arts, Entertainment and Recreation
New Zealand	ICT Sector	Tourism	Financial Services
Philippines	Business Process Outsourcing	Technology Start-Ups	Retail Services
Singapore	Commerce (Wholesale and Retail)	Accommodation and Food Services	Property
South Korea	Financial and Insurance	Manufacturing (Electronics)	Info and Comms, Media and Publication
Taiwan	Information and Communications	Education	Manufacturing
Thailand	Telecommunications and Finance	Trade (wholesale and Retail)	Education
Vietnam	Commerce (Wholesale and Retail)	Banking and Financial Institutions	Tourism and Hospitality Services

Asia Pacific region don't fully understand cloud, education will continue to be a major requirement for driving adoption and usage.

Table 4 lists the sectors thought most likely to be early cloud adopters based on historical evidence and current IT expenditures. Although these sectors are the comparatively 'low-hanging fruit' for cloud vendors and service providers, they are not necessarily the largest or wealthiest sectors in the country. In Japan, manufacturing subcontractors still make up the backbone of a strong export economy, and constitute the third largest sector for SMEs. On the surface, specialized telematics SaaS solutions have an advantage, but various obstacles leave these subcontractors out of reach of most IT providers.

It is difficult to compare sectors across the Asia Pacific region given differences in definitions, market size and market development. Nevertheless, Commerce

(broadly and variously defined), Finance, and Technology (ICT/ telecoms) were the top three sectors identified from the surveyed countries as providing the greatest early potential (Figure 2). Commerce, loosely defined, includes retail, wholesale, import/ export and a few other specifics depending on the country definition.

Successful cloud computing in commerce will also likely be linked to the rapidly growing e-commerce market in Asia. Cloud computing solutions that specifically target commercial tasks, inventory management, contact management, sales data analysis, etc., are likely to gain the most from the Asian market in aggregate. Logistics is intrinsically linked to commerce and appears on the list. Cloud solutions that can combine a logistics synergy may also have an advantage.

Finance is sometimes defined as including insurance, while in other countries it only includes financial institutions. Account management, and the large amounts of data and computational needs that come with it, create a huge need for the latest technologies in this sector. ICT may seem somewhat obvious as a sector with high cloud potential given the technology focus. However, the emphasis here is often on the applications being provided as the enablement to other sectors: education, logistics, health and so on. To think of this another way, mobile banking and payment solution provided to extend financial inclusion would fall under banking or technology when rolled out by a telecommunication provider? Similarly, email or storage solutions sold by a telco to individuals who are retailers or educators as part of a bundled comms package come under which industry rubric?

Three final points in summary are worth noting from the survey work and the report. First is the takeaway that cloud computing will likely find the gateway to less developed markets in Asia to be based upon and around the mobile phone (Table 5). Cloud services designed around the mobile first and the PC second will have a far larger and more active customer base than those that work from a more traditional approach.

Current broadband penetration in Asia shows a rather clear digital divide. Developed nations usually display over 25% penetration while developing economies are still working on extending access. Moreover, these statistics are for penetration rates on an *individual* level, which tend to look low for all countries except Singapore, *but* when household penetration

Figure 2: Total Instances of Sector as Lead Adoption Sector

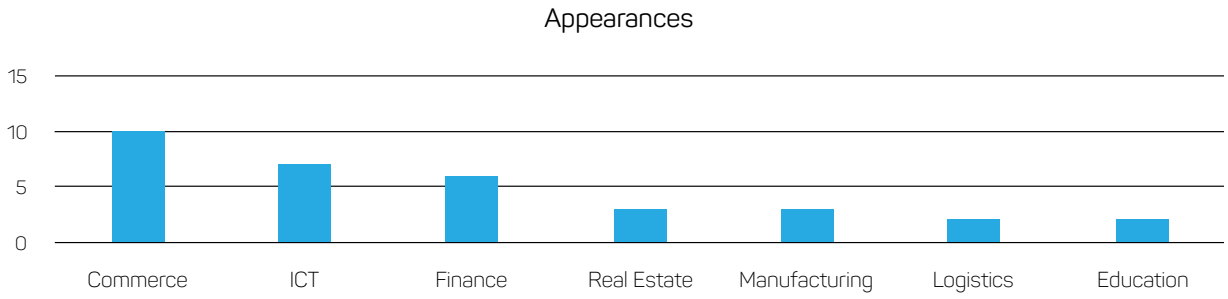


Table 5: Access Statistics

Economy	Mobile Penetration	Fixed Broadband Penetration	Wireless Broadband
Australia		26.00%	114.40%
China	88.70%	13.60%	37.10%
Hong Kong	238.60%	31.00%	
India	70.80%	1.20%	3.60%
Indonesia	121.50%	1.30%	
Japan	115.20%	27.80%	105.30%
Malaysia	143.30%	8.10%	12.70%
New Zealand	76.00%	30.00%	86.00%
Philippines	104.50%	2.60%	
Singapore	156.00%	211.00%	185.00%
South Korea	109.40%	37.20%	102.90%
Taiwan	127.00%	30.00%	77.40%
Thailand	144.40%	7.60%	
Vietnam	135.20%	5.80%	18.00%

rates are considered the picture looks very different. For example, Hong Kong may have an individual penetration rate of 31%, but household penetration is around 83%.

Second is the less than clear or consistent definition to what an SME even is across the region. Vietnam, for example, has the largest SMEs in terms of employment sizes, with an average of about 134 employees per enterprise. Japan and Malaysia also have SMEs with large employee numbers. This may come as a surprise, but a part of the explanation for this is definitional with Japan and Vietnam both considering businesses of up to 300-500 employees to be SMEs. Malaysia considers businesses with up to 200 employees to be SMEs.

Third, and perhaps most problematically for SME cloud computing uptake in the region is the issue of pricing. A 'codex' released by 451 Research at the end of 2013, designed to help businesses figure out the wildly different pricing models used by cloud infrastructure providers, makes one thing abundantly clear: cloud pricing is insanely complicated. It's virtually impossible for customers to price shop, as vendors use a wide range of models and *some don't even publish their prices*.

The key finding of the 451 Research report? "Cloud computing once promised simple, usage-based charging for resources, similar to other utilities such as electricity; unfortunately, the current reality is far from this ideal." For cloud computing to truly crack the SME market en masse this issue must be recognised, addressed and simplified.

ACCA's 2015 Asia Pacific SME Cloud Market Study

AUSTRALIA

AUSTRALIA
Executive Summary

In Australia, some 99.8% of businesses are SMEs, with 68% of the workforce employed in SMEs, and more than half of all industry value-added coming from SMEs. The Australian SME market has above average entry and exit rates when compared to other APEC countries, making the conditions for start-ups and nascent small businesses critical to maintaining the status quo. About 3.4% of the population is engaged in creating or operating a small business – well above the global average.

The high levels of income, education and financial support in Australia have a variety of important impacts on the SME market. Not only are firms more geared towards services requiring higher skills, significantly fewer SMEs are established in order to alleviate poverty. In other countries, creating a small business can mean a source of income for long-term unemployed people. But in Australia, the prospect of creating a new business often competes with the idea of staying in a stable, well-paying job. In such a situation government policies need to be geared towards incentivising business ownership to a greater extent. That would appear to be the case, with government resources for small businesses readily available. In essence, it is relatively easy to do business in Australia; if it was difficult the SME sector would stagnate.

Nevertheless, the market is a highly competitive environment where increases in productivity, savings and innovation are necessary to survive. In such an environment, SMEs either do, or can be encouraged to, look to ICT for a necessary competitive edge. Without applications and online services to streamline administrative tasks, not only can businesses lose the time needed to make enough money, they lose the passion for running a business because of the undue focus on such administration.

The Australian economy is in transition. Growth in industries outside the resources sector is becoming more important for overall growth of the Australian economy. The relationship

between high digital engagement and growth is not limited to certain industries or business sizes, indicating that digital engagement is linked to growth across the spectrum of business size and industry.

According to a study by Deloitte, only 16% of Australian small businesses have a high level of digital engagement. And yet highly digitally engaged small businesses are:

- Two times more likely to be growing revenue
- Earn two times more revenue per employee
- Four times more likely to be hiring
- Three times more likely to have growth as a business objective

More than a third of total revenue growth for small businesses with a high digital engagement is earned by reaching *new* customers. For such small businesses almost 75% of revenue growth is due to growth in markets other than existing customers.

Australia is known to be an early adopter market when it comes to new technologies and several industries stand poised to play the role of lead early adopters in cloud computing, but there is one industry in particular that is likely implement cloud computing solutions based upon historical data and ICT uptake, the financial and insurance services sector. Additionally, accountancy, advertising, market research, management and other consultancy, as well as firms involved in selling, renting and/or buying real estate for others, managing real estate for others and appraising real estate will be the key businesses for cloud computing.

Market Size

There were 2,076,068 SMEs in Australia in Jun 2013, with SMEs accounting for 99.8% of all businesses, and some 68% of the Australian workforce employed in an SME (Table 6). With an approximate workforce of 10.6 million people, SMEs employ some 7.24 million people.

Table 6: Australian SME Figures

	Companies		Employees		Industry value add
	No.	%	No.	%	%
2011-12	2,141,280	99.70	7,339,000	68.90	56.70
2012-13	2,076,068	99.80	7,241,000	68.30	55.70

Source:
ABS Cat. No. 8165.0, "Counts of Australian Businesses, including Entries and Exits, Jun 2009 to Jun 2013"
ABS Cat. No. 8155.0, "Australian Industry 2012-13"

Table 7: Percentage of Business by Employment Headcount

Number of Employees	% of Businesses
Non-employing	60.80% (1,264,298)
1 – 4 employees	27.10% (563,412)
5 – 19 employees	9.50% (197,412)
20 – 199 employees	2.40% (50,946)

Source:
ABS Cat. No. 8165.0, "Counts of Australian Businesses, including Entries and Exits , Jun 2009 to Jun 2013"

In other words, the business structure of the Australian economy is rather bottom heavy (Table 7). And, as is typical with bottom heavy economies, there are many businesses exiting and entering the market every year. In 2012-13, for example, the exit rate for SMEs was 14%, with the entry rate running slightly higher at 11.2%.

Following the 2008 financial crisis, there was a dramatic growth of the micro-business segment of the market (i.e. businesses with 1-4 employees). While the growth rate of small and mid-sized SMEs (employing 5-199) ranged from -1.4% to 0.03% in the years following 2008 period, the growth rate of micro-SMEs ranged from 3.7% - 6%.

Contribution to the Economy (GDP)

SMEs businesses are significant contributors to the Australian economy, both in terms of the number of people they employ and their output. The sector contributes more than half (57%) of private sector economic activity, totalling AUD530 billion in 2010-11, and more than two-thirds of private sector employment, with small businesses employing around 7.2 million people in 2012-13.

The industry value-add for SMEs was 55.7% in the 2012-13 period (33.1% for small, and 22.6% for medium-sized businesses) accounting for AUD556 billion.

SME Definition

The Australian Bureau of Statistics (ABS) defines a small business as an actively trading business with 0–19 employees and a medium-sized business as an actively trading business with 20–199 employees using headcount figures rather than full-time employment. The ABS breaks the 'small' category down further to specify non-employing businesses and micro-businesses, those with employee numbers in the 1 – 4 range. (Thus, despite employing a majority of Australian workers the majority of businesses are classified as non-employing.[1])

Non-employing businesses have demand drivers similar to employing businesses – eg. payroll simplification, accounting and invoicing, collaboration – albeit on a smaller scale. Targeting this segment of business is crucial for SME specific growth with so many individuals working across the segment.

ICT Market Access

The vast majority of SMEs, some 87% as of 2013, use some form of mobile device for their business. Laptops and smart phones are the most common devices although younger business owners prefer tablets over laptops. According to Rich Walker, Intuit Australia director of accountant strategy, this huge mobile penetration is already creating a trend towards cloud computing, "*Whether it's for accepting payments online, doing their books and finances, communicating with customers by email or selling goods and services through a website, small businesses are hungry for the flexibility.*" [2]

Broadband penetration in the SME community is nearly absolute. According to the ACMA, 87% of SMEs use a broadband connection as their primary Internet connection. Nevertheless, according to OECD reports, Australian broadband is among the developed worlds' slowest and most expensive.[3]

Table 8: Cloud Computing Adoption Drivers by Market

	Broadband Internet	Wireless[4]	Mobile Devices
Total number	12,192,000	25,795,000	31,090,000
% penetration	98.00%	83.00%	132.10%

Source:
ABS Cat. No. 8165.0, "Counts of Australian Businesses, including Entries and Exits , Jun 2009 to Jun 2013"

[1] It is important to note what a non-employing business is and why it is included in this report. Non-employing businesses must still be "actively trading" under the definitions of the ABS to be counted like all other businesses. Actively trading businesses must have an Australian Business Number (ABN) and be remitting some amount for their Goods and Services Tax (GST) or must be monitored directly by the ABS, which then makes the determination of actively trading directly. Businesses counted in the ABS census can be any legal organization: corporation, single proprietors, partnerships, etc. Department of Innovation, Industry, Science and Research, (2011).

[2] Redrup, Y. (2013, Jun 14). Small business owners wasting time on administrative tasks, research finds.

[3] Best, J. (2007, Jul 07). Australian broadband among world's worst: OECD.

[4] Including mobile handsets and wireless devices such as dongles

To mitigate the problem the Australian Government has undertaken the National Broadband Network (NBN), a national open access data network. The roll-out of fibre optic cable to 93% of Australian premises has enormous potential to reduce costs and increase connection speeds in the long run.

Market Characteristics

Despite immense natural resources for mining, Australia's economy is dominated by services industries like many other developed countries. About 70% of GDP comes from services, with industry (including mining) at about 26% and agriculture at 4%. In terms of industry value-add the top contributors from the services sector in 2013 were construction, professional and technical services, and retail trade, the latter being skewed particularly by large business (Table 4).

Table 9: Top GDP Contributors vs SME Contribution

Industry	Industry Value Add (AUD mill)	% SME contribution
Construction	73,394	13.20%
Professional, Scientific, Technical	73,397	13.20%
Rental, Hiring, Real Estate Services	53,680	9.70%
Retail Trade	41,141	7.40%

Source:
ABS Cat. No. 8155,0, "Australian Industry 2012-13"

Composition of SME Market

In Australia, 83.2% of SMEs' industry value added is in the services sector, compared to 8.5% in manufacturing, 4.6% in agriculture and 3.8% in mining. The Australian SME market is a highly competitive environment where increases in productivity, savings and innovation are necessary to survive. In such an environment SMEs either do, or can be encouraged to, look to ICT for a necessary competitive edge.

For example, small business owners spend one-third of their time with administrative tasks instead of the core of their business: recording transactions, completing Business Activity Statements (BAS) and tax reporting, or paying bills and wages. These are the most time-consuming tasks for business owners.[5] Online services and apps that streamline administrative tasks appear therefore to have a captive market to address – if they are presented and marketed correctly.

[5] Redrup, Y. (2013, Jun 14). Small business owners wasting time on administrative tasks, research finds. Smart Company

The leading edge of cloud computing is marketed at large enterprises and, to a lesser degree, mid-sized firms – more technologically savvy firms or firms that deal directly with IT (such as software companies or consulting firms). But micro-businesses have IT needs like any other business, this is especially true in the DIY culture of Australian business and even more particularly for those micro-businesses that are predominantly, if not entirely, Internet-based: eg. web design companies, game or application companies, dating and HR business, online retail operations (flowers takeaway food), and so on. One of the challenges facing cloud computing in Australia is approaching the problems of micro-businesses and presenting solutions in an understandable and trustworthy fashion that alleviates the administrative burden faced by proprietors, rather than increasing the burden in the first instance. The solution needs to be intuitive from the start.

But, with small operations, one eye will always be on the bottom line meaning that appealing to a revenue increase mentality – greater market reach, greater marketing, greater customer stickiness, greater partner lock in – will necessarily have greater resonance. (Only 2.4% of SMEs are mid-sized businesses – those that grow either get big or get out; there is not a strong representation of mid-sized businesses in Australia.)

However, despite some homogenous drivers, it is important to recognize the differences that exist between services sectors when it comes to ICT uptake. And SMEs in Australia are spread across a number of different industrial sectors and employment levels.

Industries Most Likely to Adopt Cloud Computing Solutions

Australia is known to be an early adopter market when it comes to new technologies and several industries stand poised to play the role of lead early adopters such as the property and business services sector and the trade sector. But there is also one industry in particular that is likely implement cloud computing solutions based upon historical data and ICT uptake: financial and insurance services.

Financial and Insurance Services: Historically, businesses in this sector have consistently invested more in ICT solutions and more rapidly than any other sector, especially in periods of high ICT innovation. SMEs in this sector (as well as the Wholesale Trade, and Property and Business Services) were more likely to have computers in the office in 1996-7, with 70% of all such firms having computers, compared to other industries (average 40%). In 2000-01, financial and insurances services firms had the third highest computer and Internet penetration rates with 90% penetration in computer usage and 81% Internet penetration (as compared to a national average of 84% and 69% respectively).

The financial and insurance services sector in Australia is dominated by large firms, and firm size has been positively correlated with ICT uptake previously. However, cloud computing, particularly when coupled with the massive uptake in mobile technologies and social media, stands to challenge this pattern. Of larger concern is the limitations being imposed on the

financial services sector by the regulator as regards the use of cloud computing. If these can be relaxed or addressed in such a way as to remove overt usage barriers, the sector stands to be a growth engine both for technology adoption in Australia and for the overall growth of the sector itself as more nimble and innovative companies will be able to use the tools enabled by the cloud to compete on far more equal footing.

Case Study 1: North West Finance and Microsoft Office 365

However, some very small firms do manage to make a profit in financial services. One business, North West Finance, has used cloud computing to improve its own businesses processes. North West Finance is a business that provides mortgage broking and lending advice for rural and agri-business clients. Most of their time is spent on the road, where being able to access essential applications and information away from the home office is important. The Microsoft Office 365 platform enabled the firm to consolidate its information and create a common platform for scheduling, emails, and collaborative productivity.

Property and business services: This sector has above average statistics for ICT penetration: In 2000-1, this sector had a 93% penetration rate for computers (second highest among selected industries), 85% penetration rate for Internet use, and 25% for Web use. Moreover, the sector shares many businesses and business processes with the real estate and professional services sectors.

In addition to standard real estate services – buying, selling and hiring of property and related services – this sector also includes a major intellectual property right component for the leasing of patents, trademarks, and copyrights.

Case Study 2: Mercurial and OpenStack

Business intelligence consultancy, Mercurial, deals with issues as various as compliance to marketing. Processing large amounts of data is essential for the firm's business and decision support. Using an OpenStack-based cloud, the firm now has data reporting and analysis fully automated, saving the company "tens of thousands of dollars".

Professional, Scientific and Technical Services: Some 56.6% of PST firms have an Internet presence, 23.5% have a social media presence, and 28.3% of firms received an order over the Internet. These overall numbers seem low considering that Professional, Scientific, and Technical (PST) services increased its employment figures by about 80,000 people or 8.7% in the 2011-12 annual period. That increase is the largest sector-wide employment increase.

This sector covers a wide array of fields across areas where capital can be significant due to heavy investments in education or training. Many of these fields are also creative and benefit enormously from collaboration. Anything enabling such collaboration – affordably, intuitively, and in a manner that is not immediately disruptive to existing process – stands to gain substantial and rapid traction. Cloud computing offers the sector innovative abilities to, for example, design on canvas or write on the same document – anywhere, any time. It can enable musicians to perform, remotely, in real time. And so on.

Case Study 3: SDE Accountants and Telstra's Cloud Solution

Using Telstra's IaaS-based solution, SDE Accountants estimates that it has saved 100 work hours per employee per year. SDE Accountants is a good example of how cloud computing can help a firm in this sector. SDE Accountants provides public accounting, taxation, superannuation and financial services to individuals and businesses, and by basing themselves off the Telstra Cloud solution, the firm has dramatically increased mobility and productivity by working more at the client's premises and less in the office.

Wholesale and Retail Trade: Wholesale trade, although it does not have a high representation of SMEs, has a higher chance of adopting cloud computing than average. Wholesale trade had the third highest investment rates for IT. Computer, Internet, and web penetration was also higher than average for selected industries.

Wholesalers are inherently businesses that work with other businesses – retailers. 66.1% of income in the wholesale sector comes from small and medium sized organizations and only 19.20% of income comes from the general public. Building and maintaining relationships with a smaller number of other organizations is important. The wholesale sector also has a larger than average amount of sales coming from abroad. 22.4% of wholesale income comes from overseas sources.

Case Study 4: Abyss Distribution and MYOB's EXO

Abyss Distribution is an importer and wholesaler of skate equipment. The firm was successful and data management became a barrier to further growth. The business looked to cloud computing to help reduce reporting errors and invoice faster. The business chose MYOB's EXO and was able to accomplish both goals, although not without extensive research and staff training.

Construction: The construction sector, writ large, is the sector with the largest representation of SMEs. Only 2.8% of Australian construction and construction-related firms provide any services outside of Australia, making construction the second most overseas averse sector behind administrative and healthcare services. Some 51% of construction-

related businesses do work outside of their local locations, with 14% providing services outside their state/territory but still within Australia. This data illustrates two important factors, many construction companies need data to bridge long distances between a central office and work site, and that construction companies very rarely need services related to overseas work.

Some sectoral characteristics are due to the market's large size: 72.5% of construction firms are directly competing with five or more competitors and there are large entry and exit rates. Despite the high level of competition, construction firms in general have not turned to the Internet for exposure or competitive advantage; 31.4% have a presence on the web; 7.5% have a social media presence, and 24.5% have received orders online. These statistics indicate that construction is one of the least Internet-using sectors in Australia. The low tech uptake presents both a challenge and opportunity to cloud computing services wishing to market to construction SMEs.

Case Study 5: Nu-Steel Homes and Salesforce

An example of a construction company seeing value in cloud computing is Nu-Steel Homes. This small business, a specialist in steel frame housing, found itself being overwhelmed by data from customer relations. Nu-Steel had a variety of processes that were at different locations, all with different information. A given lead could have 210 processes between interest in building a home and giving the new homeowner the keys. Nu-Steel used CRM software from Salesforce to create a centralized location where customer information could be gathered and analyzed. The firm subsequently decreased construction time by 10.00%, directly increasing profit levels.

SME Demand Drivers

Web presence, unlike broadband, is not widespread among SMEs. Only 34.1% of micro-businesses have a web presence; while the rate hits 57% for small businesses, and 75.7% for medium sized businesses. Web presence includes Facebook pages or eBay stores. Thus, with comparatively few SMEs yet 'online' there is both a large untapped potential in e-commerce, and a drag on the overall economy – i.e., if these businesses *were* online, the opportunity to further engage and drive business volume would be apparent.

Accessibility, flexibility and quality of service are the other key drivers of demand for cloud computing. Some 77% of small business owners in Australia say that being able to work remotely would be useful, thus creating more incentives for SMEs to take up cloud computing.

SME owners need to understand features, pricing and availability of cloud computing solutions in terms that they understand in order to feel secure in purchasing such services. The current cloud computing environment is steeped in jargon and the pricing and purchasing of services

can often be too complex. Table 10 below provides an overview of the costs of various cloud computing services across various platforms in Australia.

Comparative Pricing Index of Select SaaS, IaaS Solutions

Australia has a developed economy, with a high GDP per capita, tends to be an early technology adopter, and has many of the conditions that would help to drive broad consumption of cloud computing. With SaaS costs running as low as AUD120 pa – less than 0.2% of GDP per capita – and less than many monthly phone bills for SME entrepreneurs in Australia, the price points are extremely affordable; on this criteria the uptick in the consumption of SaaS solutions can be expected to continue and grow.

While the cost for PaaS and IaaS solutions are obviously higher, they still remain highly affordable as a business expense for the vast majority of relevant SMEs. However calculating the price for these solutions may prove to be an inhibiting challenge for SMEs, given the multiple configuration options provided by different service providers, and the lack of clarity or ease of use in coming to such calculations with any confidence. The multitude of options ensures the customer is fully able to select only what is required, hence saving money on unnecessary and unrequired components. However the multiple options also mean that the customer requires both technical understanding and proficiency to figure out exactly what the business requires – thereby mitigating the promise of not needing such skills in the first place.

The most common form of broadband connection used by SMEs is ADSL, with over 70% of SMEs choosing to do so, whereas of May 2013, only 2% of SMEs were connected to the National Broadband Network (NBN). Prices for Telstra's ADSL service range from AUD480 for a 10GB monthly data plan, to AUD3,360 for an unlimited plan. Most SMEs are unlikely to opt for an unlimited option, and a basic ADSL plan is about four times higher than that of the cheapest SaaS option. The cheapest NBN plan offered by Telstra is AUD720 a year for a 25GB monthly data plan. Prices for an IaaS solution may cost five to nearly 10 times more than the cheapest ADSL broadband option, and may be a challenge for lower income SMEs. However cloud computing solutions such as SaaS and IaaS are still attractive and affordable options for most SMEs.

Table 10: SaaS (per User, pa)

	Google Apps for Business with Vault	**Office 365 Small Business Premium**	**Salesforce Sales Cloud (Enterprise)**
Cost	AUD120 (USD113)	AUD162 (USD152)	AUD2,160 (USD2,029)
Cost (as % of GDP/capita)	0.18%	0.24%	3.20%

Table 11: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure[6]	Amazon Virtual Cloud (EC2)[7]	Salesforce Service Cloud (Enterprise)	Cloud Central Cloud Servers[8]
Cost	AUD5,193 (USD4,908)	AUD3,325 (USD3,120)	AUD2,340 (USD2,195)	AUD3,171 (USD2,973)
Cost (as % of GDP/capita)	7.70%	4.90%	3.50%	4.70%

Existing Government Programmes

There are a number of government plans with focused scope around cloud and ICT deployment, including the National Cloud Computing Strategy (see: www.communications.gov.au); the purpose of which is for: *"Australian small businesses, not-for-profit organisations and consumers (to) have the protection and tools they need to acquire cloud services with confidence."*

The most recent macro-level plan to encourage ICT adoption in business is the National Digital Economy Strategy. One of the main themes of the National Digital Economy is to realise the benefits of the NBN; a national infrastructure project that is to promote cheaper and easier access to faster broadband. The plan also includes goals for increasing productivity and job growth through ICT competence and Internet engagement. A number of the initiatives for SMEs to realize the government's macro goals are outlined in Table 12.

[6] The price estimated was calculated based on a selection of standard XS/S options for a Windows Virtual Machine, website and SQL standard XS server and database.

[7] Price estimated on a selection of Windows and Std. SQL Server on m3.medium

[8] Price estimated on a selection of Standard Cloud Servers (Medium CPU) and Microsoft SQL server standard edition

Table 12: Government Policies, Programmes and Initiatives for SMEs

Programme	Summary	Benefit to SMEs
Digital Enterprise	The AUD10 million initiative assists SMEs in local communities to benefit from the NBN.	Provides SMEs with group training seminars and one-on-one advice on using the NBN to exploit online opportunities and enhance their businesses. Offered to 40 communities first benefitting from the NBN.
National ICT Australia	NICTA collaborates with SMEs to create research products to address ICT challenges facing industry, community and national interest.	NICTA makes fundamental advances in ICT that can improve and bring down the costs of ICT used by SMEs.
Supplier Advocate Programmes	Provide leadership and coordination to improve SME competitiveness in targeted sectors.	Examples include CeBIT Sydney where a group of SMEs exhibit as members of the Australian Government pavilion to showcase solutions. Targeted sectors include: IT, Clean Technologies, Water.
Innovation Investment Fund	Ongoing VC programme to assist early stage companies to commercialize research.	Start-up businesses supported under IIF have access to capital and managerial expertise to assist in commercialising innovation.
Enterprise Connect	Designed to help develop competitiveness by improving knowledge tools and skills.	Programme consists of experienced business advisers and facilitators, and offers up to AUD20,000 in matching funding to help firms implement advice. Only eligible to firms with at least AUD1.5 million in revenue and 100 employees.
Australian Small Business Commissioner	Provides information, advice, advocacy and representation of small business interests.	Provides information and assistance to small businesses, including referral to dispute resolution services.
Early-Stage VC Partnerships Programme	Provides tax incentives with returns on investments being tax exempt, both domestic and foreign.	Early stage Australian businesses looking to fund growth able to access capital from ESVCLP funds, if total assets no more than AUD50 million and primary activity is not finance or property.
Small Business Support Line	Provides small business owners with access to information and referral services to improve sustainability.	Provides assistance on matters such as business start-up information, banking, finance, accounting, marketing, advertising and small business counseling.

SME Associations

The Small Business Division of the Department of Industry, Innovation, Climate Change, Science, Research, and Tertiary Education acts as the most formal channel between government and the small business community (www.innovation.gov.au/smallbusiness/). The small business division of the department is seen as having continuity problems; there have been six small business ministers in the past five years. Critics have stated that small business will get even less attention now, given the division includes additional tourism and resources responsibilities.

There are a number of SME associations acting outside of government, including the:

- ***SME Association of Australia*** www.smeaustralia.asn.au; and
- ***Small Enterprise Association of Australia and New Zealand*** (SEAANZ) www.seaanz.org, that lobby through government partners as well.

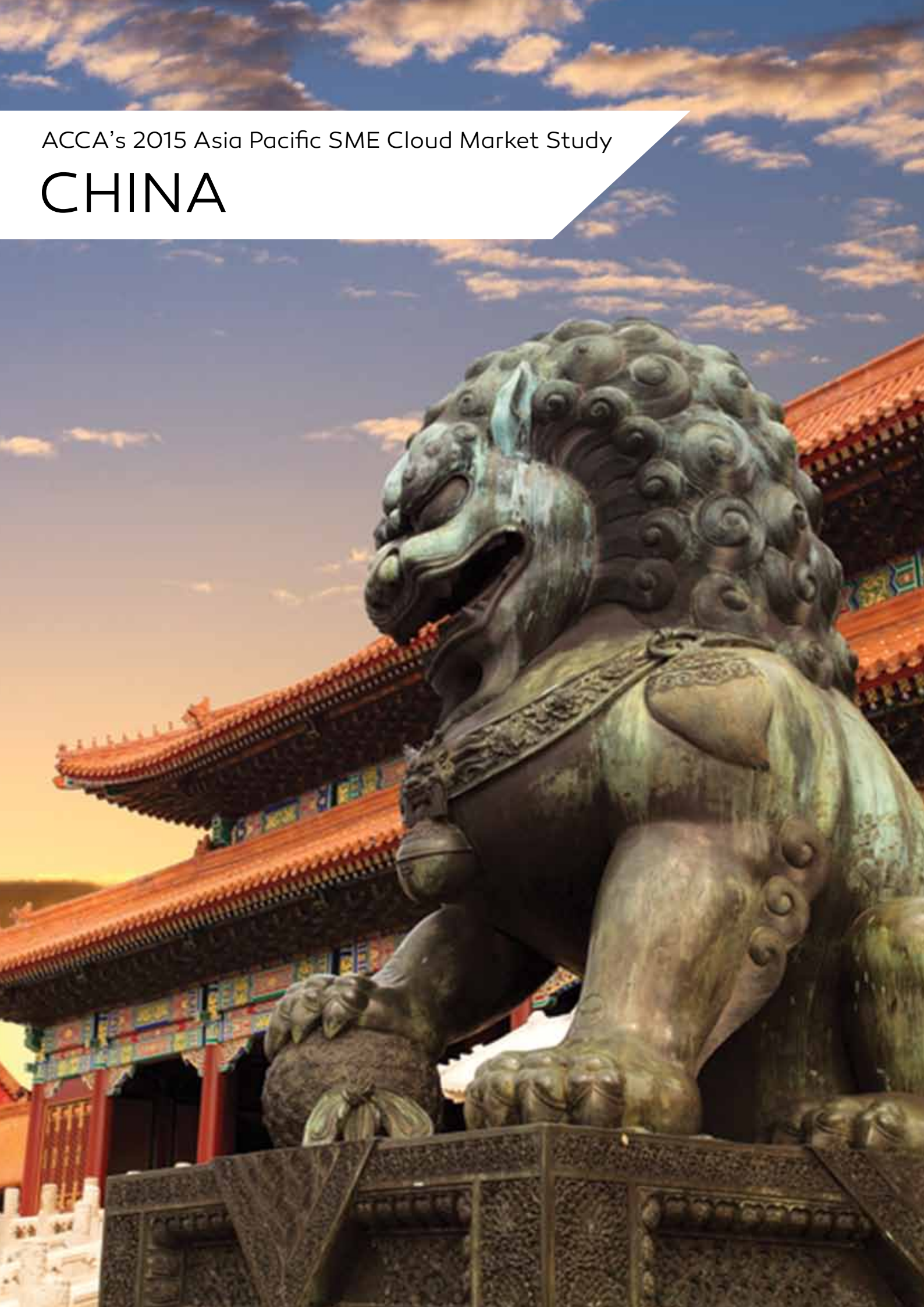
Financing Support for SMEs

There are a little over 400 government business grant programmes searchable from the Grant and Assistance Finder: www.business.gov.au/Grantfinder/Grantfinder.aspx. The Australian government has set aside about AUD48.25 million to fund 37 Business Enterprise Centres for those business grants. The government financing programmes change year to year, and are specific to each individual business. To help navigate government financial support programmes the SME Association of Australia provides free advisory services through the Pattens Group. A full list of grant programmes can be found at: www.smeaustralia.asn.au/sitebuilder/resources/knowledge/asset/files/24/grantssummary1nov2011.pdf

There are also a number of incubator programmes for Australian start-ups. A full list of incubator programmes can be found here: www.blog.thefetch.com/startup-incubators-and-accelerators-in-australia/.

ACCA's 2015 Asia Pacific SME Cloud Market Study

CHINA



CHINA
Executive Summary

The number of SMEs in China has risen rapidly in recent years. They are recognized to play an important role in boosting economic growth and employment. With over 40 million SMEs, accounting for 99.7% of enterprises in China, 85% of employment and 60% of GDP, SMEs play a crucial role in driving economic growth in China.

Chinese SMEs would like to enjoy the cost savings and efficiency enhancements offered by cloud computing technologies, yet they remain concerned about 'stability' since cloud computing as an application is at a very early stage in China and costs still remain high. The growth in the number of SMEs and wider Internet access will help fuel the growth of the cloud computing market. According to one estimate, the mainland SME cloud services market will hit CNY33.8 billion in 2016.

The Chinese government at various levels pays close attention to cloud computing, not least to enhance pubic services efficiency and capability and save administrative cost. It is within this context that the Ministry of Industry and Information Technology (MIIT) released a *Design Guideline on top-notch platform for cloud–based E-government services*, and the State Council releasing the *Guiding Opinions for Promoting the Innovation and Development of Cloud Computing to Cultivate New Types of Information Industry Services* in January 2015.[9] In the 12th five-year plan, the government intends to devote significant resources to utilise the strengths of cloud computing. Currently, there are established G-cloud centres in Beijing, Shanghai, Chengdu, Hangzhou, and elsewhere, and growth has been at an exponential rate.[10]

Outside of government, the **manufacturing**, **information transmission**, **computer services and software industry**, and the **wholesale and retail industry**, have been identified as industries most likely to adopt cloud computing in China.

[9] Fujian Economic and Information Technology Commission, "MIIT cloud based e-government public platform design guide"

[10] China Cloud, "Research on China's G-cloud application strategy 2012"

1. **Manufacturing**: Enterprises in this industry already demonstrate high usage rates of online sales and e-procurement activities. The next step towards adopting cloud solutions will be a natural one, as manufacturing SMEs look to focus their operations on their core business, and outsource their IT requirements.

2. **Information transmission, computer services and software industry**: This industry has the most affinity with cloud solutions. China is now the home to many global Internet companies, manufacturers, and service providers. SMEs in this industry will be adopting cloud solutions to keep up to date with the market, and leverage the cloud to remain competitive.

3. **Wholesale and retail industry**: The explosion of the e-commerce marketplace such as Taobao and JD.com has made it possible for anyone to now become an entrepreneur. SMEs in this industry are well positioned to take advantage of the Internet, with increasingly affordable devices and broadband connections.

With government support for SMEs, cloud computing, and a thriving Internet environment, China's SMEs both represent and stand to benefit from a huge opportunity emerging for the adoption of cloud computing. However, stumbling blocks still exist in the form of high costs, and uncertainty and concerns over the stability and security of cloud computing.

Market Size

SMEs account for 99.7% of the country's enterprises, numbering in excess of 40 million entities, accounting for more than 85% of employment and producing 60% of China's GDP.[11] Thus the number of employees working at SMEs totals more than 651 million and SMEs as a whole contribute around USD5.54 trillion to the Chinese economy (Table 13). China's SMEs also

Table 13: China's SME Figures

	Companies		Employees		Contribution to GDP
	No.	%	No.	%	%
2011-12	39,053,000	98.0%	649,570,000	85.0%	58.5%
2012-13	40,478,200	99.7%	651,984,000	85.0%	60.0%

Source:
Ministry of Commerce, "Small and Medium size enterprise", 2012
Sina, "Ma: SMEs account for over 98% of Chinese Enterprises", 2012
National Bureau of Statistics, "China Statistical Yearbook 2013"

[11] SME numbers are aggregated based on statistics from ministerial speeches and announcements and from the National Bureau of Statistics.

contribute 50% of tax revenue, 75% of new products and 65% of patents each year and play a significant role in the economic development of China. SMEs were only permitted to exist after 1988, and have contributed greatly to China's economic growth through investments in fixed assets, generating exports and promoting the adoption of technology.

SME Definition

Small- and micro-sized enterprises in China are defined in accordance with the Notice of the Ministry of Industry and Information Technology, the National Bureau of Statistics, the National Development and Reform Commission and the Ministry of Finance on Issuing the Provisions on the Classification Standards for Small and Medium-sized Enterprises (No. 300 (2011) of the Ministry of Industry and Information Technology).

The definition of an SME in China depends on industry category and is then defined based on the number of employees, annual revenues, and total assets. An industrial SME is roughly defined as having up to 1,000 employees; a medium-sized business has between 301 and 1,000 employees; while a small business has less than 300 employees, however there are different specific standards for different industries (Table 14). Consequently, what is regarded as an SME in China may be quite large relative to an SME in other countries.

Table 14: SME Definitions

Category	Industry	No. of Employees	Operating Revenue (CNY)
Small	Construction	< 300	< 60 million
	Wholesale	< 20	< 50 million
	Retail	< 50	< 50 million
	Transport	< 300	< 30 million
	Post	< 300	< 20 million
	Hotel	< 100	< 20 million
	Information transmission	< 100	< 10 million
	Software and IT services	< 100	< 10 million
Medium	Construction	300 - 1000	< 800 million
	Wholesale	20 - 200	< 400 million
	Retail	50 - 300	< 200 million
	Transport	300 - 1000	< 300 million
	Post	300 - 1000	< 300 million
	Hotel	100 - 300	< 100 million
	Information transmission	100 - 2000	< 1 billion
	Software and IT services	100 - 300	<100 million

Source:
Central People's Government of the PRC, "Notice on New Industry Standards for SMEs"

Table 15: China Infocomm Statistics

	Mobile	Fixed Broadband	Broadband Wireless
	2013	2013	2013
Total number	1,229,113,000	188,909,000	50,006,000
% penetration	88.7%	13.6%	37.1%

Source:
China Internet Network Information Center, "Statistical Report on Internet Development in China", 2014
ITU, "Time Series by Country", 2013

By the end of 2013, Internet penetration in China was 45.8%, with a total of 618 million Internet users. Wireless broadband access accounts had a greater penetration rate of 37.1% compared to fixed broadband at 13.6% for every 100 users. Fixed broadband was the most popular form of access among all enterprises, accounting for 79.6% of access, followed by narrowband at 20.8%.

Broadband penetration is set to further increase as the MIIT continues its "Broadband China" developmental drive. The MIIT has targeted a goal of 50% fixed broadband penetration in 2015, 32.5% penetration for 3G and LTE services, and improved broadband speeds and access to both urban and rural areas.

In August 2013, the State Council issued a "Broadband China Strategy and Implementation Plan", spearheaded by the MIIT. The plan was set forth to drive broadband adoption, increase coverage and speeds, and outlined goals until 2020. The continuous push by the MIIT, and construction to expand broadband networks will encourage SMEs, to make use of the Internet for e-commerce, Internet marketing and further cloud adoption.

With a proliferation of local brands and manufacturers, and inexpensive low-end models of feature and smartphones, the number of mobile users in China has been rapidly growing, reaching a penetration rate of 88.7%. This has led to an increased use of mobile phones, rather than desktop or notebook computers, to access the Internet. Thus the mobile space has increasingly become the battlefield of choice for Chinese Internet companies, especially the BAT giants of Baidu, Alibaba and Tencent, as they roll out multiple apps and offerings for mobile. This has led to a competitive arena, with each company relentlessly launching innovative products and services, integrated to their key lines of business.

China officially entered the 4G era with the issuance of home-grown TD-LTE licenses at the end of 2013, which is set to further increase competition in the mobile space. Digital consumption,

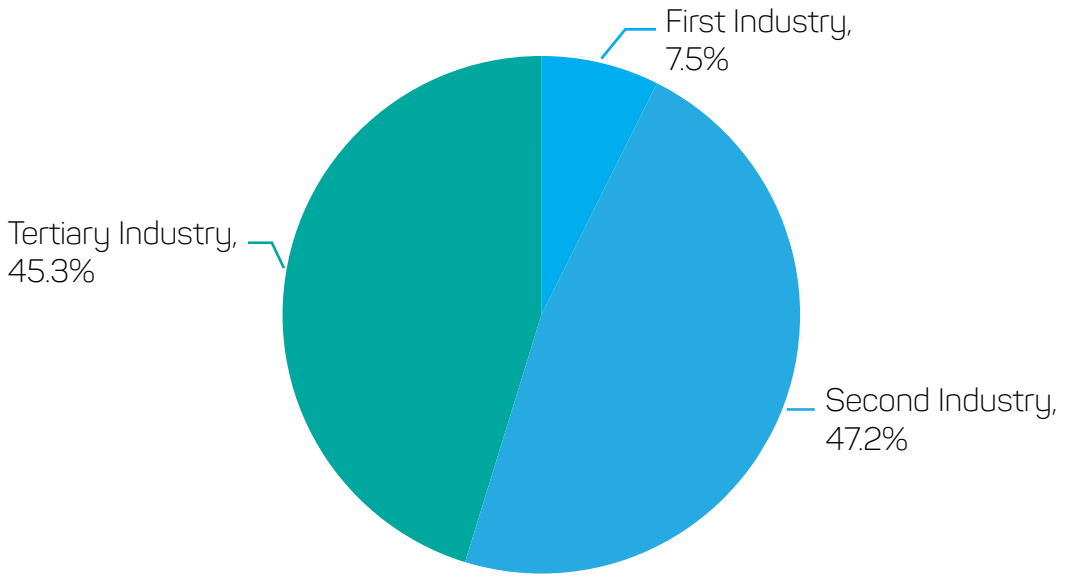
including cloud apps and services, are well set to increase as devices and access become increasingly affordable and fast, and services and apps become increasingly integrated and innovative.

Market Characteristics

China's economy is segmented into 19 categories (Table 16). The respective contributions to GDP of agriculture, industry and construction (including mining and quarrying, manufacturing, electricity, gas, water production and supply industry); and, then all other industry is shown in Figure 3.

While the SME sector plays a very important role in the Chinese economy, SMEs encompass an extraordinarily large and diverse group of businesses. Effectively, SMEs sit on two extreme sides: labour intensive vs. nimble and high-tech. Moreover, the development of SMEs is nowhere and in no way evenly distributed nationally. That said, the majority of SMEs are clustered along the eastern seaboard. Recent state data shows that SMEs in eastern provinces account for 61.6% of total SMEs, central province SMEs account for 22.24%, while western provinces SMEs contribute only around 16.16% - but this has as much to do with relative population density in many cases, as it does with economic development or scale.

Figure 3: GDP Contribution by Sector



Source:
Sina, "NDRC introduction of policy for H2"

Table 16: Types of Economic Activity

First Industry	Agriculture, forestry, animal husbandry, and fishery
Second Industry	Mining
	Manufacturing
	Electricity, gas and water
	Construction
Tertiary Industry	Transport, storage, and post
	Info transmission, computer services and software
	Wholesale and retail trades
	Hotels and catering services
	Financial intermediation
	Real estate
	Leasing and business services
	Sci research, technical services, geologic prospecting
	Water conservancy, environment and public facilities
	Services to households and other services
	Education
	Health, social security and social welfare
	Culture, sports and entertainment
	Public management and social organizations

Source:
National Bureau of Statistics

Composition of SME Market

China's SME market is characterised by huge numbers of enterprises, extreme diversity, and wide distribution and heterogeneity across all types of industries and ways of functioning. SME numbers have been growing fastest in primary and tertiary industries and also along the eastern seaboard and through the center of the country. The majority of SMEs in China are in production and processing (46%) – by far the largest economic activity that SMEs in China engage in. The second major economic activity is retail and wholesale distribution (38%).

Most Chinese SMEs are clustered into traditional labour-intensive industries with limited size, financial support and outdated technologies. At the same time, high-tech SMEs have enjoyed

comparatively rapid and sustainable development over the past decade. By the end of 2011, 82.60% of high-tech enterprises in China were SMEs, residing in one of the national or provincial science parks or high-tech industrial parks.

Industries Most Likely to Adopt Cloud Computing Solutions

Many Chinese SMEs would like to take advantages of the cost savings and efficiency enhancements enabled by cloud computing technologies, but at the same time, they remain concerned about 'stability' since cloud computing as an application is at a very early stage in China. The growth in the number of SMEs and wider Internet access will fuel the growth of the cloud computing market. The mainland SME cloud services market is forecast to reach CNY33.8 billion in 2016, according to Parallels.

For these reasons, the **manufacturing**, **information transmission**, **computer services and software industry,** and the **wholesale and retail industry**, will drive cloud computing in the immediate future in China.

Manufacturing: The manufacturing industry contributes almost a quarter of GDP to the country, and SMEs in the manufacturing sector have the highest proportions using online sales, and carrying out online procurement. This implies that SMEs involved in manufacturing are not only interested, but also actively involved in using technology and the Internet as part of their business operations. Presently, many SMEs may lack the capabilities of R&D, operating management, and coordination of the industrial chain. Transitioning towards adopting cloud should be the next step for manufacturers looking to cut costs, improve business processes, and increase revenue with minimal IT infrastructure investment.

While the majority of manufacturing operations are low-cost, labour intensive, involved in low-end production, there still remains tremendous opportunity to use applications such as manufacturing cloud ERP. These could range from basic services such as improving communications with customers, to advanced services such as keeping track of quotes and inventory.

Case Study 6: Shanghai CHILO Press Company and Windows Cloud Platform
Shanghai CHILO Press Company, a manufacturer of iron core motors implemented an inventory management system, where devices were fitted with barcode scanners and wireless receive access points were fitted throughout the plants. This allowed employees to collect and automatically transmit data to the back-end ERP system in real time. This helped CHILO reduce error rates from 50% to 4% and convert a CNY600,000 inventory loss to a CNY1 million profit within six months.

Information transmission, computer services and software: SMEs in this industry are likely to have the most affinity with technology development and, in many cases, are likely to already be using some form of cloud technology. China has not only emerged as an exporting and

manufacturing heavyweight in recent years, but also home to many innovative online services, including those from giants Alibaba and Tencent. And while these enterprises are not SMEs, many SMEs play significant roles in the supply chain for these enterprises, or are thriving within the ecosystem created around these mega- and increasingly global enterprises. The technological advancements of these bigger companies will also rollover to the smaller firms, which will be anxious to keep pace with the market, and stay abreast of latest trends.

Case Study 7: Kingnet Technology and Amazon EC2

Kingnet Technology is a startup company that develops social network games worldwide and has about 100 employees. As Kingnet expanded its user base from local social networks to other global social networks, it would need to upgrade its infrastructure to support an estimated 30 million installations and 6 million daily active users. Kingnet chose to adopt Amazon's EC2 rather than upgrade its own existing infrastructure as the flexibility and on-demand ability of the cloud service meant that it could adjust capacity as and when was required. Thus Kingnet was able to save both the cost of the infrastructure investment, and pay only for the computing capacity when required.

Wholesale and retail: Following manufacturing, this industry has the highest proportion of enterprises carrying out online sales, and online procurement. This is not surprising with the prevalence of e-commerce platforms such as Alibaba's Taobao and Jingdong Mall, which make it extremely easy for SMEs to set up virtual stores, be it for B2B, B2C or C2C transactions. The barriers of entry to setting up an online storefront are close to zero, where business owners need not worry about the technical aspects with the platforms taking care of payment, marketing, traffic, and day-to-day running of the website. Some platforms, such as Amazon and 360.com have partnered up with convenience stores to offer pick-up services to allow customers to pick up goods according to their own schedule.

To leverage the benefits of e-commerce, and online procurement, SMEs will need as the most basic requirements: a device, and Internet connection, which fulfils the basic requirements for cloud adoption. SMEs may then be able to adopt other simple cloud solutions such as POS and CRM. This will allow them to save on hardware and infrastructure costs, allowing them to remain competitive.

Case Study 8: Clarins and Demandware e-commerce Cloud

Clarins wanted to launch an e-commerce site in China to expand its offerings of lotions and potions to the Chinese consumer market. Clarins adopted a SaaS e-commerce platform from Demandware so it could focus on other features such as its loyalty programme, and not have to worry about the day-to-day technical operation of the system. Hosting its e-commerce platform on the cloud allows Clarins to easily handle company traffic, particularly during holidays and promotions when traffic surges.

SME Demand Drivers

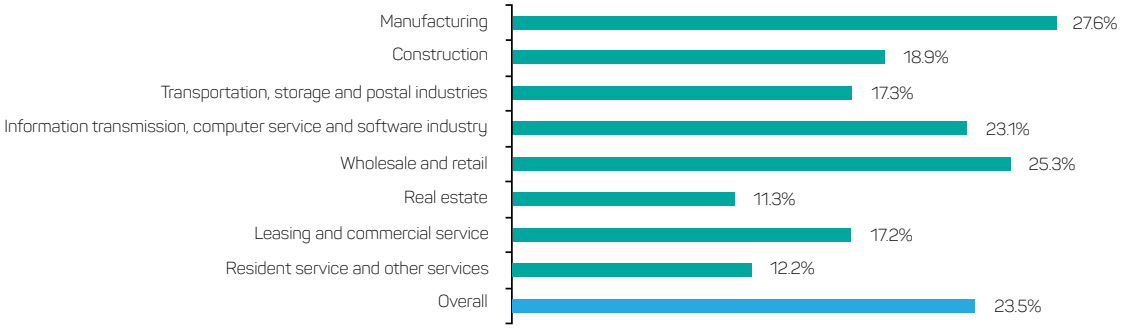
At the end of 2013, 93.1% of enterprises had experience using computers, with 83.2% using the Internet for their business needs. Fixed broadband was the most popular form of Internet access, accounting for 79.6% of access. The Internet was used for a variety of services, including online sales and procurement, marketing, promotion, and liaising with suppliers and customers. Micro-enterprises consistently had the lowest computer utilization ratio, and Internet utilization ratio, at 83.5% and 68.8% respectively.

The Chinese web presence market has grown to CNY1.97 billion, where 35% of SMEs today have a company website, 75% of which are hosted by a third-party.[12] Different industries will have different ambitions and expectations for using the Internet, be it for online sales, marketing, online procurement or others. However, as Internet coverage increases, more SMEs are seeing the benefit in utilizing the Internet to extend their reach, to both local and global markets.

With limited marketing and promotion costs, SMEs are likely to choose inexpensive solutions with a wider reach. Most SMEs in China encounter issues such as technology upgrading, saving costs and improving productivity. Adopting cloud computing can meet their demand, which will drive them to embrace cloud computing. At the same time, policy encouragement from various levels of government will be another stimulus.

Many cloud solutions also now offer free trials, which help provide the first introduction to cloud to SMEs. 93% of SMEs ultimately purchased an online business app after first trying it as part of a free trial, or within a freemium model context. SMEs are three to four times more likely to upgrade after a free trial to a paid version, than to upgrade from a freemium model.

Figure 4: Proportion of Enterprises Carrying Out Online Sales in Key Industries



Source:
CNNIC, "Survey on Internet Application by Enterprise in China in H2 2013"

[12] Parallels, "Parallels SMB Cloud Insights for China 2013"

Government policies are very pro-SME. People in China are very aspirational and creative. Trust and word of mouth play a big role in purchasing decision making. But the vast majority of SMEs are relatively short-lived, with an average life span of 2.5 years.[13] Thus, utilising high-technology to stand out amongst the competition is one strong angle – both for the customer and for the vendor promoting the opportunity. Purchasing behaviours among SMES are still very conservative. Due to limited budget, few SMEs outsource their procurement, and most are still used to payment upon products/services to keep abreast with the fierce competition.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Currently, in China, due to policy restrictions, IT infrastructure limitations and limited Internet penetration, foreign cloud services providers such as Google Apps are largely unavailable as they have found it difficult to enter the market, and therefore are effectively beyond the access of most SMEs (even if they may be being used in some cases by larger or more innovative enterprises). Local cloud services such as Aliyun and Grand Cloud are at a nascent of development and application.

Despite its recent opening up to the global economy and emerging as a manufacturing and exporting powerhouse, China remains an emerging economy with a low GDP per capita. However, users are becoming increasingly savvy, with many accessing the Internet through their smartphones rather than through PCs. However despite increasingly having the means, and devices to access cloud services, the biggest barrier to adoption remains the costs of such services.

SaaS prices range from 0.7% for basic e-mail and office productivity solutions, to 22% for dearer CRM solutions. There exist many free e-mail solutions such as 189.cn, 163.com and QQ mailbox which SMEs may find sufficient for their businesses. Alternatives to office productivity software exist, such as local Kingsoft Office, which provides a free basic version. Tencent's Weiyun cloud storage client provides 10TB of cloud storage for free.

China GDP per capita: USD6,807 (2013)

Table 17: SaaS (per User pa)

	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)	Baiuhui Office
Cost	CNY960 (USD155)	CNY,9276 (USD1,500)	CNY299 (USD48)
Cost (as % of GDP/capita)	2.3%	22.0%	0.7%

[13] PWC report on average life span of Chinese SME

Table 18: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure[14]	Amazon Virtual Cloud (EC2)[15]	Red Hat Cloud Infrastructure[16]
Cost	CNY18,883 (USD3,056)	CNY19,439 (USD3,145)	CNY17,310 (USD2,799)
Cost (as % of GDP/capita)	44.9%	46.2%	41.1%

The sheer cost of PaaS and IaaS solutions will put off many SMEs. IaaS solutions cost in excess of 40% of GDP per capita, which make them unattractive to many smaller SMEs. Even if business owners may be tempted to venture and experiment with such solutions, they require additional help to navigate through the maze of components and options each PaaS and IaaS offer requires. While service providers may provide technical help and advice, business owners are unlikely to feel comfortable paying for services they do not understand.

Compared to fixed-line broadband and mobile broadband prices which have fallen to CNY140 for a 10Mbps fixed-line broadband service, cloud solutions range from twice to almost 140 times that of a cloud solution.

While the SME market in China represents tremendous potential and opportunity for cloud solution providers, price ultimately remains the biggest barrier towards adoption.

Existing Government Programmes

In China, government policies are quite overtly pro-technology adoption by SMEs. The People's Republic of China SME Promotion Law , the Notice of State Council on Further Promotion of SME Development and the new 12th Five-Year Plan for SMEs released by MIIT all focus in on the significance of information and IT for the improvement and advancement of SMEs and encourage SMEs to embrace such technologies to improve productivity. The SME Promotion Law was enacted in January 2003, and laws the ground work for the legal rights and support for SMEs. The **National Platform for SME information** is the primary initial platform for enhancing the information and technology levels of SMEs.

[14] The price estimated was calculated based on a selection of standard XS/S options for a Windows Virtual Machine, standard cloud service, 1GB local redundant storage, 100MB SQL Database,

[15] Price estimated on a selection of Windows and Std. SQL Server on m3.medium

[16] Price estimated on a selection of Red Hat Cloud Infrastructure without unlimited Red Hat Enterprise Linux guests, 2 sockets and standard support

Ministry Responsible for SMEs

There are four administrative departments tasked to oversee the development of SMEs in China, namely the National Development and Reform Commission, China Coordination Center for Cooperation of SMEs with Foreign Countries, China Association for SMEs, and local SME departments in each province. The **ProSME Centre**, (formerly the International Cooperation Office for SME, and now affiliated to the MIIT) is responsible for promoting relevant laws, regulations and policies, conducting research on SME development and International cooperation projects for SMEs in China. At the provincial level the Bureau of SMES is in charge of overall supervision of SMEs. The objectives of the government agency is to provide overall guidance of SME development, promote development of SME policies in conjunction with interested parties, promote foreign exchange and cooperation, and improve the service system to solve any SME-related issues.

Beyond MIIT and the provincial level administration, there are a variety of associations coordinating SME-related issues, including the **Association for SMEs in China**, established in 2006, and under the supervision of the National Development and Reform Commission (NDRC). The association serves as a link between SMEs and government, and is focused on national information exchange, training, R&D support, and enhancing cooperation with foreign counterparts. (On this latter aspect, but more from an outward facing perspective, there is also the **China SME International Development Promotion Association**, a government association for promoting, enhancing and strengthening international exchange, and business for SMEs.) At the provincial level are the **SME Promotion Councils**, providing financing support, incubation, technology support and talent development.

Financing Support Plans for SMEs

There are numerous types of financing plans for SMEs, from the state government down to the provincial and local levels, and many of these include supporting foreign tie-ups with local ventures or various types of joint-ventures. At the central government level, for example, "*A Notice by the State Council on the Further Support of SMEs, especially the healthy development of small and micro enterprises*" provides a guide for systematically supporting SMEs, including the following excerpt: "E*xpand the scale of special funds… for SME arrangements focusing on technology innovation, structural adjustment and upgrade, credit guarantee and business development*".[17]

The government also requires financial institutions to improve the financing environment for SMEs, strengthen their support to SMEs in terms of enhanced credit and direct financing channels. It has likewise enjoined various types of venture capital to increase investments in SMEs by giving tax incentives.[18] For instance, in Haidian District, Beijing, a gathering place of

[17] Central People's Government of the PRC, "Central government to continue fiscal support policies for SMEs in 2013"

[18] Shenzhen SME Service Department, "Tax incentives polies for SMEs in China"

numerous high-tech start-ups, multi-level fund services are provided to incumbent enterprises. Bank loans, venture capital investment along with government support are provided to back up the emerging SMEs financially.[19] In 2013, policy reforms to assist SMEs resulted in the creation of small and private banks focused on servicing SMEs, and facilitating their ability to access credit. The state council also issued guidelines with eight measures to help SMEs, with an emphasis on developing new financial institutions and encouraging existing ones to develop more products geared at SMEs. The Ministry of Finance announced the "Administrative measures on the development fund for SMEs" in Apr 2013, which explicitly supports SMEs to cultivate and create their own brands. The Fund will provide SMEs support through three focuses: financial aid, subsidies for loan interest, and capital investment. The scope of the funds include (i) to promote the technological innovation of SMEs, (ii) to promote the energy-saving and emission reduction by SMEs, (iii) to strengthen the specialized cooperation between SMEs and backbone enterprises, (iv) to promote the industrial upgrading of SMEs, (v) to support the brand-building of SMEs, (vi) to improve the service environment for SMEs, and (vii) to support the establishment of the Guiding Fund for SMEs.[20]

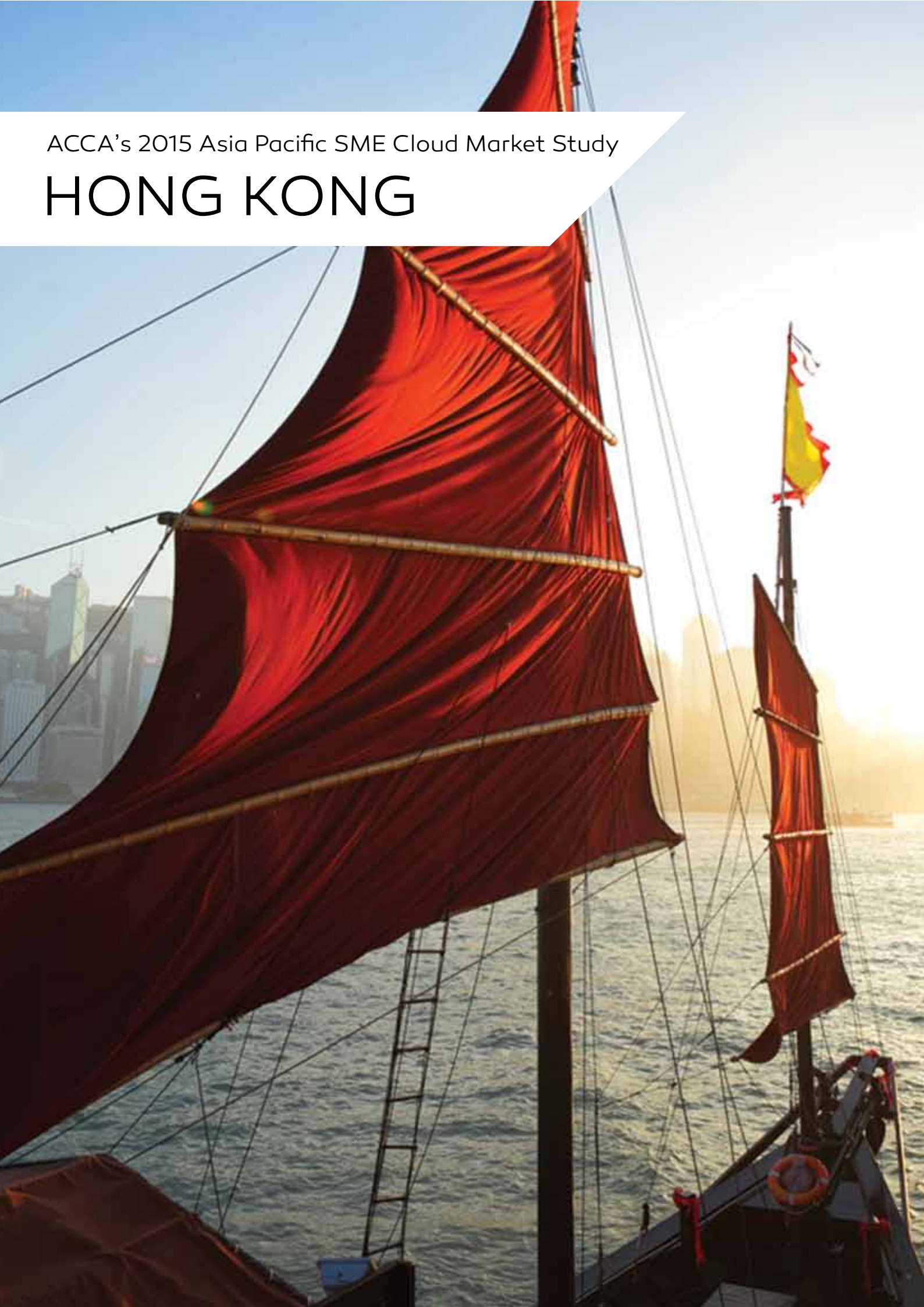
The state allocates funds to support SME development and spent a total of CNY26.8 billion from 1999 to 2013. This includes fiscal support to help enhance innovative capability, contribute to industrial upgrading and restructuring. The total also includes a fund set up to encourage the innovation of technology-intensive SMEs. The state has been gradually expanding the scale of such funds, to better support SMEs. The National SME development fund was raised to CNY11.5 billion in 2014.

[19] Government aid driving growth of SMEs in HSP

[20] Guiding Fund refers to venture capital funding raised by local governments to promote the development of SMEs in industry clusters with local characteristics.

ACCA's 2015 Asia Pacific SME Cloud Market Study

HONG KONG



HONG KONG
Executive Summary

Hong Kong is technically advanced and has approximately the same per capita gross domestic product (GDP) as the United States. The city serves as the gateway to mainland China as well as a hub for commerce and innovation. Mobile phones and broadband Internet are nearly ubiquitous in the population and connection speeds are among the best in the world.

There were a reported 316,432 SMEs in Hong Kong in March 2014 where they make up over 98% of all enterprises. SMEs employ between 34–55% of the active labour force. About 30% of SMEs are in commerce, including wholesale, retail and import/export, making it the most prevalent economic sector. The Hong Kong business community enjoys one of the most advanced IT infrastructures in the world.

Information and communications, real estate services, and commerce are the leading economic sectors for cloud adoption. About 30% of businesses in Information and communications use cloud computing, 14% for real estate, and 5% for commerce. Each of these sectors is data-heavy.

Reducing capex, not requiring IT upgrades and elastic capacity are leading demand drivers for cloud uptake. In addition, Hong Kong is unique in its limited land space, which creates a premium for storage space and forces firms to depend on international trade. As a result, there is a large potential for apps for inventory management and cloud solutions that can ease collaboration across national borders.

The government has created a number of support programmes for SMEs, including specific measures to promote cloud usage. The Expert Group on Cloud Computing Services and Standards (EGCCSS) is focused on the promotion of cloud solutions for SMEs in the Hong Kong

market. In terms of financial support, the government has committed about HKD40 billion pa in SME support schemes.

Market Size

There were 316,432 SMEs in Hong Kong as of March 2014, accounting for over 98% of the total business units, and employing some 1.3 million people, about 35% of all employed persons in the active labour force. The GDP was about HKD1.93 trillion in 2013, of which SMEs contributed 54% or about HKD1.04 trillion.

Table 19: Hong Kong SMEs by GDP and Number of Persons Engaged

	Enterprises	Employment/Engaged	GDP
Total	322,000	3,743,800	HKD1.93 trillion
SME contribution (absolute)	316,432	1,296,003	HKD1.04 trillion
SME contribution (%)	98.00%	35.00%	54.00%

Source:
Hong Kong Trade and Industry Department, (2013) "SMEs in Hong Kong"
CIA World Factbook, (2014)

SME Definition

The Hong Kong Government defines small and medium enterprises (SMEs) as manufacturing enterprises with fewer than 100 employees and non-manufacturing enterprises with fewer than 50 employees.

Persons engaged by SMEs are defined to include:

1. Individual proprietors, partners and persons having family ties with any of the proprietors or partners and working in the business unit without regular pay, who are actively engaged in the work of the business;

2. Full-time salaried personnel/employees directly paid by the business unit and working directors of limited companies, both permanent and temporary; and

3. Part-time employees and employees on night/irregular shifts.

ICT Market Access

In April 2014, the number of mobile service accounts in Hong Kong was 17,170,526, representing one of the highest penetration rates in the world at 238.6%. Among these accounts, 12,665,133 were 2.5G and 3G/4G service customers.

The number of wireless hotspots installed in Hong Kong were over 20,800 as of April 2014. Operators have been rolling out Wi-Fi hotspots rapidly.

There were also 2.23 million customers using fixed broadband services with speeds up to 1,000 Mbps. In the residential market, 84% of households are using fixed broadband service. Internationally, Hong Kong's fixed broadband penetration rate is among the highest in the world. The city is one of the world leaders in the deployment of FTTH technologies.

Although traditional Internet penetration is low compared to many industrialized nations, nearly all citizens of Hong Kong have Internet access in their household or on mobile phones. According to Charles Ng of Invest Hong Kong, the tech infrastructure and Hong Kong's easy access to markets like China make it "ideal place for companies to start their business and extend their networks globally." As a result, the amount of start-ups, largely tech businesses, has boomed in the past three years, 7,449 new businesses in 2013 alone. The young, more tech-oriented businesses are likely to increase the use of apps and cloud computing. One major issue with cloud in particular continues to be cybersecurity: a potentially growing threat to critical infrastructure.

Table 20: Hong Kong InfoComm Statistics

	Internet	Mobile	Broadband	Mobile Broadband
Date	2012	2014	2014	2014
Total number	5.2 million	17.22 million	2.23 million	12.37 million
% penetration	72.80%	238.60%	84.00%	171.40%

Source:
The Government of the Hong Kong Special Administrative Region "Hong Kong: The Facts" (2014)

Market Characteristics

Table 21: Breakdown by Industry of Hong Kong's SMEs, 2013

		No. of SMEs	People employed by SMEs
Total		308,630	1,271,207
Industry	Manufacturing	10,674	63,056
	Mining & Quarrying; Electricity & Gas Supply, and Waste Management; Construction	1,229	13,472
Services	Import/Export Trade and Wholesale	113,393	453,197
	Retail	45,656	144,326
	Transport, Storage, Postal, Courier Services	8,194	44,984
	Accommodation and Food Services	11,945	117,135
	Information and Communications	10,993	39,755
	Financing and Insurance	18,894	62,471
	Real Estate	12,349	35,314
	Professional and Business Services	39,077	144,112
	Social and Personal Services	36,226	153,385

Source:
Department of Trade and Industry, "SMEs in HK" (2013)

Hong Kong has a standard set of economic activities and, within these, the distribution of SMEs is as shown in Table 21.

Most SMEs are in the import/export trade and wholesale industries, followed by the retail industry. These sectors account for over 50% of SMEs in Hong Kong and represent about half of SME employment. The import/export and wholesale/retail and hospitality sectors represent 60% of total business units in Hong Kong and 28% of GDP.

The total value of trade in services in Hong Kong in 2012 was HKD1,439.5 billion. Hong Kong exported HKD990.1 billion worth of services, representing 48.5% of Hong Kong's GDP. Some 98.4% of the 300,782 enterprises engaged in the services sector are SMEs. Hong Kong's manufacturing enterprises are also mainly SMEs. Of the 10,897 manufacturing business units at the end of 2012, 98.8% were enterprises engaging fewer than 100 people.

Industries Most Likely to Adopt Cloud Computing Solutions

The top three industries likely to adopt cloud computing are:

Information and communications: This includes the production and distribution of information and cultural products, the means to transmit or distribute these products as well as data. Also included are broadcasting, communications and information technology activities, as well as the processing of data and other information service activities.

At 30.1%, this sector already has the largest percentage of establishments using cloud computing. The needs of this sector align well with the classic selling points of cloud computing. Many of these industry sectors have large data storage needs, cloud computing offers a chance to reduce how much that storage costs. Broadcasting, communications and many of areas in sector have complicated IT needs, cloud computing promises to reduce the cost of maintenance and building more IT infrastructure.

For telecoms in particular, being able to avoid disasters and maintain business continuity is a priority. 39% of enterprises surveyed in the IT usage and penetration in the business centre report said they would use cloud computing for disaster recovery/business continuity.

According to the statistics department, 18.4% of establishments over all sector cited a lack of personnel familiar with cloud computing as the leading reason not to use cloud computing. That barrier is far severe in the information and communications industry, because there is a larger percentage of "tech-savvy" workers.

Comba Telecom is one communications company that uses cloud. The company has over 30 offices in China and more than 40 offices throughout the Asia Pacific. Dealing with offices in different locations makes consolidating work difficult. Using SAP solutions 40 employees in the company can create monthly reports in a single format for the financial controller.

The Real Estate Activities industry: This includes buying, selling and renting real estate as well as relevant activities facilitating and leading to such transactions. Also included are real estate development and property management.

14.9%[21] of establishments in the Real Estate sector use computing in their business. This the second highest percentage for all business sectors (Information and Communications being the highest). Like the IT industry, Real Estate activities require large amounts of data handling, which requires infrastructure and storage.

The leading real estate websites, like gohome.com.hk, serve as examples of how much data goes into property transactions. Listings, area maps, lending options and agency information are a few of the requirements. Furthermore, those investing in real estate in Hong Kong require up -to-date transaction information to understand property values, much like a stock ticker.

Commerce: This Industry Section includes wholesale and retail sale (i.e. sale without transformation) of any type of goods, and rendering services incidental to the sale of merchandise. Wholesaling and retailing are the final steps in the distribution of merchandise. For Hong Kong this definition means a very high percentage of commerce firms engaged in import/export.

Unlike real estate and IT, Commerce has not yet embraced cloud computing. 4.7% of establishments use cloud computing as part of their business. Nevertheless, the Hong Kong commerce sector has two uncommon factors that would make the cloud appealing for business: its need to work with companies internationally, and its harsh logistical requirements.

With limited storage space, businesses are required to accurately predict demand or pay a hefty price for unsold inventory. Precision inventory management as well as sourcing suppliers abroad requires IT infrastructure and the right kind of software.

Case Study 9: Predictix and AWS

Predictix is a company that deals almost exclusively with the problem of inventory management for wholesalers and retailers, and the business uses AWS. The company outsources its data needs for a few reasons. For one it allows scalability, which lessens the cost of big data. It also allows the company to work with customers internationally. Predictix offers its services as a SaaS, between its successes as an inventory management company and its ability to work internationally the company epitomizes cloud service that Hong Kong commerce firms need.

[21] Other business activities, such as financial services, were also tallied in the same statistic which may skew the percentage for enterprises only engaged in real estate. The sectors are closely linked, however, because of the widespread use of real estate as an investment instrument.

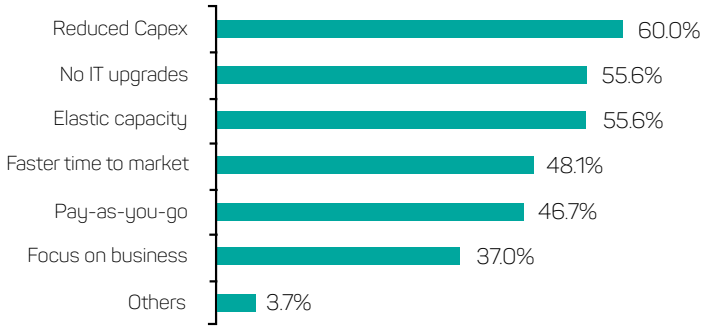
SME Demand Drivers

The Hong Kong Productivity Council undertook a survey to determine demand drivers for cloud computing services for SMEs in Hong Kong. The survey focused on particular industries: Retail/ Wholesale, Distribution, Manufacturing, Professional services, Banking/Finance, Education, Construction, Property Management (Figures 5-9).

According to the Hong Kong Government, different charging schemes for different kinds of cloud service models has had a confusing effect on the market, particularly on SMEs in terms of knowing what to purchase and in terms of providing both comparability and comfort. (IaaS are typically charged based on unit rates of allocated/used computing resources per unit of time; charging schemes for PaaS and SaaS of different service providers vary and are application specific.) As a result, the Government has begun advising users to: compare charging rates; understand charging details (e.g. unit of measurements, per allocation vs per usage, etc.); and consider exit arrangements (e.g. committed period/usage, cost of bringing out data and software licences) when procuring cloud services.[22]

Additionally, the Government found many people to be wary of using cloud services because of concerns about service outages, data loss, privacy issues, hacker compromising their access accounts, and compliance with legislation. IT savvy enterprises are likely to have skills and resources to monitor the service level of their service provider, assess the service provider's security compliance, or implement their own additional security safeguards to protect their data. On the other hand, for average cloud service consumers and SMEs, they may overlook their own rights and responsibilities, be confused about how to choose a cloud service provider that is trustworthy, and hesitant on whether their data has sufficient protection when using a cloud service.

Figure 5: Expected Benefits from Cloud Application



[22] 採購雲端服務的實務指南, (2013)

Figure 6: *Attributes of a Desirable Cloud App*

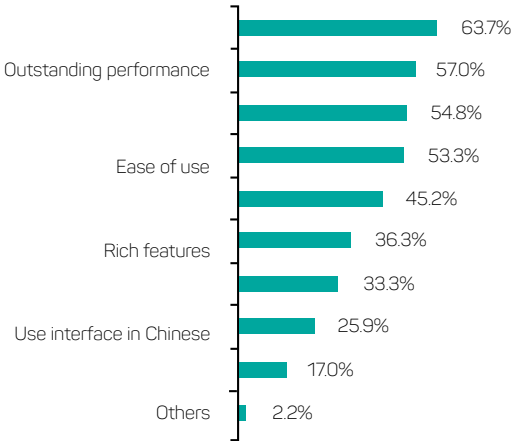


Figure 7: *Cloud Service Fee Acceptance Level*

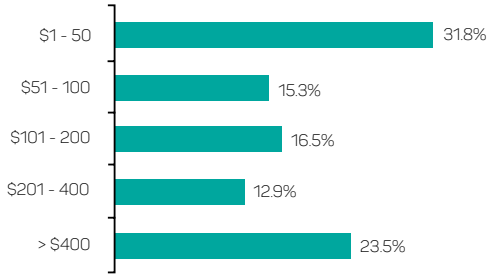


Figure 8: *Fee Acceptance Level (LE vs SMEs)*

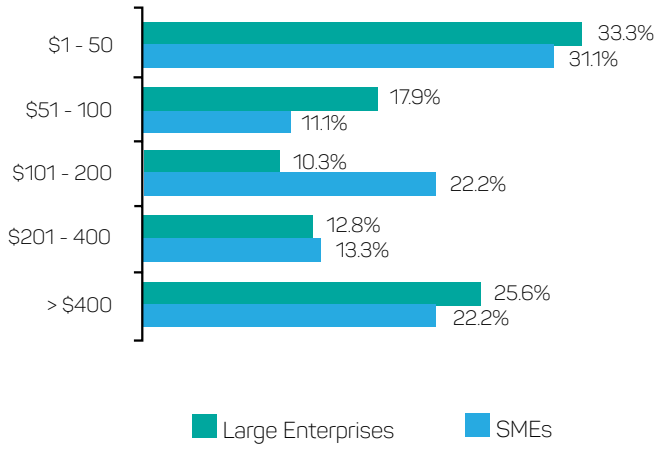
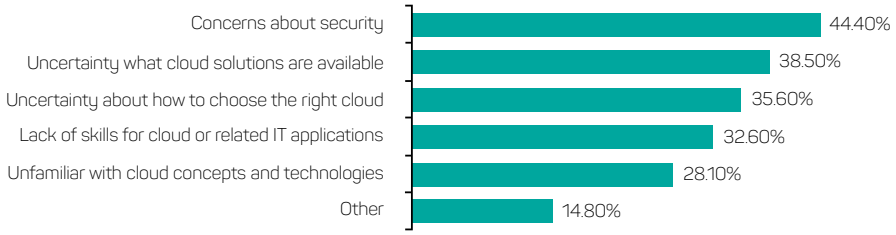


Figure 9: Reasons for Not Using Cloud Application



Source:
Hong Kong Productivity Council[23]

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Hong Kong's GDP per capita (PPP) is about USD52,700, roughly the same as the United States. Which means that these cloud solutions are as affordable as they are in the US market, where many of them were developed. Moreover, neither large enterprises nor SMEs reported expense as a barrier to adopting cloud computing.

Although they are affordable, whether the cloud services are worth it is a barrier. In both the HKPC and statistics department surveys, ignorance about cloud computing was an obstacle in adoption. Since SMEs large still do not understand how cloud computing can help them, they cannot conduct meaningful cost-benefit analysis.

Average GDP per capita = HKD285,146 in 2012[24]

Table 22: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	HKD936 (USD120)	HKD1164 (USD149.23)	HKD11,700 (USD1,500)
Cost (as % of GDP/capita)	0.33%	0.41%	4.10%

[23] It's important to recognize that the Hong Kong Productivity Council (HKPC) and the Department of Census and Statistics are different in their definitions and methods. The statistics department is far more conservative, estimating that less than 20% of SMEs use cloud, whereas the HKPC, which includes items like email services as cloud, estimates that over 50% of SMEs use cloud.

[24] GovHK, Hong Kong – The Facts, 2014

Individual wireless broadband plans are prices at around USD360 – 420 pa, 2GB of mobile data will cost about USD270 pa. Many of available cloud services are comparable to these common IT costs.

Table 23: PaaS (Lowest Tier Pricing, or One Instance of Everything)

Cloud Solution	**Windows Azure**	**Amazon Virtual Cloud (EC2)**	**IBM SmartCloud**	**Red Hat Openshift**
Cost	HKD2,925 (USD375)	HKD0.0468[25] (USD0.006)	HKD11,120 (USD1,426)	HKD1,872 (USD240)
Cost (as % of GDP/ capita)	1.03%	0.0%	3.90%	0.66%

Table 24: IaaS (Lowest Tier Pricing, or One Instance of Everything)

Cloud Solution	**Amazon EC2**	**Rackspace OpenStack Cloud**	**Windows Azure**	**HP Cloud Compute**
Cost	HKD0.0468[26] (USD0.006)	HKD1170 (USD150)	HKD2925 (USD375)	HKD4102.8 (USD526)
Cost (as % of GDP/ capita)	0.0%	0.41%	1.00%	1.44%

SME Demand Drivers

The Office of the Government Chief Information Officer (OGCIO) is responsible for overseeing the adoption of ICTs for developing Hong Kong as a digital economy and for releasing Hong Kong's Digital 21 development blueprints. Through a "Sector-Specific Programme" (SSP) and IT Training Programme for SMEs (ITTP), OGCIO supported 22 projects for 16 business sectors since between 2004-13, directly benefiting over 17,000 SME employees. A new round of SSP was launched at the end of May 2013.

An **Expert Group on Cloud Computing Services and Standards (EGCCSS)** was established in April 2012 drawing expertise from industry, academia, the community, professional bodies and the Government to drive cloud computing adoption and deployment in Hong Kong, as well as facilitate expert exchanges among cloud experts both within Hong Kong and with the Mainland.

[25] per GB, over 5PB/month

[26] per GB, over 5PB/month

The Expert Group comprises three working groups:

- Working Group on Cloud Computing Interoperability Standards (WGCCIS);
- Working Group on Cloud Security and Privacy (WGCSP); and
- Working Group on Provision and Use of Cloud Services (WGPUCS).

The Expert Group is initially focused on the promotion, development and adoption of best practices and common services for SMEs, since adoption of cloud services by and in SMEs is expected to have significant on-benefits to the whole community. The Government has also launched the website InfoCloud, to encourage the uptake of Cloud technology by SMEs. The InfoCloud website is established as a one-stop portal for the general public and enterprises (especially SMEs) to effectively access information and resources on cloud computing technologies including sample use cases, guidelines and best practices for achieving the desired benefits in adopting the cloud computing model. The InfoCloud portal is developed under the collaborative efforts from members of the EGCCSS.

A **Small and Medium Enterprises Committee (SMEC)** was appointed by the Chief Executive (CE) to advise him on issues affecting the development of SMEs and suggest measures to support and facilitate their development and growth. The SMEC comprises businessmen, professionals, bankers, academics, representatives from organisations that provide support to SMEs and government officials.

Finally, the **Trade and Industry Department (TID)** is responsible for conducting Hong Kong's international trade relations, implementing trade policies and agreements, as well as providing general support services for industries and SMEs. The TID focuses upon the following:

- playing a key role in international trade fora for the pursuit of global free trade; assisting the trade and industry in safeguarding and maximising their access to the global market;
- helping Hong Kong enterprises, particularly SMEs enhance their competitiveness and add value to their products and services;
- safeguarding the integrity and credibility of Hong Kong's trade regime; and
- developing staff skills, support structures and systems.

The **Support and Consultation Centre for SMEs (SUCCESS)** is an information and advisory centre for SMEs run by the TID. It collaborates with various industrial and trade organisations, professional bodies, private enterprises and other Government departments to provide SMEs with a comprehensive range of free business information and consultation services. On business information, SUCCESS provides comprehensive information on business licensing and certification requirements, and updates on business activities, services and facilities that are of interest to SMEs. Seminars, workshops and other activities are organised to help broaden SMEs' business knowledge and enhance their entrepreneurial skills. On consultation services, SMEs seeking professional and expert advice may apply for the "Meet-the-Advisors" Business Advisory Service or join the SME Mentorship Programme.[27] It also provides free access to

[27] The Government of the Hong Kong Special Administrative Region "Hong Kong: The Facts" (2014)

business electronic databases, a reference library and a regular publication "SME Pulse."

A new Innovation and Technology (ITB) is also currently in the midst of being set up.

Financing Support Plans for SMEs

The TID has three funding schemes established to support SMEs in Hong Kong: t*he SME Loan Guarantee Scheme, the SME Export Marketing Fund and the SME Development Fund*, which help SMEs secure loans, expand markets outside Hong Kong and enhance overall competitiveness. The total funding provision and government commitment of the schemes are HKD5.25 billion and HKD33.75 billion respectively.

These schemes assist SMEs in Hong Kong to secure financing for business installations and equipment, meeting working capital needs, expanding into overseas markets, and enhancing overall competitiveness.

Incubator Programmes

Hong Kong Cyberport Management Company Limited (HKCMCL)

The Entrepreneurship Centre, formerly called the Cyberport Digital Entertainment Incubation-cum-Training Centre (IncuTrain Centre), was first established in 2005 under the Innovation and Technology Fund (ITF) to support the development of start-up companies/SMEs in digital entertainment and creative lifestyle industries. Beginning 2012, Cyberport started supporting the Incubation Programme with its own funding. The programme provides incubatees with access to rent-free office space, advanced ICT facilities and resources, support in business development, financing and hiring of graduate interns, as well as entrepreneurship and technology training for a period of up to two years.

The Entrepreneurship Centre also runs the Cyberport Creative Micro Fund (CCMF) Scheme. CCMF seeks to spark creativity and innovation in ICT industries by providing seed funding of HKD100,000 for concept and prototype development in a 6-month project period.

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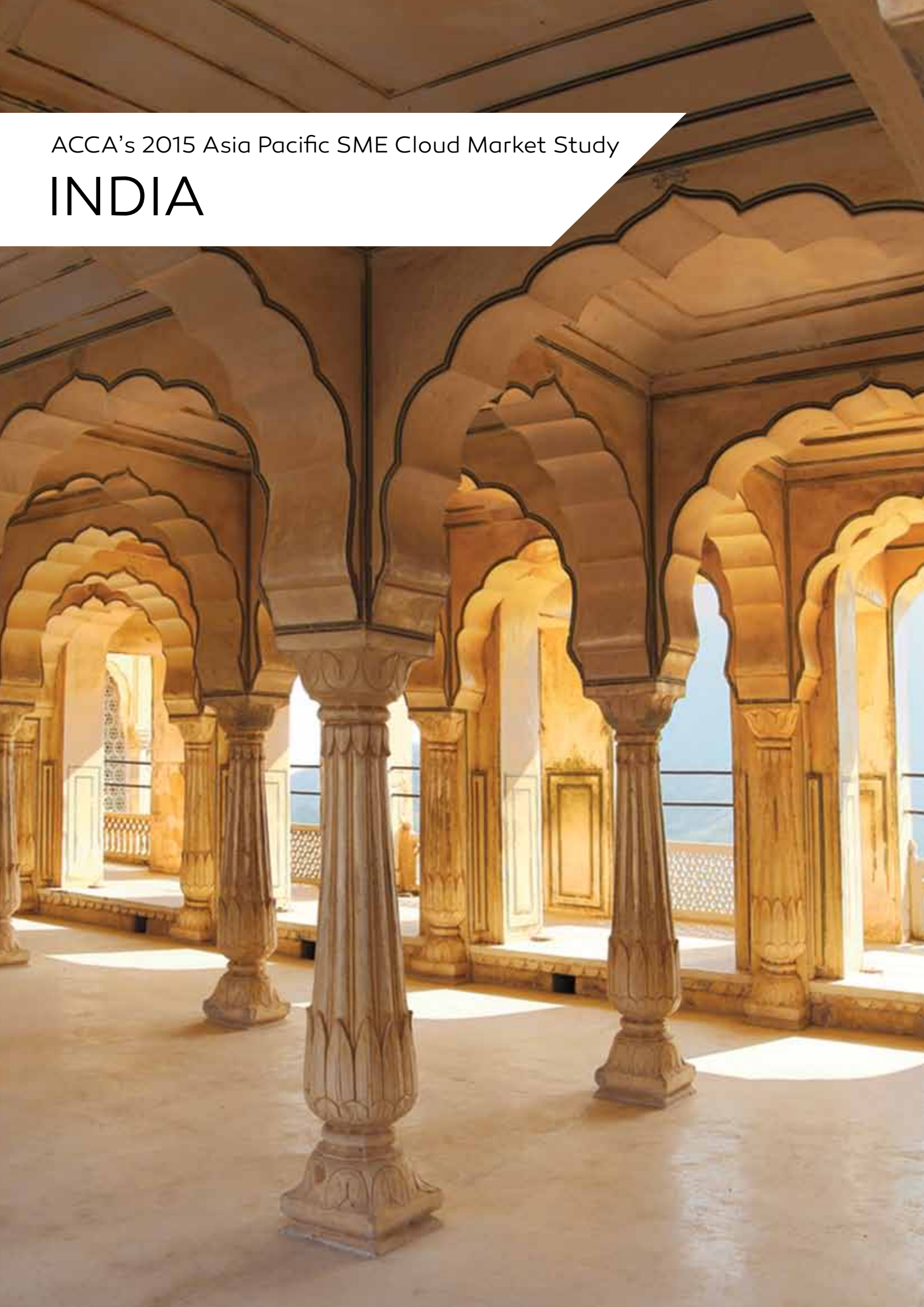


INDIA
Executive Summary

India is a regional IT power, with the world's third-largest population of Internet users and home to a significant proportion of the Business Process Outsourcing (BPO) sector. With mobile penetration now running at around 70% and a rapidly growing base of broadband users, India appears to be well poised to meet the cloud computing era.

The SME sector in India is also vibrant; with over 33.2 million SMEs employing more than 101 million people and contributing 40% of Indian export revenues, SMEs are considered to be not only an economic engine but also a major source of job creation.

While success stories of Indian technology start-ups abound, SMEs en masse in India still show extremely limited use of ICT in their operations. Poor availability of Internet infrastructure, high cost of access and usage, and lack of awareness and low digital literacy are some of the top cited obstacles for technology adoption.

SMEs in India look for cost savings, flexible pricing (such as pay-as-you-go), ease of use and convenience in deployment in cloud, but the main drivers will come from increased competition among SMEs, rising popularity of mobile technology and decreasing cost of technology and government leadership will help propel demand for cloud computing.

The three industries likely to adopt cloud computing are:

- Manufacturing (textile, apparel and jewellery)
- Retail trade
- Education

While ICT access has been enhanced significantly in recent years, India will have to address the limited speed and relatively high cost of connection, which adds to the cost of cloud offerings.

Market Size

India is set to become the largest SME nation globally. According to the Fourth All India Census of the Ministry of Micro, Small and Medium Enterprises (MSME), there were 36.2 million MSMEs in India in 2011-12, or more than 80% of the total number of enterprises, up from 26.2 million in 2009-10.

The SME sector is also growing fast: the number of SMEs and the level of employment across SMEs increased at a CAGR of 28.2% and 26.42% respectively between 2007 and 2012. During the same period, SMEs' total investment grew by 24.1% and 17.6% in production value.[28] The year-on-year growth rates of SMEs have been constantly higher than those of the overall industries in which they are categorized, meaning that SMEs have grown at a substantially faster rate than large enterprises in India.

The SME sector is the largest generator of jobs in the Indian economy. The Ministry of MSMEs reports that SMEs employed 80.5 million people in 2011-12, up from 59 million in 2009-10. Moreover, this appears to be a gross underestimation given that the total workforce in India is about 472.9 million, according to the 2011-2012 National Sample Survey of the Ministry of Statistics and Programme Implementation. In fact, Zinnov, a management consultancy, estimates that MSMEs account for 51% of the total workforce in India, which would put SME employees at over 200 million. One potential explanation for the discrepancy is the dominance of informal employment in the Indian economy, which is thought to be as high as 92% of India's total workforce.[29]

Table 25: Indian SME Figures

	No. of businesses	No. of employees	Contribution to GDP (%)
2009-2010	29.8 million	69.5 million	8.6%
2010-2011	31.2 million	73.2 million	9.3%
2011-2012	36.2 million	101.2 million	6.2%

Source:
Annual Reports 2009-2010, 2010-2011 & 2011-2012, Ministry of MSME, Government of India & "Growth and Performance of MSMEs in India", Dr.M.Ramana Kumar, The International Journal of Business and Management

[28] "Growth and Performance of MSMEs in India", Dr.M.Ramana Kumar, The International Journal of Business and Management , May 2014

[29] India Labour and Employment Report 2014

SMEs contributed nearly 45% to manufacturing and about 40% to the Indian export sector, according to the 2014 Economy Survey, an annual flagship survey of the Ministry of Finance. Their contribution to Indian GDP however, at around USD600 billion, was only around 6% in 2012 (Table 25), which the government aims to increase to 10% by the end of the current 12th Five Year Plan for 2012- 2017.

SME Definition

SMEs are defined under the Micro, Small, Medium Enterprises Development (MSMED) Act, 2006, which categorizes small- and medium- enterprises into manufacturing and services sectors. SMEs are classified by the investment sizes; a manufacturing SME, for example, is an entity of above INR2.5 million and below INR100 million in plant and machinery while a service SME would have an investment between INR1 to 950 million in equipment (Table 26).

Table 26: Indian SME Definitions (INR)

Type	Manufacturing	Services
Micro	< 2.5 million	< 1 million
Small	2.5 - 50 million	1 - 20 million
Medium	50 - 100 million	20 - 50 million

Source:
SME Chamber of India

ICT Market Access

India has fast become a connected society in recent years. According to the International Telecommunications Union (ITU), India has 886 million mobile phone subscribers, or 71% penetration, as of end-2013. According to the Telecom Regulatory Authority of India (TRAI), the total number of telephone subscribers has grown at a CAGR of 35% between 2001 and 2011, marking 78% in overall tele-density in 2012. TRAI also notes that India's telecom network is the second largest in the world after China.

India also has the world's third-largest Internet user base with 240 million Internet users, which grew 14% year-on-year. India is likely to have the largest incremental growth, with the number of Internet users expected to grow to 350 million Internet users in 2015, according to McKinsey & Co. As of end-2012, the number of fixed broadband connections stood at 14.5 million with a penetration rate of 1.15%. Of these 85% were DSL subscribers. TRAI also predicts that there are 45.61 million broadband subscribers on mobiles and other devices as of March 2014 (Table 37).

Table 27: India ICT Access Statistics (2013)

	Mobile	Internet	Fixed Broadband	Broadband Wireless (2014)
Total number	886,304,245	243,198,922	14,540,000	45,610,000
% penetration	70.80%	15.10%	1.16%	3.60%

Source:
World Development Indicators, World Bank and Telecom Regulatory Authority of India

Given the downward trends of Internet costs and mobile devices, India is on the verge of an Internet boom. In a pattern increasingly replicated across emerging economies, Indian mobile users predominantly access the Internet only through a mobile or tablet device, leap-frogging the PC and fixed access which traditionally dominated. Moreover, mobile broadband usage is on the rise with social media, web browsing and chat driving more than a third of mobile broadband traffic currently. Video streaming consumption in particular has grown significantly.[30]

A growing middle class of young and tech-savvy individuals, and the rise of social media are set to drive technology adoption by Indian consumers in coming years. For example, McKinsey & Co. estimates that the average Indian user spends more than 29 minutes on social media platforms and 77% access these on mobiles.[31] This pattern of India's online behaviour is converging rapidly with the developed economy: areas such as product price comparison, travel booking and social media usage of India is almost on par with many developed economies.

Aside from positive growth in individual access, ownership and use of mobile devices, the use of technology by SMEs have also increased rapidly. According to the 2012 study by Zinnov, there are at least 0.5 million SMEs with websites, 2 million SMEs with Internet connections and 4 million SMEs with computers, which is expected to grow 30% year-on-year, doubling the PC-base by 2015.

The ubiquity of mobile technology will be a key driver in SME ICT adoption. Ernst & Young, a management consultancy, estimates that mobility-related products and services accounted for 14% of SME IT spending in 2013.[32] Further, the strong BYOD culture among Indian SMEs will further fuel the imperative for SMEs to consider cloud. Reflecting the growing cloud opportunities in India, the number of providers offering cloud-based services is also increasing. The total number of channel partners catering to SMEs in India increased by 10%-15% year-on-year in 2013, while the number of cloud channel partners increased by 25%-30%. The challenge for cloud computing providers is the poor infrastructure and the correspondingly limited quality in broadband consumption in India. According to Ericsson, only a third of mobile broadband users are able to access the Internet each time they attempt. Broadband and ICT infrastructure

[30] "Growth and Performance of MSMEs in India", Dr.M.Ramana Kumar, The International Journal of Business and Management , May 2014

[31] India Labour and Employment Report 2014

[32] SMAC — the next growth driver for SMEs in India, EY, 2013

development need to be priorities for the government and the private sector in order to grow the cloud computing market in India.

Market Characteristics

India has moved from an agrarian economy in the post-independence era (1950s-1960s) to a service dominated economy today. According to the government's 2013-14 Economic Survey, the services sector accounts for 65% of India's economy, the agriculture sector contribute 8% of GDP, and industry makes up 27%. The major sub-industries include textiles, chemicals, food processing, steel, transportation, cement, mining, petroleum, machinery, software and pharmaceuticals. The Survey also highlights agriculture as the primary employment-providing sector, followed by the services sector (including construction).

The Indian economy has two major sub-components that need to be noted – the formal and informal sectors. The formal sector is registered by the government and has regular terms of employment. Some 93% of India's workforce is self-employed or employed within the informal sector.

SME Market

The SME sector is considered the backbone of the Indian economy contributing 45% of industrial output. The SME sector's contribution in job creation, export earning, rural development and social mobility is well recognised by the government and society. But the Indian SME market is far from monolithic. It differs markedly across economic activities, due to differences in ownership structure, caste of the owners, area of operation, type of industry, stage of development, and so on. The broad heterogeneity of SMEs can also be observed in the range of products, with over 6,000 different kinds of products produced, from traditional handicrafts and consumer goods to technically sophisticated products such as micro-processors, computers, and electronic parts to medical devices.

As of 2012, about 1 in 3 registered SMEs (31.8%) were engaged in manufacturing while the rest (68.2%) were in services. The pattern reverses among the unregistered SMEs: 67.1% were in manufacturing (67.1%) while only 32.9% in services, according to the Ministry of MSMEs. Table 28 shows the breakdown of the leading industries of the MSME sector.

That said, available figures on Indian SMEs are, at best, an estimate. The Ministry of MSME noted in its 2012 annual report that less than half of MSMEs (45.2%) have formally registered with District Industries Centres, leaving the Ministry to resort to a sample survey for part of its census exercise.

Table 28: Leading SME Industries in India

	Industries	Number of Businesses	Number of Employees
1	Retail trade (except for motor vehicles & motorcycles)	- *	- *
2	Repair of personal and household goods	11,415,000	24,548,000
3	Manufacture of wearing apparel	- *	- *
4	Dressing and dyeing of fur	3,165,000	6,006,000
5	Manufacturing of food products and beverages	2,512,000	6,299,000
6	Other service activities	2,243,000	3,765,000
7	Other business activities	1,364,000	2,767,000
8	Hotel and restaurants	1,318,000	3,392,000
9	Sale/maintenance/repair of motor vehicles & motorcycles	- *	- *
10	Retail sale of automotive fuel	1,292,000	- *
11	Manufacture of furniture and non-classified products	1,161,000	2,819,000
12	Manufacture of fabricated metal products (except for machinery & equipment)	842,000	- *
13	Manufacture of textiles	842,000	3,591,000
14	Education	- *	2,726,000

** Annual Report 2012-13 of Ministry of MSMEs reports ranking but no. of businesses and employment for certain categories are missing.*

Source:
Annual Report 2012-2013, Ministry of MSMEs

The informality of India's economy is also deeply entrenched; even within formally registered businesses there tends to be a high proportion of informal workers. Credit Suisse estimates that India's informal GDP is half of total GDP – among the highest ratios in the world and comparable to

sub-Saharan Africa. Therefore, cloud computing providers need to consider the risks associated with dealing with a large scale of un-organised and informal businesses in approaching the SME market in India.

Industries Most Likely to Adopt Cloud Computing Solutions

Technology adoption by SMEs is very limited and concentrated within a small group. Limited availability of Internet infrastructure, high cost of access and usage, and lack of awareness and low digital literacy, along with a narrow range of applications and services are some of the major obstacles for both individuals and businesses in India.[33] Despite the challenges, cloud computing is already making strong headway. According to IDC, the cloud market in India stood at USD688 million in 2012 and will grow five-fold to USD3.6 billion by 2016.

There are many signs that support SME willingness to adopt cloud technologies: according to AMI Partners, Indian SMEs will spend over USD49 billion in 2017, a CAGR of 16% from the 2012 figure (USD23 million); an IDC survey in early 2014 targeting 473 CIOs, 40% of whom were from SMEs, found strong willingness to adopt cloud; NASSCOM, the leading Indian IT association, has consistently noted that could computing is well suited to address the unique requirements of SMEs.[34]

Against this background, the three industries most likely to adopt cloud computing solutions are:

Wholesale and Retail Trade: One of the biggest industries in India, wholesale and retail trade contributed 15% of GDP in 2011-12. It also has largest number of SMEs. The value propositions of cloud computing to the wholesale and retail trade sector are numerous. Retailers serve a large range of customers spread across regions, and therefore experience the challenges in seamless communication from their supply chain, and the difficulty in studying the trends and patterns of their customers.

Case Study 10: ***BookMyShow.com***

BookMyShow.com, online ticketing company, started off with just three employees in 2008 to sell tickets to a movie-loving Indian population via mobile. The company attributes the rapid scalability of cloud to be the key driver behind successful growth from 100, 000 tickets-per-day in 2011 to 2 million tickets in a month in 2012. The company is now adding other types of tickets such as concerts, plays, expos, and more recently Formula 1 racing and India's other national passion, cricket.

[33] "Online and upcoming: The Internet's Impact on India", McKinsey and Company, 2012

[34] "A Roadmap to Enhance ICT Adoption in the Indian Manufacturing Sector", NASSCOM

Case Study 11: Oxford Bookstore

Oxford Bookstore was looking for a simple, cost-effective and scalable systems to integrate their offline and online stores and deployed TCS cloud from Tata Consultancy Services, using open-software solutions.

Manufacturing: A key growth driver of the Indian economy, contributing about 15% of GDP. Comprising 5.3 million firms, the manufacturing sector is highly fragmented with 99% of them belonging to micro, small and medium enterprises.

The sector is also divided into a number of sub-verticals with varied and distinctive characters; auto and auto components, for example, has the highest growth rates and net value-added per employee but is one of the smallest verticals due to the cost barriers to entry. Food and beverages and leather products have the largest number of firms but the value-add of the outputs is low and the sector growth has stagnated.

Textile and accessories, on the other hand, have the highest number of employees and is one of the key contributors to exports, and the one that cloud computing providers could aim for two reasons. First, a large number of employees means large volumes of transactions in basic ICT systems such as communication, collaboration, HR/payroll management and finance and accounting. Given the export-oriented nature of the business, the larger companies tend to have a certain level of procurement, inventory, order processing, and quality compliance management systems. Second, high seasonality in the textile, garment and accessories also means SMEs must have the flexibility to adjust design and production to thrive. Cloud computing's reliability and scalability appeals strongly to such operators.

Another attractive offering for companies in these sector is cloud-based Business Intelligence (BI) solutions. A jewellery retailer, for example, deployed a cloud-based analytics solution to explore and analyze business data including supply chain and profitability metrics. This has enabled the company to enhance its decision-making and widen acceptance of advanced analytical modeling in the organization.[35]

Case Study 12: E-readiness Centre

E-readiness Centre (ERC) in Tirupur region deployed G-Tech Solutions, an ERP solution that helps exporters manage their production, supply chain and demand forecasting processes to provide common software platform on a pay-as-you-go basis to the 4,000 SME exporters of the 2-billion knitwear industry. SMEs are charged a one-time subscription of INR10,000 (~USD220) and monthly charges of INR 3,200-3,500 (~USD70 – USD80) for each user to avail services related to HR, procurement and inventory, among others.

[35] SMAC — the next growth driver for SMEs in India, Ernst and Young, 2013

Education: An important economic sector in India, responsible for 14% of GDP in 2012 and employing over 2.7 million people in the SMEs education sector alone. Cloud solutions have already made inroads in the Indian education sector with schools using cloud e-mail solutions, collaborative tools and virtual desktops. The cloud enables schools to avail themselves of administrative software such as Learning Management Systems (LMS) and Student Information Systems (SIS) as services instead of paying hefty license fees for products.

Cloud computing could also be transformational to distance and blended learning, which is gaining popularity in India. Many schools are experiencing a crunch in quality teachers and are turning to distance and blended learning to meet the rising demand for quality education. The distance education market in India is expected to grow at the rate of 24% to 2016 and expected to reach INR87 billion by the end of that year.[36] The cloud could offer the necessary infrastructure through cost competitive IaaS offerings and still provide the high-end data application servers the schools need to run high-quality distance learning programmes.

SME Demand Drivers

Despite the great success of India's technology stories, the use of technology by SMEs is limited at best. With the average of 2-3 employees per business, the majority of SMEs are micro firms with limited resources to invest in IT systems. Awareness by SMEs of technology and its benefits, let alone cloud, is also very low.

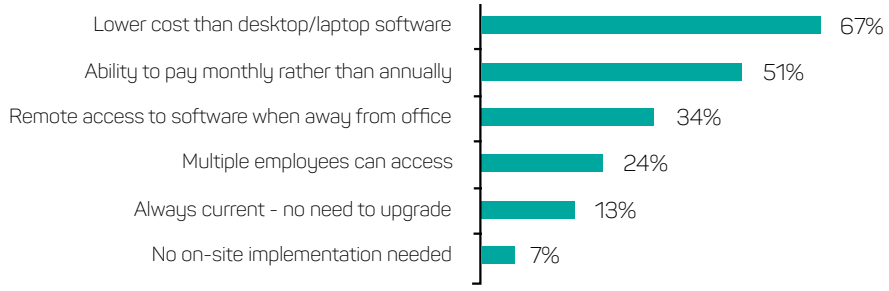
The upside is that, once explained, both perception and adoption can be very positive. According to a study by Intuit and the Ministry of MSMEs, close to 80.00% of SMEs were interested in embracing cloud – if concerns on security were addressed. Among current IT users of SMEs, perceived benefits of cloud computing are well recognised. The value propositions identified within the survey are summarised in Figure 1.

With this in mind, key demand drivers for SMEs in cloud can be seen to be coming from the following:

1. **Increasing competition among SMEs** as the SME sector continues to experience rapid growth in numbers and investment. More and more SMEs that are technology-able will look to more cost-effective ways to organise their businesses to stay ahead. Cloud offers the performance of the IT systems that would prove to be game changers at an affordable price.

[36] Adoption of Cloud Computing in Distance Learning, Meghana Jalgaonkar and Ashok Kanojia, International Journal of Advanced Trends in Computer Science and Engineering, 2013

Figure 10: Indian SMEs' perceived benefits of cloud



Source:
Understanding and Overcoming Barriers to Technology Adoption Among India's Micro, Small and Medium Enterprises: Building Roadmap to Bridge the Digital Divide, Intuit and Ministry of MSME, 2013

2. **Rising popularity of mobile technology** and near-universal use of mobile phones means that SME owners and employees conduct a significant portion of their operations on mobile platforms. The increasing ubiquity of (cheap) smartphones and the decreasing cost of mobile Internet are driving more Indians towards more sophisticated use of mobile technology. Many Indian entrepreneurs have completely skipped the PC-stage becoming clear targets for the use of mobile cloud services – provided that they are easy to use and affordable.

3. **Strong government-backing**: Within the last 2-3 years, government agencies such as the Ministry of MSMEs, and industry association such as NASSCOM and the National Institute of Entrepreneurship and Small Business Development (NIESBUD) have carried out surveys to identify drivers for technology adoption by SMEs, and have all come to espouse the benefits of cloud to be had by SMEs. The Ministry of MSMEs has also requested cloud computing to be included in its ICT support programme. The recent launch of the national cloud, MegaRaj, by the Ministry of Information and Communication, as part of the Digital India ICT Masterplan, also means that more government leadership in driving cloud can be expected in the near future.

Key Characteristics to Note

When it comes to technology adoption, there are two distinct camps of SMEs in India: the leaders and the laggards. The gap between these two groups is wide and difficult to reconcile without a large-scale customer awareness and training programme from the government and the private sector. The entrenched and dominant informal nature of SMEs in the laggard group also means that the addressable opportunity within the SME sector may be limited. Indeed, SMEs with the resources, willingness and competency to adopt cloud are more the minority than the norm – at

least in the initial stages. The price-sensitive yet tech-savvy entrepreneurs in the leader group, however, would easily see the benefits of the cloud.

Indian SMEs are extremely price-sensitive. Cost is often identified as the top inhibitor of technology adoption, which means that SMEs are not yet convinced of the return on investment in technology adoption. Therefore, simple and compelling cost-benefit analyses of cloud-based solutions compared not just to traditional IT use, but also against non-IT use, should be clearly demonstrated to SMEs. Trade-in offers of old legacy systems with for adopting, or subscribing to, cloud platforms would also work well for SMEs that are cost conscious.

Cloud computing service providers also need to bear the varied regional context of the states in mind. The differences among Indian states' business environment, infrastructural readiness and the state of the technology adoption are vastly different. For example, a study by Intuit and Ministry of MSME[37], showed that while Gujarat and Punjab are leaders in entrepreneurship and business environment, Bangalore showed greater technology adoption.

Lastly, cloud adoption must be easy and implemented from a local perspective. SMEs, due to their lack of skills and technical prowess, tend to rely on outside vendors for various auxiliary business support, including IT system maintenance. SMEs would need and benefit from quality customer care that helps SMEs seamlessly transition to the cloud environment and win their trust. Cloud services offered in local language would also help ease the adoption.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

In the first instance, the price of cloud offerings alone appears well within the reach of the spending capability of average Indians. However, when spending patterns on mobile and Internet of the average Indian is considered, the cloud offerings appear expensive. For example, the average spending on mobile bills is INR345 or USD6. Spending on a data plan was 45% of the average mobile bills, according to the Internet and Mobile Association of India (IAMAI). The majority of mobile users opt for data plans of less than 1GB a month.

The timid spending on mobile bills, despite the explosive growth in recent years is seen to stem from the price-sensitivity of Indian consumers. This is corroborated by the cloud price war that is going on in India. For instance, in 2013, Google India announced the price cuts for Google Apps for Business (without Vault) by 45% in a bid to attract more SMEs.

Another factor that SMEs would consider is the cost of Internet, which in India is high. A monthly Internet connection from Aircel, for example, for 100Mbps is INR5,999, or USD95. The quality and speed of Internet is also one of the lowest in Asia Pacific, according to Akamai. This means that consumers in India have to spend more on an Internet connection to get the desired quality for a cloud service.

[37] Understanding and Overcoming Barriers to Technology Adoption Among India's Micro, Small and Medium Enterprises: Building Roadmap to Bridge the Digital Divide, Intuit and MInistry of MSME 2013

Indian GDP per capita: INR74,380 (2014)
Exchange Rate: USD 1= INR60.06

Table 29: Comparative Pricing Index of SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce.com Professional
Cost	INR 3,600 (USD 59)	INR 9,119 (USD 151)	INR 46,847 (USD 780)
Cost (% GDP/capita)	4.84%	12.26%	62.98%

Table 30: Comparative Pricing Index of PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure Virtual Machines[38]	AWS - RDS	Rackspace OpenStack Cloud + Database	HP Public Relational Database
Cost	INR10,811 (USD180)	INR174,472 (USD2,905)	INR26,306 (USD438)	INR26,306 (USD438)
Cost (% GDP/capita)	14.53%	234.57%	35.37%	35.37%

Table 31: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	AWS EC2	Rackspace OpenStack Cloud	HP Public Cloud Compute[39]
Cost	INR 10,587 (USD176)	INR 52,613 (USD876)	INR 31,568 (USD526)
Cost (% GDP/capita)	14.23%	70.73%	42.44%

[38] Extra Small Instance/Shared

[39] Standard Extra Small

Existing Government Programmes

The Ministry of Micro, Small and Medium Enterprises (MSME), established in 2007, acts as an apex body for the formulation and administration of laws and regulations relating to MSMEs in India. The Ministry runs the "Promotion of ICT Tools in MSME Sector" programme that encourages ICT uptake and skills upgrade of the SMEs in order to enhance the overall productivity and competitiveness of the sector. The activities include working with manufacturing clusters for ICT intervention, ICT facility support through the e-Readiness Centres, and development of applications such as web portals and software solutions for SMEs. Between 2011 and 2012, the Ministry worked with 6 IT firms and spent about INR 167 million (USD 2.8 million) to assist 46 potential clusters across the country.

Recognising the unique potential of the cloud computing on SMEs, the Ministry of MSME has requested the programme to include cloud computing, which the Planning Commission of India gave in-principle approval, according to the Ministry's 2012-2013 Annual Report. While the budget or scope of the support has not been announced, the added imperative would help boost the cloud computing demand for SMEs in coming years.

Related agencies providing government support for SME development include:

- **National Commission for Enterprises in the Unorganized Sector (NCEUS)** a national body formed by the Indian government faced by enterprises in the unorganized sector and falls under the Ministry's purview. The commission is an advisory board for the informal sector of India. The informal sector of India stands at 93% of the total workforce.

- **National Small Industries Corporation** (NSIC) is a PSU that falls under the MSME Ministry and promotes micro and small-scale industries and enterprises in the country. NSIC started as a government agency which was converted into a fully owned government corporation

- **National Institute of Micro, Small and Medium Enterprises (NI-MSME)** an autonomous arm of the ministry, it has become the premier institution offering training, consultancy, research and education to the sector. The institute focuses on the promotion, development and modernization of the SME sector

- **National Institute for Entrepreneurship & Small Business Development (NIESBUD)** – an apex institute in the area of entrepreneurship and small business development under the ministry. The institute conducts training programmes aimed at the promotion and development of MSMEs including enhancement of their competitiveness through various activities

- **Indian Institute of Entrepreneurship (IIE)** established to undertake training, research and consultancy activities in small and micro enterprises focusing on entrepreneurship development

- **Small and Medium Business Development Chamber of India** – SME Chamber of India

Incubator Programmes

There are plenty of SME and ICT incubators in the country. Some of them funded and managed by various state governments in order to boost the culture of entrepreneurship and some more funded and managed by venture capitalist firms who have seen success in their respective ventures.

Serial entrepreneurs and their respective funding arms run some of the more successful incubator programmes. Most of the start-ups in the country are in areas related to IT and ITeS.

VCs support most of the incubator programmes and they allow for a certain range of funding to the start-ups that are being incubated through the accelerator programmes. VC firms in India have in fact become very competitive in marketing themselves as better than their competition as there are quite a few VC firms in India now. VC firms have also started getting into the operations of SMEs and Start-ups' once they see discrepancies in the way in which the prescribed operations are being executed.

Some of the accelerator/incubator programmes are more recently ones started by state governments to promote new businesses starting in their back yards. States like Kerala have made a good effort in setting up startup incubators/accelerators like Startup Village. The setup helps students and entrepreneurs to get together and discuss ideas that eventually the state hopes would bring more business into the state and eventually the country.

ACCA's 2015 Asia Pacific SME Cloud Market Study

INDONESIA

INDONESIA
Executive Summary

Indonesia is the world's fourth most populous country with some 250 million people. Of these, 74 million are already defined to be middle-class and affluent consumers, a figure that is projected to double by 2020 (Figure 11).

The vast majority of the Indonesian business market is made up of SMEs, with some 56.3 million such businesses accounting for 99.9% of total business units. SMEs employ 107.7 million people (97.2% of the total workforce), and contribute approximately 57.1% of total GDP (USD506.3 billion). However, the vast majority of these are also micro businesses. Removing the *micro*-component from these statistics, the 700,000 SMEs (ie, *not* MSMEs) active in Indonesia employ 7.8 million people, or 7.2% of the total workforce, and contribute USD172.4 billion (23.2%) of total GDP.

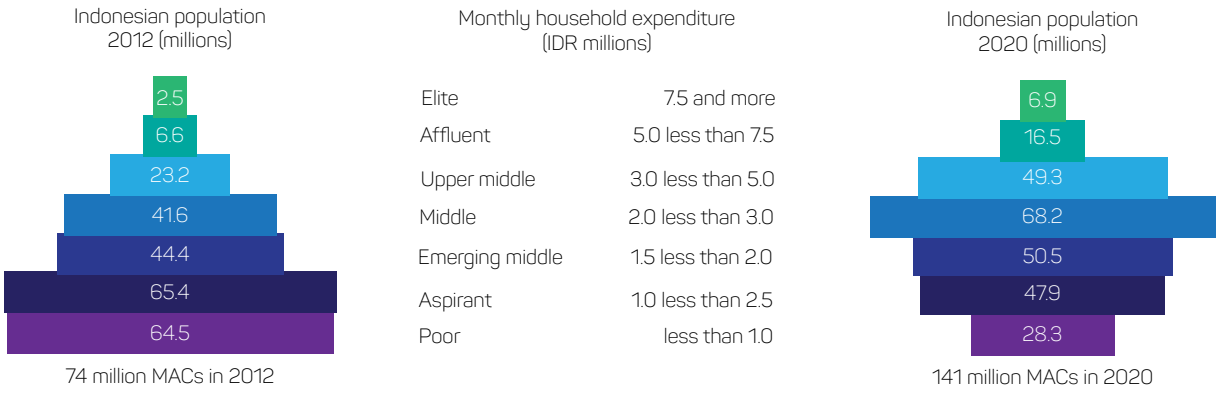
Cloud computing services have been identified by a number of groups as a key growth area for Indonesia with the total market value for cloud computing forecast at more than IDR12.1 trillion by 2017. Government support through a variety of initiatives such as the Master Plan for Acceleration and Expansion of Indonesia Economic Development (MP3EI) has latched onto this potential, particularly as it concerns enabling the vast SME markets and become one of the main drivers for SMEs adopting cloud computing.

And while the current SME demand for cloud computing is relatively low – only 14% of SMEs have adopted cloud computing technology, and some surveys cite figures of only 3% really understanding what cloud computing is – nevertheless, the takeup rates and the potential of cloud computing in Indonesia are impressive: in 2013, the growth rate of cloud computing adoption among Indonesian SMEs was 100%. The main driver is the need of Indonesian SMEs to increase productivity and to be able to compete, locally, domestically, or globally.

Writ large for the Indonesian market, cloud computing solutions need to be targeted and marketed on the basis of removing a specific point of pain (e.g., business management software tool), or *increasing revenue and growth opportunities* (e.g., expanding global market access). Using the traditional IT industry approach of saving on cost will likely fall flat for the broad expanse of Indonesian SMEs – they would not *spend* money to learn the lesson on savings.

Early adopters of cloud computing in Indonesia will be: financial institutions, wholesale and retail trade, restaurants and hotels, transportation, warehousing and communication, and the creative industry. Additionally, Indonesia's fundamentals look positive in adopting cloud computing because of: 1) a healthy mix of local and global players; and 2) the presence of cost-conscious SMEs and Internet-savvy youth.

Figure 11: Indonesia's Middle Class Market



MAC population includes middle, upper-middle, affluent, and elite consumers

Source:
Boston Consulting Group

Market Size

According to the Ministry of Cooperatives and SMEs, Small and Medium Sized Enterprises account for 99.9% of total business units in Indonesia, totalling around 56.3 million businesses in 2012, and contributing approximately 57% of total GDP (Figure 12). However, the vast majority of these are *micro* businesses, as Table 32 illustrates. And while a significant proportion of these are viable functioning businesses worth targeting, there are also a large number of either very small or single person operations not likely to be contenders for cloud computing solutions.

By 2012 there were 56,345,592 MSMEs in Indonesia, up from 55,206,444 MSMEs in 2011, and growing at a compound annual growth rate of 2.7% from 2005-12. Within this:

- **Micro enterprises** comprised 55,856,176 (98.79%) of total business units
- **Small enterprises** comprised 629,418 (1.11%) of total business units
- **Medium enterprise** comprised 48,997 (0.09%) of total business units

In 2012, Indonesian MSMEs employed 107.7 million people, or 97.2% of the total workforce, up from 101.7 million in 2011 (Table 33). Removing the *micro* - component from these statistics, SMEs employed 7.8 million people, or 7.2% of the total workforce.

Table 32: Number of Enterprises (2011-12) in Indonesia

Size	2011		2012		Growth	
	# of business units	%	# of business units	%	# of business units	%
Micro	54,559,969	98.82%	55,856,176	98.79%	1,296,207	2.38%
Small	602,195	1.09%	629,418	1.11%	27,223	4.52%
Medium	44,280	0.08%	48,997	0.09%	4,717	10.65%
Total Micro, Small, Medium	55,206,444	99.99%	56,534,591	99.99%	1,328,147	2.41%
Large	4,952	0.01%	4,968	0.01%	16	0.32%
Total	55,211,396	100.00%	56,539,559	100.00%	1,328,163	2.41%

Source:
Ministry of Cooperatives and SMEs 2013

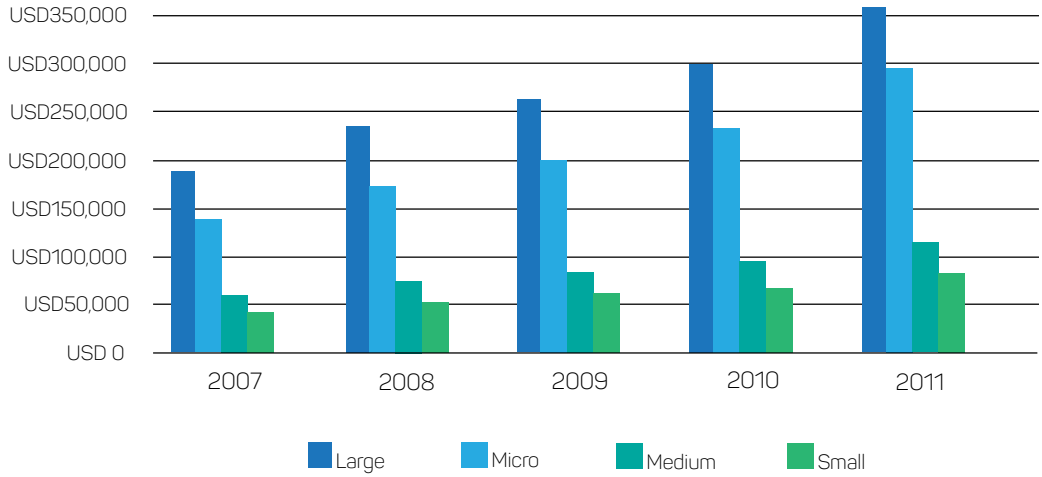
Table 33: Indonesian Workforce Composition (2011-12)

Size	2011		2012		Growth	
	# of workers	%	# of workers	%	# of workers	%
Micro	94,957,797	90.77%	99,859,517	90.12%	4,901,720	5.16%
Small	3,919,992	3.75%	4,535,970	4.09%	615,978	15.71%
Medium	2,844,669	2.72%	3,262,023	2.94%	417,354	14.67%
Total Micro, Small, Medium	101,722,458	97.24%	107,657,510	97.16%	5,935,052	5.83%
Large	2,891,224	2.76%	3,150,645	2.84%	259,421	8.97%
Total	104,613,682	100.00%	110,808,155	100.00%	6,194,473	2.41%

Source:
Ministry of Cooperatives and SMEs 2013

Contribution to Economy

Figure 12: Contribution of SMEs to Indonesia's GDP 2007-11 (USD mill)



Source:
Ministry of Cooperatives and SMEs 2011

The contribution of MSMEs to the Indonesian economy was 57.1% in 2012, or roughly USD506.3 billion (Figure 12). The contribution of SMEs in 2011 was roughly USD172.4 billion, or 23.2% of total GDP. In other words, the micro-sector of the economy is neither insubstantial nor unproductive.

It is also important to note that Indonesian MSMEs' contribution in non-oil exports has been declining since 2008 and represents less than 20% of non-oil exports.[40]

SME Definition

Somewhat problematically there are several definitions of SME in Indonesia, issued by different government institutions.

According to Law No. 20/2008 (primary definition), SMEs are divided into three categories:

- **Micro-firms**: enterprises with net-assets less than IDR50 million (USD4,320) and total annual sales less than IDR300 million (USD25,900).
- **Small-firms**: independent economic enterprises with net-assets of between IDR50 million and IDR500 million (USD4,320 – 43,182), and total annual sales of between IDR300 million and IDR2.5 billion (USD25,900 – 216,000).
- **Medium-firms**: independent economic enterprises with net-assets of between IDR500

[40] OECD 2012

million and IDR10 billion (USD43,182 – 864,000), and total annual sales of between IDR2.5 billion and IDR50 billion (USD216,000 – 4,319,000).

According to the Ministry of Cooperatives and SMEs:

- **Micro-firms** (including small-firms) are business entities with assets less than IDR200 million (USD17,272) and total annual sales no more than IDR1 billion (USD86,364).
- **Medium-firms** are business entities with assets of between IDR200 million and IDR10billion (USD17,272 – 864,000).

According to the Central Bureau of Statistics categorisation is based on number of employees:

- **Small-firms**: business entities of between 5-19 employees
- **Medium-firms**: business entities of between 20-99 employees.

ICT Market Access

Indonesia had around 304 million mobile phone users in 2013, a penetration rate of 121.5%. With an average of 1-2 SIM cards per subscriber in Indonesia, actual user numbers will be lower. Notably though, some 76.5% of rural households had access to a cellular phone in 2012.[41] The number of fixed telephone subscribers in the country was 40 million in 2013 for a penetration rate of 16.10%.

Similarly, some 40 million Indonesians had direct Internet account in 2013 according to the ITU (Table 3). Actual Internet access in the country is far far higher with most Indonesians accessing the Internet through their mobile phone. According to the Ministry of Communication and Information (MCIT), Indonesia had more than 62 million Internet users in 2012, up from 55 million in 2011, with penetration at 22.1%.[42] But these numbers are still significantly conservative. By late 2103, Facebook alone was reporting more subscribers in Indonesia than this.

Table 34: Indonesia ICT Connectivity Statistics (2013)

	Mobile	Internet use	Fixed Wired Broadband	Fixed Telephone
Date	2013	2012	2013	2013
Total number	303,695,200	62,100,00	3,251,800	40,165,000
% penetration	121.54%	22.10%	1.30%	16.07%

Source:
International Telecommunications Union (ITU), "Time Series By Country," 2013

[41] Central Bureau of Statistics, 2014

[42] Ministry of Communication and Information White Book 2012, p. 21.

Fixed wired broadband penetration in the country was at 1.3% or 3.25 million subscriptions in 2013. According to the Communications and Information Technology Ministry, about 84% of the companies operating in Indonesia access the Internet via fixed broadband and about 21% of the companies use mobile broadband.[43] The rate of adoption of cloud computing services by SMEs is estimated at 14%.

Market Size

According to the 2012 Global Competitiveness Report, Indonesia ranked 50th among 144 global economies.[44] However, Indonesia continues to lag behind neighbouring economies such as Singapore, Malaysia, or Thailand, in terms of institutional frameworks, particularly due to corruption and bribery, unethical behaviour within the private sector, and the cost of doing business. It requires more time to obtain an operating license in Indonesia than in any neighbouring countries. For example, in Vietnam small firms require less than 10 days on average to obtain an operating license, while in Indonesia small firms need more than 20 days to obtain one.[45] Furthermore, the minimum capital requirement of IDR50,000,000 to start a limited liability company is a significant burden for many Indonesian entrepreneurs.[46] Obtaining the status of a Limited Liability Company is important for small enterprises because of the benefits that the status enables such as being able to apply for bank loans and therefore have significantly more opportunity to grow their businesses.

This issue around setting up a small business becomes more challenging when regional government requirements are also factored in. Since 2004, regional governments (provincial or district level) have been able to impose additional licenses and tax as a result of the Decentralization Policy giving more room for regional governments to generate their own Regionally Generated Revenue.

Indonesia's economy is broken down into nine primary categories:

1. Agriculture, Forestry, Hunting and Fisheries
2. Mining and Quarrying
3. Manufacturing Industry
4. Electricity, Gas, and Water

[43] The Jakarta Post, "Operators on their way to developing broadband," 2014

[44] World Economic Forum 2012, p.14

[45] OECD 2013, p.12.

[46] Law No.40 of 2007 on Limited Liability Company, accessed 26 August 2013

5. Construction

6. Wholesale Trade, Retail Trade, Restaurants and Hotels

7. Transportation, Warehousing and Communication

8. Financing, Insurance, Real Estate and Business Services

9. Community, Social and Personal Services

The top five industry sectors in Indonesia, based on contribution to GDP, are manufacturing; agriculture; trade, hostels and restaurants; mining and quarrying; and construction (Table 35).

SMEs in Indonesia, particularly in the lead adoption sectors are varied in terms of business enablement tools. Most SMEs are still working with fairly conventional approaches and methods. According to a survey by the Indonesia Cloud Forum only 32% of total respondents use computers to manage stock allocation, while 14% use computers to manage a customer database, and 20% use computers to manage email servers or other functions.[47]

Based on the type of credit given by Indonesian banks to SMEs in 2011, 78.2% (USD37,529.6 million) was channelled to SMEs for Working Capital Credit and 21.8% (USD10,458.7 million) allocated for Investment Financing Credit.[48] This figure is very rough and needs to be used carefully because SMEs who can apply for bank loans are SMEs who have already obtained a Limited Liability Company status and in Indonesia most SMEs are domestically-owned sole proprietorships (Table 36), which prevents them obtaining credit through formal financial channels such as the banks. However, the data on type of credit given by Indonesian banks

Table 35: Top 5 Economic Sectors in Indonesia (Q1 2014)

Sectors	Contribution to GDP (IDR billion)
Manufacturing	565,766.90
Agricultural	361,024.40
Trade, hotels and restaurants	344,758.20
Mining and quarrying	269,237.60
Construction	233,042.00

Source:
Bank Indonesia Statistics, 2014

[47] Marketers 2013, accessed 8 August 2013

[48] OECD 2013, p. 18. Working Capital Credit is a short-term credit (maximum 1 year) to pay various expenditures (operational costs) that will be fully consumed in one business cycle. Investment Credit is mid and long-term credit to acquire capital goods and services to establish new projects, rehabilitation, modernization, expansion, relocation, and/or refinancing.

Table 36: Business Characteristics in Indonesia

	Indonesia (2009)			
	Small	Medium	Large	All
Age (years)	14.70	16.60	20.20	15.00
Proportion of private domestic ownership in firm (%)	89.90	87.50	77.60	89.40
% of firms with legal status of				
Publicly listed company	0.80	2.00	5.30	1.00
Privately held Limited Liability Company	4.00	13.50	59.80	6.20
Sole Proprietorship	87.60	68.10	26.00	84.30
Limited Partnership	6.80	14.30	8.60	7.50

Source:
OECD 2013. Adapted from World Bank Enterprise Survey

to SMEs indicates that a majority of SMEs allocate their finances for working capital or to cover operational costs rather than investment purposes. Based on a survey by Oxford Economics and SAP, 39% of SMEs total business cost is allocated for employee salary, while among SMEs who utilize ICT, they only spend IDR830,000 (USD661,000) per month on average for ICT-related needs.[49]

Industries Most Likely to Adopt Cloud Computing Solutions

According to BMI, cloud services is a key growth area in Indonesia with the total market value for cloud computing forecast at more than IDR12.1 trillion by 2017.[50] Government support through a variety of initiatives such as the Master Plan for Acceleration and Expansion of Indonesia Economic Development (MP3EI) is therefore potentially one of the main drivers for SMEs adopting cloud computing.

Obviously this is both potential and challenge in terms of delivering cloud computing benefits. Cloud computing can be a solution for overcoming these issues, but may in the first instance impede both understanding and initial adoption. To capture the opportunity, businesses in the sector must be supported with a high-level of IT support to enable processes to become far more efficient.

The early adopters of cloud computing can be identified as:

Financial institutions, including peripheral financial sector businesses. Indonesia's economic growth has driven the need for financial institutions to upgrade their IT infrastructure. In particular, they need to improve their database and security systems.

[49] Bisnis 2013, accessed 8 August 2013

[50] BMI 2013, p. 19-20.

The increasing use of e-commerce and the expansion of the financial sector in Indonesia has further driven the potential for finance and banking to adopt ICT solutions, particularly where technology tools provide greater security and increase the effectiveness of financial transactions. With the growth of the Indonesian middle class, the Indonesian financial sector needs to cope with an increasing number of new customers, improve customer service satisfaction, and reach out across a broad archipelago to service that customer base.

The Wholesale and Retail Trade, Restaurants and Hotels sector is growing rapidly driven by the rise of the new middle class. McKinsey Global Institute, for example, sees the new middle class providing a huge economic driver but notes the services sector needs significant strengthening to improve its productivity and ensure that customer services are sufficiently available – all of which suggest the opportunity gap that exists for cloud computing solutions to both drive early winners and to be picked up en masse across the sector.[51] The rapidly increasing use of e-commerce in Indonesia provides further support for this conclusion. It shows that this sector is "technology-conscious", and perhaps the principle early adopter target.

Transportation, Warehousing and Communication: While the communication sector can be expected to be a natural target for ICT tools, the transportation and warehousing sectors demonstrate the key issues of this portion of the economy: rising price of land and poor physical infrastructure (particularly roads and ports). The rising price of land means that businesses (particularly in warehousing) need to manage the flow of incoming and outgoing goods far better. Poor physical infrastructure presents a problem of predictability of goods delivery. Therefore they need to improve forecasting to reduce unnecessary costs.

The creative industry sector is a relatively newly designated sector, managed by the Ministry of Tourism and Creative Economy. The Indonesian government created this sector in 2011 to facilitate and exploit the economic potential of creative-skilled businesses. Businesses that fall into this category include TV and Radio, Fashion, Interactive Games, Music, Art Performances, Publishing, Software Development, Research and Development, Advertising, Film and Video.[52] The very nature of this sector, targeting a young Internet-savvy audience in a country that is one of the biggest consumers of Facebook and Twitter globally, suggests therefore that this sector is vastly untargeted and developed.

Additionally, Indonesia's fundamentals look positive in adopting cloud computing because of: 1) a healthy mix of local and global players; and 2) the presence of cost-conscious SMEs and Internet-savvy youth.

[51] MGI 2012, p. 5-6

[52] Presidential Instruction No.6/2009 on Creative Economy Development

SME Demand Drivers

SME demand for cloud computing is still relatively low. According to a survey of 1,700 SME executives in eight cities by the Indonesian Cloud Forum and MARS Indonesia in early 2012, only 14% of SMEs had adopted cloud computing technology, and only 3% really understood what cloud computing was about. Challenges include the level of openness to new technology, fear of cybercrime risk, low investment allocation for IT, a culture of non-transparent data recording, and a reliance on conventional methods.[53] According to the survey, 32% of total respondents used computers to manage stock allocation, 14% used computers to manage a customer database, and 20% used computers to manage email servers and other functions. In other words, a primary requirement for the Indonesian market is far more education on the importance, advantages and benefits of cloud computing for their business.

Nevertheless, within this overarching context, the growth rate of cloud computing by Indonesian SMEs, and the potential are impressive. According to a survey by Oxford Economics and SAP to 100 Indonesian SME executives in 2013, the growth rate of cloud computing adoption among Indonesian SMEs was 100%, far higher than comparable global growth rates (only 35% for emerging economies).[54] Additionally, 42% of respondents said that they need business management software to support their businesses in the next three years. The main driver therefore should be seen to be **the needs of Indonesian SMEs to increase productivity to be able compete, locally, domestically, or globally**. Writ large for the Indonesian market, cloud computing solutions need to be targeted and marketed on the basis of removing a specific point of pain (e.g., business management software tool), or *increasing revenue and growth opportunities* (e.g., expanding global market access). Using the traditional IT industry approach of saving on cost will likely fall flat for the broad expanse of Indonesian SMEs – they would not spend money to learn the lesson on savings.

It should be noted in this regard that according to the survey, only 13% of respondents relied upon the domestic market, and *this figure is predicted to be lower in the future*. Currently, 56% of respondents generate 20% of their revenue from foreign markets. The Oxford Economics predict that by 2016 74% of respondents will generate 20% of their revenue from foreign markets.

Another driver for adopting cloud computing is the **ability to route around infrastructure limitations** in various locations.[55] In other words, cloud computing can develop at the same time as business development. This appears to be very an attractive proposition to the Indonesian market.

[53] Presidential Instruction No.6/2009 on Creative Economy Development

[54] Marketers, 2013

[55] Bisnis, 2013

Key Characteristics to be Noted

1. The Indonesian market needs more education on the benefits of ICT and, on cloud computing. Most SMEs still rely on traditional methods in running their business. To address this issue, investors need to cooperate with the government because they have the networks to undertake effective socialization and education of the market.

2. Indonesia's consumer is cost-sensitive but eager to adopt new technology. IT spending per capita is increasing because the size of middle class is also increasing. To address this issue, sellers need to conduct aggressive market segmentation and develop various products to fulfil the needs of cost-sensitive consumers.

3. Complex government regulations and bureaucracies as well as bad governance practices, such as corruption and bribery, are still significant problems in Indonesia – a message to be carefully developed is how cloud computing can address and progress these issues.

4. Indonesian consumers like to socialize. Indonesia is towards the top of Facebook and Twitter users per population globally. Investors or sellers need to build communities who can be "promoters" to their peers.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Most of the available cloud computing solutions in Indonesia are still expensive for SMEs. While some prices start from 0.2% of the average IT budget of an SME, most are far higher than this, and represent a significant proportion of investment. The ratio of price to GDP per capita range from 1.73% - 47.25% (Table 37-39). Lower-priced cloud solutions are likely to appeal to more SMEs with limited resources for IT products and services. In addition, most of the available cloud solutions are still more expensive than broadband services. The cheapest cloud solution available, Google Apps for Business, is still significantly more expensive than an average mobile phone package (which costs around USD7 per month). Broadband services are priced from USD5 - USD30 per month.

GDP per capita (2013) = USD3,475

SME IT Spend = IDR9,960,000 per annum (USD866.31)[56]

[56] Telkom Solution, "Pengeluaran UKM untuk TI Maksimal Rp 830 Ribu," 2012

Table 37: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	IDR689,820 (USD60)	IDR1,800,000 (USD157)	IDR17,245,500 (USD1,500)
Cost (as % of IT spend)	6.92%	0.18%	173.00%
Cost (as % of GDP/capita)	1.73%	4.51%	43.00%

Table 38: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure	IBM Smart Cloud	Red Hat Openshift
Cost	IDR2,069,460 (USD180)	IDR32,938,905 (USD2,865)	IDR2,759,280 (USD240)
Cost (as % of IT spend)	20.70%	330.70%	27.70%
Cost (as % of GDP/capita)	5.17%	82.00%	6.90%

Table 39: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Amazon EC2	Rackspace OpenStack Cloud	HP Cloud Compute
Cost	IDR18,878,074 (USD1,642)[57]	IDR1,986,681.60 (USD172.80)[58]	IDR6,042,823 (USD525.60)
Cost (as % of IT spend)	189.50%	19.94%	60.60%
Cost (as % of GDP/capita)	47.25%	5.00%	15.00%

[57] Price in Singapore

[58] Price in Hong Kong, Indonesian customers use the Rackspace HK data centre

Existing Government Programmes

The Ministry of Cooperatives and SMEs is responsible for formulating and coordinating SME-related policies in Indonesia. The Ministry empowers SMEs in Indonesia through a number of programmes:

- Evaluating regulations to favour the growth of SME.
- Successfully increasing the number of SMEs, SME employment numbers, and SME contribution to GDP.
- Conducting socialisation and training programmes for SMEs across Indonesian provinces, and managing credit disbursements to SMEs.
- Developing and providing technical assistance for modern retail SMEs/SME marts.
- Organizing SME networks and get-togethers of SMEs, modern retail players, cooperatives to promote SME products.
- Facilitating partnership programmes between SMEs across industries and provinces

There are a number of government initiatives available, issued by different institutions, and targeting different audiences:

- One of the seven priorities of the **Ministry of Cooperatives and SMEs** is to utilise ICT to create a more accurate and speedy services delivery. Thus, dedicated websites have been created to encourage SMEs to use ICT to improve business performance, including as a media to promote SMEs products;
- The **Ministry of Research and Technology** has been working (with the Ministry of Cooperatives and SMEs) on the development of the Information System for SMEs Support Programme. The programme utilises the Internet for e-commerce and product design for SMEs.
- The **Ministry of Communication and Information** also stated they will be formulating policies to support development of the cloud ecosystem.

The Ministry of Cooperatives and SMEs supports SMEs through a number of programmes, such as:

- **Start-up Capital for Entry-level Entrepreneur Programmes**. This programme is channelled through the cooperatives to stimulate the entry-level entrepreneur.
- Various **partnership programmes** to connect SMEs with sectorial institutions such as State Owned Enterprises, the Tourism Ministry, franchisors, and others.

SME Associations

There are several institutions that represent SMEs in Indonesia, public and private:

- The **Integrated Business Services (PLUT)**, under the Ministry of Cooperatives and SMEs, collates and integrates potential resources to develop an SME's business.
- **Smesco Indonesia Company (SIC)**. The Marketing Service Agency for SME (SMESCO) was founded in March 2007 to promote Indonesian products to the world. The SIC Tower located in Jakarta's central business district was built primarily to conduct SME exhibitions.
- **Lembaga Pegelola Dana Bergulir (LPDB KUKM)** was established by the Ministry of Cooperatives and SME to manage funds for SME financing. Funds can be given in the form of loans or other financing methods.
- The **Indonesian Chambers of Commerce (KADIN)** speaks on behalf of private business, acts as liaison to Government Officials and covers all relevant sectors at the national level. KADIN has a nationwide network of 33 regional Chambers and 440 district branches.
- The **Employers Association (Apindo)** plays a central and coordinating role in representing the employing companies especially on manpower, industrial relations, creating job opportunities, and creating a conducive business climate in Indonesia. They have increasingly focused on empowering SMEs in Indonesia in recent years. In April 2010, Apindo developed Creative SME Cooperation (UKEA) to be a liaison between their SME members and large enterprises, government, and financial institutions. Apindo has some 14,000 member companies.
- The **Indonesia Market Seller Association (APPI)** represents SMEs who operate in traditional or "wet-market" business. The organization helps to nurture their SME members to be able to compete in the retail industry, especially with the vast growing numbers of modern retail channels such as supermarkets and hypermarkets.

These institutions are active in encouraging the government and parliament to reform various regulations in order to ease the burdens of SMEs in doing or starting their business.

Financing Support for SMEs

1. In January 2013, the Central Bank of Indonesia (BI) instructed the major banks in Indonesia to participate in SME financing. BI issued a regulation to ensure bank participation by channelling a minimum of 20% of their total loans to SME-related businesses by 2018. With this new regulation, foreign and joint-venture banks are required to expand their playing field to reach the SME.

2. The Ministry of Cooperatives and SMEs created the Rolling Funds for Cooperatives and SME Management Institution to manage SME funding through loans or other funding. There are several schemes to channel the funding to SMEs.

3. PT Permodalan Nasional Madani (PNM) has also been established to improve access to capital and capacity building programmes for SMEs.

ACCA's 2015 Asia Pacific SME Cloud Market Study

JAPAN

JAPAN
Executive Summary

Two archetypes have come to represent the SME market in Japan: the manufacturing subcontractor and the highly skilled craftsman. Manufacturing subcontractors make up the hidden backbone of major manufacturing and exporting industries such as car manufacturing. It takes 50,000 parts to make a typical, modern Toyota car, representing well over 50,000 contracts that have been granted to companies throughout Japan. For the most part, Japan has not outsourced these contracts to countries with cheaper labour. Ninety-eight percent of manufacturing firms are SMEs (some 430,000 companies) that are in a constant struggle to maximize efficiency on the floor and minimize defects. Cloud computing offers the ability to save costs on data collection and storage, and to have a common place where management can access schedules, payrolls, contract information, etc, from any location at any time. In a country where quality is so essential, the ability to always have the best software and hardware capabilities without enormous IT investments is also appealing. There is already collaboration among manufacturing subcontractors and the potential for cloud collaborations between businesses is also high.

Businesses based on highly skilled craftsmen or processes based on generational knowledge cover a variety of sectors from accommodation to retail. The challenge with this class of SMEs is obvious, how can you market to firms who have never needed or wanted cloud computing and how can you merge 21st technology with sometimes "ancient practices"? The solution most likely lies with the bureaucratic nature of 21st century Japan. Experts in these businesses are not experts in hiring, taxes, law, etc. If cloud computing can be marketed as a way to cut administration time in an understandable way, the gap between old and new can possibly be bridged.

These archetypes are not only symbols; they are large segments of the SME population and create unique challenges for cloud computing adoption and adaptation.

There are approximately 4.2 million SMEs in Japan. SMEs comprise some 99.7% of all businesses. SMEs employ 70% of the workforce and contribute 53% of Japan's total GDP. Most SMEs can be found in wholesale and retail trade; construction; eating, drinking and accommodation services; and manufacturing, as well as and medical, health care, and welfare.

These are the largest potential SME sectors and have the largest potential for sales for cloud computing solutions. While solutions for manufacturing, wholesale/retail, accommodation and medical services should be prioritised, those solutions won't necessarily appeal to other sectors, and hence other sectors showing promise as early adopters include:

- Transportation/Telecommunications
- Electric Machinery
- Finance/Insurance

Market Size

There are 4,128,215 enterprises in Japan, of which approximately 4,115,830 are SMEs, meaning that SMEs comprise some 99.7% of all businesses in Japan. With a total workforce of around 65.28 million people, SMEs employ about 45.6 million people, or 70% of the workforce, and contribute 53% of Japan's total GDP of USD4.9 trillion (Table 40).

There is no "micro business" in the SME definitions established by Japanese law. Nevertheless, there is comprehensive employment data in the Japanese Bureau of Statistics, as shown in Table 42, with the employment rate distribution in all classified economic sectors.

Businesses with very few employees dominate with 76% of the total, including businesses that have no official regular employees. Unfortunately, the definitions of SMEs and the way statistics are collected in Japan make it impossible to count only "small enterprises" separate

Table 40: SMEs by GDP and Employment

	GDP	Employment	Enterprises
Date	2013	2012	2012
Total	USD4.9 trillion	65.28	4,128,215
SME contribution	53.00%	45.6 million	99.70%

Source:
World Bank, "Country at a Glance: Japan," 2013; Japan SME Agency,"SME White Paper on Small and Medium Enterprises in Japan," 2012 and 2013
Ministry of Internal Affairs and Communications, Statistics Bureau, "2012 Economic Census for Business Activity", 2012

Table 41: Distribution of SMEs by Employment

No. employees	No. enterprises	% total enterprises	Total employees	% total
0-4	3,136,695	75.98%	8,555,184	16.00%
5-9	455,674	11.04%	4,003,970	7.00%
10-19	258,599	6.26%	4,235,068	8.00%
20-29	94,115	2.28%	2,576,706	5.00%
30-49	73,560	1.78%	3,130,947	6.00%
50-99	56,039	1.36%	4,228,638	8.00%
100-299	37,638	0.91%	6,561,445	12.00%
300-999	11,953	0.29%	6,305,295	12.00%
1,000-1,999	2,165	0.05%	3,022,882	6.00%
2,000-4,999	1,196	0.03%	3,629,858	7.00%
>5,000	582	0.01%	7,236,779	14.00%
Total	4,128,216	100.00%	53486772	100.00%

Source:
MIC, Statistics Bureau, "2012 Economic Census for Business Activity", 2012

from SMEs as a whole. However, the majority of small enterprises according to the definition have five employees or less, making the percentage most likely somewhere between 76 – 87% out of all businesses.

SME Definition

An SME is defined under the Small and Medium-sized Enterprise Basic Act (Table 3).

The two requirements, employment and capital, are also 'OR requirements', allowing companies that only meet one requirement to still be considered an SME. Since there are subsidy programmes and tax incentives for SMEs, the definition functions as a criteria test. The Act also partially functions as a means of giving support to certain selected industries: construction, manufacturing, and transportation. Those industries have the broadest employment and capital requirements, allowing those firms to receive support for extended amount of time for their business development.

Table 42: Japanese SMES Defined by sector

Sector	Requirements
General, including manufacturing, construction, transport	<JPY300 million or <300 employees
Wholesale trade	<JPY100 million or <100 employees
Services	<JPY50 million or <100 employees
Retail trade	<JPY50 million or <50 employees
Micro-businesses,[59] *excluding* Services	<20 employees
Micro-Services businesses	<5 employees

Source:
Japan SME Agency, "Small and Medium-Sized Enterprise Basic Act,"1999

ICT Market Access

In 2013, there were 146,454,898 mobile phone subscriptions, with a penetration rate of about 115.2%. This percentage includes mobile subscribers and pre-paid phone users. Business Internet usage rate was 99.9% in 2012. Broadband penetration rate for businesses with more than 100 employees was 79.7% in 2010 for fixed or wireless. The broadband penetration rate for households in 2010 was 63.4% for Internet via FTTx, ADSL, cable and fixed wireless broadband. One factor that may explain the disparity between the business and personal use numbers is the relatively large number of people over 60. The adoption of broadband Internet is regularly assumed to be lower for this section of the population. There is also a disparity in Japan between wireless broadband (including satellite, terrestrial fixed wireless, and terrestrial mobile wireless, but not Wi-Fi) and fixed broadband (DSL, Cable, Fibre, and BPL). As of June 2013, wireless broadband penetration was 105.3%, and fixed broadband was 27.8% (Table 43).

The use of mobile phones and smartphones in Japan is ubiquitous, and with smartphone adoption on a rapid rise. As of March 2014, smartphone penetration was 54.7%, and expected to exceed 62% by year-end. This will be a 20 percentage points increase from the smartphone usage rate of 42% in 2013, and more than double the rate in 2012 at 28%.[60]

Latest available data from the Japanese government showed a penetration rate for personal computers at 78.7% and 20.9% for tablet PCs as of March 2014.[61]

[59] The Small and Medium-sized Enterprise Basic Act does not define "micro-businesses", but it defines a small business using only an employment requirement. Since most of the subsidy programmes apply equally to medium and small enterprises, the definition for a small business is much looser.

[60] Bloomberg, "Japan Passes U.S. as Top App Spender as Smartphone Use Rises," 2013

[61] Japan Cabinet Office," Mobile phone/Smartphone penetration in Japan, 2014 March," 2014

Table 43: Japanese InfoComm Statistics

	Wireless Broadband	Fixed Broadband	Mobile
Date	June 2013	June 2013	2013
Total number	134,301,898	3,549,4373	146,454,898
% penetration	105.30	27.80	115.19

Source:
OECD, "Broadband Portal," 2013
ITU, "Time Series by Country," 2013

Market Characteristics

The Japanese Statistics Bureau breaks the Japanese economy out into 17 categories (Table 45). Despite a large manufacturing and export industry, Japan's economy is dominated by service industries. Services make up about 72.5% of all economic activity, followed by industry with 26.3%, and agriculture with 1.1%. As shown in Table 44, the largest service industry by value add is wholesale and retail trade, followed by finance and insurance and medical, healthcare and welfare.

However, most SMEs can be found in wholesale and retail trade; construction; eating, drinking and accommodation; and manufacturing. The largest four sectors in terms of number of businesses, employees and value add are shown in Table 44, and manufacturing, as a sector, is the largest in terms of industry value add.

Table 44: Japanese InfoComm Statistics

	No. of businesses	Employees	Value add
1	Wholesale & retail trade (22.70%)	Wholesale & retail trade (20.00%)	Manufacturing (USD550,555)
2	Accom, food services (13.20%)	Manufacturing (19.50%)	Wholesale & Retail trade (USD437,754)
3	Construction (11.30%)	Medical, Health Care & Welfare (10.10%)	Finance & Insurance (USD323,420)
4	Manufacturing (10.70%)	Accom, food services (8.80%)	Medical, Health Care & Welfare (USD209,102)

Source:
MIC, Statistics Bureau, "2012 Economic Census for Business Activity", 2012

Table 45: Operating business, 2013

	Enterprises		Employees		Value Add
	No.	%	No.	%	(USD mill)
Agriculture, Forestry and Fisheries	24,616	0.60	340,532	0.60	7,942
Mining and Quarrying of Stone and Gravel	1,766	0.00	22,630	0.00	4,406
Construction	468,199	11.30	3,820,434	7.10	143,813
Manufacturing	434,130	10.50	10,038,043	18.80	550,555
Electricity	759	0.00	198,972	0.40	28,881
ICT	45,441	1.10	1,543,342	2.90	130,104
Postal and Transport Activities	75,783	1.80	3,183,062	6.00	133,188
Wholesale and Retail Trade	930,073	22.50	10,680,333	20.00	437,754
Finance and Insurance	32,419	0.80	1,461,901	2.70	323,420
Real Estate and Goods Rental and Leasing	329,449	8.00	1,412,653	2.60	82,168
Scientific, Professional and Technical Services	192,062	4.70	1,510,504	2.80	95,162
Accommodation, Eating and Drinking Services	545,801	13.20	4,865,977	9.10	78,298
Living-Related, Personal, Amusement Services	385,997	9.40	2,335,448	4.40	63,369
Education, Learning Support	116,051	2.80	1,762,674	3.30	65,395
Medical, Health Care and Welfare	276,973	6.70	5,660,386	10.60	209,102
Compound Services	6,469	0.20	491,911	0.90	24,340
Service	262,228	6.40	4,157,970	7.80	130,536
Total	4,128,216	100.00	53,486,772	100.00	2,508,433

Source:
MIC, Statistics Bureau, Statistics Bureau, "2012 Economic Census for Business Activity", 2012

The sectors that appear over and over again are manufacturing, wholesale and retail trade, accommodation, eating and drinking services, and medical, health care, and welfare. These are the largest potential SME sectors with the largest potential for sales for cloud computing solutions.

Industries Most Likely to Adopt Cloud Computing Solutions

According to the results of a November 2012 survey on "IT Use of SMEs", which was commissioned by the Japanese SME Agency, the top three SME industries with the highest rates of cloud adoption were the information and communications (31%), transportation (8.3%), and wholesale and retail trade (7.8%).[62]Trailing behind were accommodation and food services (7.1%), construction (6.5%), and manufacturing (7.1%).

About 30% of Japanese companies were already familiar with cloud services, according to the results of the survey, among them medium enterprise awareness was at 27.8%, and micro enterprise awareness at 21%. Respondents were considering adopting cloud solutions to address high IT costs and lack of staff. Of the small enterprises surveyed, 7.1% said they were using cloud computing already; 8.2% said they were considering using cloud computing; while 18.1% said they were not considering using cloud computing but were interested. Some 23.3% claimed to not understand or know about cloud computing. The corresponding figures for medium sized enterprises were; 11% (already using), 10.3% (considering), 29.9% (interested), and 8.9% (don't understand/know).

In the information and communications industry, the ratio of SMEs that consider IT to be essential component of business runs to 76.6%. Telecoms accounts for the largest share of industry sales (38.9%)[63], with leading Japanese telecom operators KDDI, NTT and SoftBank all aggressively developing and offering cloud solutions for enterprises (in and outside of Japan). One example of a government-led initiative that helps spur the adoption of cloud computing across the industry has been the experiment with cloud-based learning systems allowing access to teaching materials using remote devices.[64]

The transportation industry can be classified into three types: those doing business-to-business (B2B) transactions; those business-to-consumer (B2C) transactions; and those doing consumer-to-consumer (C2C) transactions. e-commerce has rapidly driven the growth of B2C and C2C transactions in recent years.[65] The business of moving a product or a service from one location to another is labour intensive, involves multiple processes and can be costly – often unnecessarily so. Cloud computing applications are seen as a means to simplify these processes, reduce costs and ensure on-time delivery.

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[62] Japan SME Agency, "SME White Paper on Small and Medium Enterprises in Japan," 2013

[63] Ministry of Economy, Trade and Industry, "Basic Survey on the Information and Communications Industry," 2012

[64] Enterprise Communications, "The Education Sector is Ripe for Cloud Innovation and Adoption,"2014

[65] Manufacturing Management Research Center, "Supply Chain of the Transportation Industry and Network Building Strategy," 2013

The wholesale and retail trade industry has seen new players using cloud computing solutions as a means to lower barriers to entry, both generally and specifically to e-commerce, allowing newly-established retailers to immediately put up their own online stores, and in many cases *leading with an online presence* before a physical one is properly established. Existing players are tapping cloud solutions to streamline processes as they expand. One example of a retail enterprise that has deployed cloud solution is the Fast Retailing Company which is using the solution to unify its processes as it grows its business in Japan and abroad.[66]

SME Demand Drivers

There are two archetypes that have come to represent the entire SME market in Japan. The first is a manufacturing subcontractor. These businesses make up the hidden backbone of major manufacturing and exporting industries such as car manufacturing. The second is highly skilled craftsman. These are small businesses that sell a product that has been produced by a skilled producer of the highest tier or by an ancient process perfected over generations. These archetypes are not only symbols; they are large segments of the SME population and create unique challenges for cloud computing adoption and adaptation.

It takes 50,000 parts to make a typical, modern Toyota car, which represents well over 50,000 contracts that have been granted to companies throughout Japan. For the most part, Japan has not outsourced these contracts to countries with cheaper labour. As a result, a common practice is to import foreign workers who, not protected by Japanese minimum wage laws, will work for a developing world salary.

Under the definition given by Ministry of Economy, Trade and Industry (METI), 98% of manufacturing firms are SMEs, a total market of a little over 430,000. These companies are in a constant struggle to maximize efficiency on the floor and minimize defects. Cloud computing offers the ability to save costs on data collection and storage and the ability to have a common place where management can access schedules, payrolls, contract information, etc, from any location at any time. In a country where quality is so essential, the ability to always have the best software and hardware capabilities without enormous IT investments is also appealing. There is already collaboration among manufacturing subcontractors and the potential for cloud collaborations between businesses is also high.

Businesses based on highly skilled craftsmen or processes based on generational knowledge cover a variety of sectors from accommodation to retail. In the paper, "Open innovation strategy of Japanese SME" 44.7% of SMEs were in operation for more than 50 years and only 5.3% were in operation for less than 10 years.[67] The longevity of SMEs is indicative of the common practice of staying regional or even local to protect the quality and reputation of the product.

[66] www.accenture.com/SiteCollectionDocuments/PDF/Accenture-A-New-Era-For-Retail.pdf

[67] Idota, H., Teruyuk, B., & Masatsugu, T., "Open Innovation Strategy of Japanese Smes: From Viewpoint of ICT Use and Innovative technology," 2012

The challenge with this class of SMEs is obvious, how can you market to firms who have never needed or wanted cloud computing and how can you merge 21st technology with sometimes ancient practices. The solution most likely lies with the bureaucratic nature of 21st century Japan. Experts in these businesses are not experts in hiring, taxes, law, etc. If cloud computing can be marketed as a way to cut administration time in an understandable way, the gap between old and new can possibly be bridged.

Key Characteristics to be Noted

Eco-friendly: Cloud computing offers the potential to have high quality IT infrastructure without as much energy expenditure. Since the Fukushima plant explosion, Japan energy policy has had an ambiguous future. Nuclear energy and burning coal or fossil fuels is incredibly unpopular and options like solar panels and wind farms cannot yet make enough electricity cheap enough to supply Japan's large energy needs. As a result, conservation is requirement for SMEs and electricity is becoming more and more expensive.

Japan is a cash based society – people in general like to pay for everything with hard currency, bills, groceries, everything. Although credit cards continue to grow in popularity, there are a few additional considerations for successful e-commerce. Businesses selling online need some method for consumers to pay for the product using cash, and this is often done through partnerships with convenience stores. A customer will make a purchase online, print out the receipt and take it to the local convenience store, which will clear the transaction allowing the customer to pay with cash.

Japanese consumers have high expectations for the quality of products and the service they receive. Store clerks will almost always welcome customers to a store, grocery stores will deliver groceries to the home for around a dollar, and customers are almost always spoken to in the highest, most respectful form of Japanese. As a result, Japan is not a "do-it-yourself" culture. Consumers expect purchases to be made with the greatest amount of ease and will pay for the convenience.

Cost Conscious: According to a study by Small and Medium Enterprise Agency, SMEs spend about USD1.1 trillion in operating expenses. The highest expenditure is personnel costs, taking up nearly half of expenditures.

Japanese firms see cloud computing as a means of lessening electricity costs and increasing ICT capabilities in a cost-effective way. The sectors with the highest utility costs were accommodation and dining services, retail and manufacturing. Although it is not clear how much of their utility costs are from ICT usage, marketing any potential cost-saving measure in electricity would most likely be effect for those firms. Personnel costs can also be reduced though cloud computing by replacing IT infrastructure that would otherwise have to be maintained by staff. The sectors with the highest personnel costs were wholesale, manufacturing, and retail.

Table 46: SME Operating Expenditures after Sales Costs (USD million)

	Total expenditures	Personnel	Utilities	Freight & packing	Ad	Employee training	Taxes & charges
All sectors	1,132,450	536,145	23,604	38,952	22,468	1,991	30,091
Construction	128,125	65,244	1,655	770	2,108	280	3,944
Manufacturing	199,785	90,346	2,927	18,402	3,152	448	5,661
Info & comms	49,431	24,453	454	536	1,277	141	709
Transport & postal	51,692	25,022	619	930	166	61	1 535
Wholesale	190,765	92,167	2,434	13,500	2,503	248	3,667
Retail	163,230	77,936	4,340	2,928	5,352	202	3,002
Real estate	92,345	34,217	2,267	250	2,299	98	6,036
Sci research, pro & tech	44,301	24,831	395	245	346	107	916
Accom, eating & drinking	64,229	30,636	4,938	229	1,141	79	1,390
Personal & amusement	71,464	27,981	2,898	304	3,102	122	1,597
Services	77,082	43,313	677	857	1,022	206	1,632

Source:
Small and Medium Business Agency, "Small Business Realities Survey," 2012

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

SMEs (enterprises with less than 1,000 employees) spent about USD58 billion on ICT expenses in Japan. This translates to an average ICT spend per company of about USD14,000. With this budget, most SMEs can afford to buy a cloud solution. Based on the prices of some cloud solutions gathered for this report, the ratios of cloud prices against the estimated annual IT budget are from 0.43% to 12.34%.

[68] AMI Partners, Inc., "Worldwide large business cloud and mobile-related ICT spending to reach $175 billion in 2018,"2012,

Prices of some cloud computing products are comparable to the prices of Internet and broadband services: a high-speed mobile broadband costs JPY400 per month (USD3.92); mobile WiMAX costs JPY3,410 per month (USD33.4).

Average GDP per capita = USD38,492

Table 47: SaaS (per User, pa)

	Google Apps for Business	Zendesk Enterprise	Salesforce Sales Cloud (Enterprise)
Cost	JPY6,120 (USD60)	JPY151,000 (USD1,5000	JPY165,240 (USD1,620)
Cost (as % of GDP/capita)	0.15%	3.89%	4.20%

Table 48: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure	IBM Smart Cloud	NTT Cloud	Red Hat Open Shift
Cost	JPY19,584 (USD192)[69]	JPY12,240 (USD120)	JPY10,800 (USD106)	JPY24,480 (USD240)
Cost (as % of GDP/capita)	0.49%	0.31%	0.27%	0.62%

Table 49: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Amazon Virtual Cloud (EC2)	HP Cloud Compute Linux | Windows
Cost	JPY176,265 (USD1,728)	JPY26,806 (USD262.80) – Linux JPY53,6112 (USD525.6)[70] – Windows
Cost (as % of GDP/capita)	4.48%	0.68% - Linux 1.36% - Windows

[69] Note: This is based on Microsoft Japan West price. Price of A0, shared and 768MB RAM for Japan East is USD18 per month or USD216 per annum.

[70] Both are standard prices on HP website

Existing Government Programmes

The most formal representation for SMEs in the government is the Ministry of Economy, Trade, and Industry (METI). An external bureau of METI, the **Small and Medium Enterprise Agency**, implements METI's plans regarding SMEs, publishes important laws for the SME community and acts as a channel between METI and the SME community.

The SME Agency is responsible for the main government report for SMEs, a white paper released every year. The main problem for the agency has been identified to be that many SMES are simply not aware of available measures. To address the issue, the Agency regularly publishes all relevant government law and policies.

At an implementation level, the Japan Chamber of Commerce and Industry (JCCI) serves as a public association for businesses.[71] There are a number of support programmes, including financing and loan support programmes available to SMEs for ICT uptake (Table 50).

Most financial resources for SMEs are distributed by Japan Finance Corporation (JFC), a financial service corporation entirely owned by the Japanese government. A selection of the more relevant programmes are outlined in Table 51.

Table 50: SME ICT Support Programmes

Measure	Description
Development of next-gen, energy-saving core IT technologies	Enables small and medium sized IT vendors proposing to develop new businesses "in the cloud." Accompanied by the development of local networks to facilitate SME IT users' use of IT via the cloud, and the formulation, dissemination, and implementation of self-sustaining business models in collaboration with small and medium IT vendors.
Promotion of IT use by SMEs	Support provided to revitalize regional economies using IT. Promoting sustainable use of IT in business management, development of new services, and generation of innovation through B2B partnerships by local SMEs.
Taxation support for SME information infrastructure	Allows SMEs that invested in IT equipment and that meet certain criteria to select either a 30% depreciation or a tax credit for 7% of the amount of investment.
Government supported lending for investment in IT	Enables SMEs to keep up with changes in the business environment associated with changes in IT and digital content.

Source:
Japan SME Agency,"SME White Paper on Small and Medium Enterprises in Japan," 2012

Table 51: Financing Programmes for SMEs

Policy	Description
New Startup Loan Programme	Unsecured, unguaranteed loans of up to 7 years working capital, and 10 years capital expenditure provided to new ventures in identified key areas.
Founders' guarantees	Meant to improve lending to startup entrepreneurs from private financial institutions by giving credit guarantees for person who are starting up in business or have started up a business less than five years ago.
Fund Investment Programme (SME Growth Support Fund)	Up to one half of total value provided by SMRJ in order to expand opportunities for investment in SME ventures at startup or early growth stage.
Angel tax system	Enables SMEs to keep up with changes in the business environment associated with changes in IT and digital content.
	Assist the financing of newly founded SMEs by granting tax rebates on supporting investments.
New Business Activity Promotion Support Programme	(1) New Partnership Support Programme Comprehensive support in the form of subsidies, loans, guarantees, tax exemptions, etc. provided for approved business plans resulting from partnerships between SMEs in different fields under the New Business Activity Promotion Act. (2) New Business Using Regional Resources Support provided for approved business using regional industrial resources.
Innovation Support Programme	Support provided to SME business activities for implementation of approved management innovation plans engaging in new business activities.
New business support	Integrated support provided to SMEs engaging in new business within Regional Resource Utilization Promotion Act framework, New Business Activity Promotion Act.
Local industry strengthening	Support provided to initiatives contributing to the creation and development of new growth industry clusters through active use of regions' strengths, advantages, and potential and the formation of industry-academia-government collaboration.
New business support	Integrated support provided to SMEs engaging in new business within Regional Resource Utilization Promotion Act framework, New Business Activity Promotion Act.
Local industry strengthening	Support provided to initiatives contributing to the creation and development of new growth industry clusters through active use of regions' strengths, advantages, and potential and the formation of industry-academia-government collaboration.

Source:
Japan SME Agency,"SME White Paper on Small and Medium Enterprises in Japan," 2012

ACCA's 2015 Asia Pacific SME Cloud Market Study

MALAYSIA

MALAYSIA
Executive Summary

Malaysians are big users of social media, and a well-managed social media site with relevant two-way communications has been shown to effectively appeal to consumers and businesses alike. However, only 27% of businesses use ICT in their businesses. With the proportion of ICT usage in business still so low, and considering the conservative and traditional nature of local SMEs, much more can be done to encourage greater usage.

As Malaysia is still an emerging economy, most SMEs are still involved in low-tech and traditional businesses. However, as Malaysia continues its transition to a digital economy, more of these traditional businesses are being replaced by modern companies. However, according to the government some 73% of SMEs do not use ICT in conducting their business. Of the 17% who do, 67% utilized the Internet in their business, although only 12% had their own websites.

In 2012, there were some 645,136 SMEs in Malaysia, accounting for 97.3% of total enterprises; SMEs employed 4,854,142 people, accounting for 57.4% of total employment; and contributing 32.7% of total GDP (MYR 257.5 billion).

The services sector which accounts for 90% of SMEs will likely be the most attractive sector to target for increasing adoption of cloud computing services. Within the services sector, the industries likely to be early adopters of cloud computing services are:

1. Transportation and storage
2. Wholesale and retail trade, repair of motor vehicles and motorcycles
3. Arts, entertainment and recreation

Simple cloud computing solutions in each of these areas, enabling enterprises to save costs and reach further customers are becoming an attractive option. These could help improve communications with different employees in the enterprise or other partners, help streamline workflows through better documentations and scheduling, create databases for inventory, and help bid for projects and tenders online.

However, given that most SMEs are still involved in low-tech and traditional businesses, they perceive less incentive to conduct R&D activities or to make changes to the way they conduct their businesses, with 73% of financing used as working capital for the core business operations. However a changing mind-set, and the government's vision to transform Malaysia into a digital economy, is beginning to lead to a greater amount of financing used for improving production processes, or the use of hardware and software to improve efficiencies.

Innovation and technology adoption is one of the six focus areas under the SME Masterplan 2012-20. This includes SME Cloud Computing under the Multimedia Development Corporation (MDeC), providing 6-month subscription fee rebates or up to MYR1,500 of the total subscription fee from any SaaS solutions from any MSC Malaysia Status companies. Similarly, the Product Development & Commercialisation Fund (PCF) helps local MSC companies accelerate the development of products and solutions to commercialization, with a focus upon areas such as the Internet of Things and Big Data.

Market Size

SME Corp Malaysia reports that there were some 645,136 SMEs in Malaysia, accounting for 97.3% of total enterprises. According to their annual reports, SMEs employed 4,854,142 people, accounting for 57.4% of total employment. Despite the significant numbers of SMEs and sizable contribution to employment, SMEs contributed only 32.7% to total GDP in 2012, or MYR257.5 billion (Table 52). Table 53 also shows that the vast majority of SMEs in Malaysia are micro-businesses, followed by small and then medium-sized businesses.

Table 52: Malaysia SMEs by GDP and Employment

	GDP	Employment (2013)
Total	MYR787.6 billion (2013)	8,460,971
SME contribution (%)	32.7% (2012)	57.4%
SME contribution (absolute)	MYR257.5 billion	4,854,142 people

Source:
Malaysia Department of Statistics, "GDP 2005-2013"
"SME Annual Report 2012/2013"

Table 53: Relative Sizes of Malaysia SMEs

Category	Micro	Small	Medium	Total
Number of SMEs	496,458	128,787	19,891	645,136

Source:
SME Corp, "SME Annual Report 2012/2013"

These totals, however, were based on the old definition of SMEs. The National SME Development Council recently updated the definition of Malaysian SMEs to facilitate the country's transformation to a high income economy. The new definition for SMEs was released by SME Corp Malaysia in July 2013, raising the qualifying thresholds for sales turnover and employment and allowing more SMEs to benefit from incentives provided by the government – a recognition of the central economic development role that SMEs are seen to play in the Malaysian economy.

The updated SME definition is expected to lead to more firms being classified as SMEs, particularly from the services sector. This increases the total share of SMEs from 97.3% to 98.5% of total establishments, or 652,995 SMEs, up from 645,136 SMEs.

SME Definition

SME Corp Malaysia previously defined SMEs by both the number of full time employees and annual sales turnover:

Table 54: Old Definition of SMEs (Prior to 2014)

Industry	Criteria	Micro	Small	Medium
Manufacturing (including agro-based) and manufacturing-related industries	Sales turnover	< MYR250,000	MYR250,000 to < MYR10 million	MYR10 million to < MYR25 million
	OR			
	Full-Time Employees	< 5 people	5 to < 50 people	50 to < 150 people
Primary Agriculture, Services Sector, (including ICT)	Sales turnover	< MYR200,000	MYR200,000 to < MYR1 million	MYR1 million to < MYR5 million
	OR			
	Full-Time Employees	< 5 people	5 to < 20 people	20 to < 50 people

Source:
SME Corp, "SME Annual Report 2011/12"

Table 55: New Definition of SMEs (Enacted Jan 2014)

Industry	Criteria	Small	Medium
Manufacturing	Sales turnover	MYR300,000 to < MYR15 million	MYR15 million to < MYR50 million
	OR		
	Full-Time Employees	5 to < 75 people	75 to < 200 people
Services and Other Sectors	Sales turnover	MYR300,000 to < MYR3 million	MYR3 million to < MYR20 million
	OR		
	Full-Time Employees	5 to < 30 people	30 to < 75 people

Source:
SME Corp, "Guideline on New SME Definition", Oct 2013

1. *For Manufacturing, Manufacturing-Related Services and Agro-based industries*: SMEs were enterprises with no more than 150 full-time employees or with annual sales turnover not exceeding RM25 million.

2. *For Services, Primary Agriculture and Information & Communication Technology (ICT)*: SMEs were enterprises with no more than 50 full-time employees or with annual sales turnover not exceeding RM5 million.

Updated by the National SME Development Council (NSDC), the new definition for SMEs came into effect in January 2014 (Tables 50).

SME Definition

The respective contribution of sectors to the Malaysian economy and the relative strength of SMEs in each are illustrated in Tables 56-58.

Table 56: SME Contribution to GDP, by Sector (%) (Constant 2005 Prices)

SME Contribution to GDP	2005 (% share)	2012 (% share)	Increase/ Decrease (%)	CAGR 2006-2012
Overall	29.40	32.70	+3.30	6.30
Services	17.00	20.20	+3.20	7.30
Manufacturing	8.10	7.90	-0.20	4.30
Agriculture	3.40	3.30	-0.10	4.10
Construction	0.70	0.90	+0.20	8.10
Mining and Quarrying	0.10	0.10	0.00	6.30

Source:
SME Corp, "SME Annual Report 2012/2013, Chapter 2"

Table 57: Number of Establishments by Sectors

	Micro	Small	Medium	Total MSMEs	
Sector	Number	Number	Number	Number	% Share
Services	462,420	106,061	12,504	580,985	90.00%
Manufacturing	21,619	13,934	2,308	37,861	6.00%
Construction	8,587	6,725	3,971	19,283	3.00%
Agriculture	3,775	1,941	992	6,708	1.00%
Mining	57	126	116	299	0.00%
Total SMEs	496,458	128,787	19,891	645,136	100.00%

Source:
SME Corp, "SME Annual Report 2012/2013, Appendix 1: Key Statistics on SMEs"

Table 58: Overview of Malaysia's Large Firms and SMEs

	Total Establishments	Large Firms		SMEs	
Sector	Number	Number	% share of total sector	Number	% share of total sector
Services	591,883	10,898	1.84%	580,985	98.16%
Manufacturing	39,669	1,808	4.56%	37,861	95.44%
Agriculture	8,829	2,121	24.02%	6,708	75.98%
Construction	22,140	2,857	12.90%	19,283	87.10%
Mining	418	119	28.47%	299	71.53%
Total	662,939	17,803	2.69%	645,136	97.31%

Source:
SME Corp, "SME Annual Report 2012/2013, Appendix 1: Key Statistics on SMEs"

ICT Market Access

Mobile subscription rates in the first quarter of 2014 were 143.32%, or nearly 1.5 mobile subscriptions per person (Table 59). Malaysia's use of mobile phones is heavily skewed towards postpaid subscriptions, with more than 35 million postpaid subscribers.

Compared to mobile subscriptions, broadband and wireless subscriptions pale in comparison, with only 8% penetration of broadband. The number is slightly higher for wireless broadband, and 12.86% penetration.

Broadband access is not quite ubiquitous in Malaysia, as the Malaysian Communications and Multimedia Commission (MCMC) reports that there is only 23.5% population penetration rate of broadband for fixed, wireless, and 1Malaysia Netbook[72] connections.

However, these statistics clearly show that Internet access in Malaysia is *overwhelmingly* mobile-based, with most of the mobile use in urban areas. However, rural use of mobile services has expanded over the years, as Table 59 also shows rural use of mobile phones increasing from 26.3% in 2007, to 31.2% in 2012.

These movements are significant to note, as it suggests that most Malaysians are accessing the Internet via mobile devices such as mobile phones, tablets or other mobile devices. The potential for using mobile cloud computing is therefore very high for the mass population of Malaysia, as many should be familiar with using cloud mobile applications, and there is no legacy "on prem" mindset to hurdle over.

[72] The 1Malaysia Netbook is part of the Komputer 1Malaysia initiative launched in March 2010 under the National Broadband Initiative (NBI), a government project to boost broadband access to underserved areas.

This potential for adopting mobile cloud computing extends to SMEs as well. The geography of Malaysia spans across two land masses, and anecdotal evidence has shown that many small business owners have to do inter-state travel, often on a daily basis.

The low take-up rate of non-household subscriptions of broadband and wireless broadband suggests that many businesses are not yet on the broadband network. However, the high mobile phone penetration rate suggests that many SME owners may have already developed fully-mobile workstreams, where portable devices such as tablets, laptops, smartphones, and mobile dongles are used for managing their businesses.

Given the evidence that Malaysia is in the middle of a leapfrog move to a mobile economy, there is a strong likelihood that SMEs in Malaysia would be ready to adopt mobile cloud computing solutions – if they aren't already.

Population (2013) = 30 million

GDP (2013) = MYR787.6 billion

GDP per capita = MYR26,253

Table 59: Malaysia Infocomm Statistics

Total subscribers (2014 Q1)	**Mobile**		**Broadband**		**Wireless Broadband**		**1Malaysia Netbook**
	42,996,000		2,419,300		3,805,200		1,871,100
% population penetration	143.32%		8.06%		12.68%		6.24%
Subscription Category	Postpaid	Prepaid	House-holds	Non-Households	House-holds	Non-Households	
	7,880,000	35,233,000	199,600	419,700	2,401,200	1,404,000	

	Mobile phone users by urban and rural areas (%)	
Year	**Urban**	**Rural**
2007	73.70	26.30
2012	68.80	31.20

Source:
Malaysian Communications and Multimedia Commission, "Communications and Multimedia : Pocket Book of Statistics, Q1 2014"

Market Characteristics

Malaysia's economy is segmented into 21 individual categories (see for full listing and further breakdown at www.tinyurl.com/MYecon2008Classify). The SME market overall can be divided into agriculture, manufacturing, construction, mining and service (Table 60).

Services represent the bulk of SMEs in Malaysia, accounting for over 90% of all MSMEs and contributing 20.2% to GDP in 2012 (Tables 56 and 57). The service industry's contribution to GDP has increased 3.3% between 2005-2012, with a healthy compound annual growth rate (CAGR) of 6.43% over the same period.

Services can be further broken down into 15 sub-sectors (Table 60), where the majority of service establishments come from (1) wholesale, retail and trade and repair of vehicles, (2) food and beverage services, and (3) transportation and storage. Out of these 15 sectors, the first sector, wholesale, retail and trade and repair of vehicles accounts for nearly half (49.88%) of all SMEs in the services sector. This is followed by food and beverage services (24.57%), and transportation and storage (6.89%).

As Malaysia is still an emerging economy, most SMEs are still involved in low-tech and traditional businesses. However, as Malaysia continues its transition to a digital economy, more of these traditional businesses are being replaced by modern companies.

However, according to the government some 73% of SMEs do not use ICT in conducting their business. Of the 17% who do, 67% utilized the Internet in their business, *although only 12% had their own websites*.

Table 60: Overview of Service SMEs by Sub-Sector

Services Sub-sector	Number of Establishments	Number of Establishments (%)	Gross Output (MYR mill)	Value Add (MYR mill)	Employees	Fixed Assets (MYR mill)
ALL SERVICES	580,985		286,640	165,284	2,610,373	167,988
Financial services	5,356	0.92%	43,322	29,560	27,413	61,572
Real estate activities	8,180	1.41%	13,402	8,180	38,523	37,741
Wholesale/retail trade, repair of vehicles	289,798	49.88%	129,206	80,426	1,263,983	34,525
Transportation and storage	40,025	6.89%	19,365	8,160	143,581	10,318
Admin & support services	10,609	1.83%	11,308	3,941	75,163	4,365
Pro, scientific & tech activities	19,054	3.28%	15,418	8,696	141,901	4,195
Accommodation	2,817	0.48%	1,850	980	37,302	3,229
Food & beverage services	142,721	24.57%	31,934	14,362	610,819	2,581
Electricity, gas, air-con supply	107	0.02%	1,538	620	2,621	2,276
Other activities	36,721	6.32%	4,485	2,373	94,274	2,050
Human health & social work	9,040	1.56%	4,389	2,299	53,387	1,413
Arts, entertainment and recreation	6,217	1.07%	2,444	1,227	30,280	1,404
Education	7,938	1.37%	3,118	2,029	64,999	1,367
Info and communications	1,880	0.32%	4,609	2,318	22,052	855
Water, sewerage & waste	522	0.09%	251	113	4,075	96

Source:
Department of Statistics, "Economic Census 2011: Profile of Small and Medium Enterprise"

Industries Most Likely to Adopt Cloud Computing Solutions

The services sector which accounts for 90% of SMEs will likely be the most attractive sector to target for increasing adoption of cloud computing services. The manufacturing sector makes up the second highest number of SMEs, accounting for 6% of all SMEs, and has MYR564 million worth of fixed assets in computer hardware and software. Simple cloud computing solutions which may allow enterprises in this sector to save money are likely to be an attractive option. These could help improve communications with different employees in the enterprise or other partners, help streamline workflows through better documentations and scheduling, create databases for inventory, and help bid for projects and tenders online.

The purchasing/leasing of equipment/machinery/vehicles/computer hardware and software takes up a sizeable 22.5% of financing of SMEs as shown in Table 61 below. Within the services sector, the top industries likely to adopt cloud computing are likely to be:

Transportation and storage: Encompassing 6.89% of all SMEs. Cloud computing is an attractive option for transportation and storage enterprises to keep track of inventory, tracking services, communications with suppliers and customers.

There is room for growth in this sector, especially in e-commerce. According to e-commerce.milo, Malaysia's e-commerce sites are lacking in a measure for stock keeping units (SKUs), such as PAO, or Products Availability Online metrics. Malaysia e-commerce websites like lelong.my, bazaarita.com.my and mudah.my could use a real-time cloud solution to track and show inventory available to customers.

There are some existing examples of live tracking available in the transportation industry. For example, CatchThatBus is a real-time aggregator of bus tickets between Malaysia and Singapore. It is available on the web as well as on various mobile platforms, and allows customers to check availability of bus tickets and purchase tickets across various devices, allowing for more informed, efficient allocation of transport options between Malaysia and Singapore.

In another case of logistics management in the transport sector, a busy Shell gas station along Jalan Pahang in Kuala Lumpur was expecting to see a drop in sales following the opening of a rival gas station a short distance away. They implemented a gas volume system on cloud to track the total sales for the station - and found that the total volume of gas moved did not drop, but in fact was gradually increasing over the months.

Wholesale and retail trade, repair of motor vehicles and motorcycles: Encompassing 49.88% of all SMEs. This sector accounts for almost half of all SMEs and will range from small mom and pop shops to bigger retail shops. The retail trade industry is likely to adopt cloud computing for its inexpensive offerings, and ability to communicate with potential customers through setting up websites, as encouraged by the Get Malaysian Business Online programme. Cloud computing solutions are also an option to keep track of inventory, tax invoices and sales receipts.

Case Study 13: FocusPoint, Club 21, Softspace: **On the Cloud**

For example, Malaysian eye-care specialist Focus Point wanted to streamline its enterprise resource planning (ERP) systems across all 180 of its retail stores. It used the cloud to connect all its POS systems with a central warehouse, merchandising and finance system. Finance reporting is now 60.00% easier, and the cloud has helped boost margins, increase cash flow, and competitiveness. Club 21, a luxury lifestyle business in Malaysia also implemented a cloud solution to synchronise the company's email and ERP systems, creating efficiencies in business. In an industry related to the retail trade, Malaysian mobile money company SoftSpace has designed a device which attaches to any mobile phone, and which allows users to make payments from Europay, MasterCard and Visa (EMV). Cardholder information is stored in the cloud and not in the device, which makes transactions more secure.

Arts, entertainment and recreation: Encompassing 1.07% of all SMEs. More forms of entertainment and recreation are being found through computers, smartphones and tablets than ever before. As computers and handheld devices penetration increases, more people are likely to access the Internet for social media, online videos, games etc.

Appxplore and Kurechii are examples of the Malaysian indie games and startup industry, who have made mobile games available on cloud platforms such as iTunes and the Android store. Some games which they have designed include Tiny Guardians, Reachin'Pichin, Alien Hive, Mobfish Hunter, and others. Cloud computing should be an attractive option for this industry to sandbox new games on cloud infrastructure.

In addition to games, Malaysia has also instituted an annual Malaysia Social Media Week (MSMW) in its efforts to become a social media hub. New entrepreneur SMEs such as EasyUni.com have tapped into the huge base of social media users to power their businesses. For example, EasyUni has built a social media platform called Unifrens to help students in various tertiary institutions connect with each other – strengthening the core proposition of EasyUni, which is to help match potential students with universities around the world.

Penang-based *MobileAds* is a startup which creates rich media mobile ads. The company designs advertisements online on the cloud which are built for mobile or regular screen viewing, and which include detailed tracking for engagement and conversion metrics for every single ad created.

SME Demand Drivers

Malaysians are big users of social media, and a well-managed social media site with relevant two-way communications has been shown to effectively appeal to consumers and businesses alike. However only 27% of businesses use ICT in their businesses, with 67% of these using the Internet in their businesses and 12% having their own websites. With the proportion of ICT usage in business still so low, and considering the conservative and traditional nature of local SMEs, much more can be done to encourage greater usage.

The Get Malaysian Business Online (www.getmybusinessonline.com.my) and grants provided by the MCMC (gmbo.skmm.gov.my) are therefore attractive programmes to incentivize SMEs to create a front facing Internet website. However, understanding business reservations and inertia in creating such opportunities, and what more can be done to help improve existing options by, for example, adding e-commerce functionality, social media pages, and appealing to markets outside of Malaysia is thus fundamentally important.

On the cost side, SMEs have noted that the cost of rising raw materials and input costs, increasing overhead costs and cashflow restraints as key challenges, with 61% of SMEs in a survey of 2582 SMEs reporting the increase of raw materials and input costs being the main constraints to business growth and expansion.[73]

Table 61: Spending in Services Sector by Size

Fixed assets (MYR mill)	SMEs	Micro	Small	Medium
Total	35,042	11,591	17,243	6,209
Land	14,516	6,916	6,038	1,562
Buildings, construction	6,481	2,246	2,820	1,415
Motor vehicles and transport	5,880	951	3,647	1,281
Computer h/w & s/w	814	268	384	163
Machinery & equipment	2,178	534	925	719
Furniture & fittings	882	306	372	204
Other assets	4,292	369	3,059	864

Source:
SME Corp, "SME Annual Report 2012/2013, Appendix 1: Key Statistics on SMEs" Department of Statistics, "Economic Census 2011: Profile of Small and Medium Enterprise"

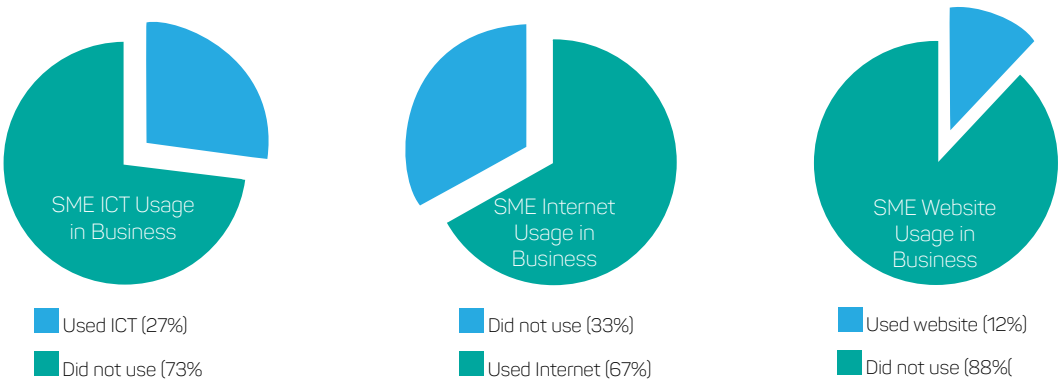
[73] Shares Investment, "SME Development In Malaysia: Challenges and Solutions", 22 May 2013

Table 62: Purpose of Financing by SMEs in Services Sector by Size

Purpose of financing	SMEs		Micro		Small		Medium	
	No.	%	No.	%	No.	%	No.	%
Total	30,557		21,224		7,921		1,412	
Working capital	22,317	73.0	15,438	72.7	5,939	75.0	940	66.6
Improve production processes	7,626	25.0	4,901	23.1	2,354	29.7	371	26.3
Purchase/lease property	5,843	19.1	3,467	16.3	1,960	24.7	416	29.5
Purchase equip/ computer h/w & s/w	6,875	22.5	4,487	21.1	1,862	23.5	526	37.3
Debt consolidation	1,306	4.3	796	3.8	414	5.2	98	6.8
R&D	617	2.0	324	1.5	236	3.0	57	4.0
Purchase biz	832	2.7	462	2.2	301	3.8	69	4.9
Others	3,771	12.3	2,512	11.8	1,026	13.0	233	16.5

Source:
Department of Statistics, "Economic Census 2011: Profile of Small and Medium Enterprise"

Figure 13: ICT usage by SMEs



Source:
SME Corp, "SME Annual Report 2011/12"

ICT spending in the form of purchase/lease of computer hardware and software accounts for the smallest proportion of purchases by SMEs in the services sector (Table 61). However, despite micro enterprises accounting for more enterprises than small and medium enterprises, it is small enterprises which account for the most purchases of computer hardware and software at MYR384 million. ICT spending by SMEs which are still engaged in traditional and low tech businesses remains low, compared to other purchases of fixed assets.

For SMEs in the services sector, the majority of a firm's finances are invested into the core operations of the business (Table 62). Given that most SMEs are still involved in low-tech and traditional businesses, they perceive less incentive to conduct R&D activities or to make changes to the way they conduct their businesses, with 73% of financing used as working capital for the core business operations. However a changing mind-set, and the government's vision to transform Malaysia into a digital economy, is beginning to lead to a greater amount of financing used for improving production processes, or the use of hardware and software to improve efficiencies.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Table 63 shows a number of popular SaaS offerings against GDP per capita. Small businesses should be able to afford the basic SaaS package, as they are less than 2% of GDP per capita. A monthly subscription to Google Apps for example, costs MYR16 (USD5). This is reasonable, compared with the average cost of a mobile phone plan or a broadband fibre plan, both which cost an average of MYR100 per month.

However, this cost escalates with the more fully-fledged SaaS offerings, such as Salesforce's customer relationship management system, Sales Cloud. Table 63 shows the cost of this SaaS as 18% of GDP per capita, which would be considered pricey, especially in a micro enterprise comprising one or two persons.

Compared to SaaS, the cost of IaaS is higher – in some cases, very much higher (Table 64). A basic Windows Azure service costs close to half of GDP per capita. The two next IaaS in pricing are Google App Engine and Red Hat Openshift, which cost over MYR5,000 per year, or about 20% of GDP per capita.

These prices are unlikely to attract Malaysian SMEs to use cloud, because the offerings are simply priced out of sensible reach for SMEs. Compared to a mobile or broadband fibre plan which costs MYR1,200 per year on average, a price tag of MYR12,492 will be hard to justify – especially if it does not bring about immediate benefits.

What might be palatable to Malaysian SMEs may be to make the IaaS offers more bit-sized, such as with Heroku and AWS Elastic Beanstalk services, as these are priced around the cost range of an average Internet fibre connection. However, at 5-6% of GDP per capita, they are still priced at a range which will make the average Malaysian SME think twice about moving onto cloud.

Table 63: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	MYR382 (USD 120)	MYR478 (USD150)	MYR4,775 (USD1,500)
Cost (as % of GDP/capita)	1.46%	1.82%	18.19%

Source:
TRPC, 2014

Table 64: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure	Google App Engine	Red Hat Openshift	Heroku	AWS Elastic Beanstalk Default[74]
Cost	MYR12,492 (USD3,924)	MYR5,651 (USD1,775)	MYR5,215 (USD1,638)	MYR1,662 (USD522)	MYR1,493 (USD469)
Free plan available?	Yes	Yes	Yes	Yes	Yes – 1 yr
Cost (as % of GDP/capita)	47.58%	21.53%	19.86%	6.33%	5.69%

Existing Government Programmes

Innovation and technology adoption is one of the six focus areas under the SME Masterplan 2012-2020. Between 2011-2013, the government allocated over MYR2.3 billion for the implementation of over 42 programmes on innovation and technology adoption. In 2014, six **High Impact Programmes** (HIP) were announced to accelerate the growth of SMEs from 6.30% to 9.30%. The six HIP programmes involve the integration of business registration and licensing, technology commercialisation platform, SME investment, export, catalyst and inclusive innovation, to empower 40 per cent of the lowest-income earners.

The SME Masterplan 2012-2020 also included the **SME Cloud Computing Adoption Programme**, by the Multimedia Development Corporation (MDeC), providing 6 months subscription fee

rebates or up to MYR1500 of the total subscription fee from any SaaS solutions from any MSC Malaysia Status companies.[75]

Similarly, the **MSC Malaysia Innovation Voucher** has been designed to increase collaboration between public and private institutions of higher learning and research institutions with MSC Malaysia status companies, with cloud computing featuring as one of the 15 approved technology areas.[76] The **Product Development & Commercialisation Fund** (PCF) helps local MSC companies accelerate the development of products and solutions to commercialization, with a focus upon areas such as the Internet of Things and Big Data.[77]

SME Associations

While there are no direct government SME associations, the **SME Association of Malaysia,** previously known as the SMI Association of Malaysia, helps to promote and provide support for SMEs, including organizing events and engaging in dialogue with government ministries. The SME Association in 2013 was instrumental through discussions with the National Wages Consultative Council of Ministry of Human Resources in deferring the implementation of minimum wages for foreign workers in order to help SMEs have more time to adjust their financial spending, particularly those who would have financial difficulties adhering to the minimum wage requirements.

SME Corporation Malaysia, an agency under the Ministry of International Trade and Industry (MTI), acts as Secretariat to the National SME Development Council (NSDC). SME Corp helps to coordinate the various policies, programmes, and ministries to help SMEs, while also acting as a centre of advisory services and information. SME Corp is also in charge of various SME development programmes, such as the "Business Accelerator Programme", "Enabling ePayment for SMEs and Micro Enterprises", "SME Mentoring Programme".

[75] Malaysia Multimedia Development Corporation, "SME Cloud", n.d

[76] Malaysia Multimedia Development Corporation, "MSC Innovation Voucher", n.d

[77] Malaysia Multimedia Development Corporation, "Product Development and Commercialisation Fund (PCF)", n.d

Financing Support Plans for SMEs

Financial institutions serve as the main source of financing for SMEs, including banking institutions and development financial institutions. SMEs enjoy a high financial approval rate of above 80%.[78] Malaysia has been ranked 1st for five consecutive year by the World Bank for "Getting Credit" in its Doing Business Report,[79] and climbed to 7th position in the World Economic Forum 2012 "Ease of Access to Loans".[80]

The government has also introduced various credit guarantee schemes mainly through the Credit Guarantee Corporation Malaysia Berhad (CGC). The CGC has helped SMEs gain easier and speedier access to credit, introducing simplified processing procedures and reducing the number of applications required for applications. The Portfolio Guarantee, Enhancer Express and Enhancer Direct are some such examples. Microenterprises are also able to access a microfinance scheme (Skim Pembiayaan Mikro), established in 2006.

Incubator Programmes

Entrepreneur Circle Programme : A group coaching programme designed for 4 levels of entrepreneurship: Entrepreneur Readiness, Acceleration, Growth and Expansion, to target entrepreneurs from different business stages. This programme started in year 2012.

D.A.R.E. BizStart Showcase: BizStart Showcase is the largest business startup show in Malaysia. Each year more than 3000 startup entrepreneurs converge for 2 days of learning, knowledge acquisition, business network building and business matching. It is also a platform for entrepreneurs to showcase products and businesses.

BizStart Membership: BizStart Membership is about building a business startup community which we believe if given the right dose of nurturance and help, can become a dynamic business community in Malaysia. Generally, MAD's goal is to uncover 1000 companies that can be nurtured into million ringgit companies and BizStart is the starting point for us to identify these companies.

[78] SME Corp Malaysia Annual Report 2011-12

[79] World Bank, "Doing Business", 2013

[80] World Economic Forum, "Financial Development Report: Financial Access 2012"

ACCA's 2015 Asia Pacific SME Cloud Market Study

NEW ZEALAND

NEW ZEALAND
Executive Summary

New Zealand has a highly entrepreneurial culture, spearheaded by entrepreneurs who are ambitious and hard working. They operate within a broader New Zealand culture which values informality, egalitarianism, directness and honesty. Meetings are generally relaxed but serious, with a high value on facts and figures. Decision makers — particularly within SMEs — are generally accessible and do not require extensive relationship building before being prepared to meet and seriously consider well-reasoned and persuasive business cases.

In 2014, there were 459,300 businesses identified as SMEs in New Zealand. This represented 98% of all businesses. New Zealand has the highest density of SMEs of all OECD countries, and they account for the great majority of employment in New Zealand; SMEs employed some 964,000 people, and contributed 42% of New Zealand's GDP.

SMEs dominate all sectors of the New Zealand economy, accounting for over 90% of all enterprises in all sectors except Public Administration and Safety, and Education and Training, and so their number closely tracks the division of the economy as a whole.

Of note, is New Zealand's ICT sector, which has been performing very strongly in recent years and punches significantly above its weight internationally. Other sectors that can be identified as early adopters of cloud computing technologies and services are: Tourism, Financial Services, and the Creative Industries.

In 2013, only 10% of New Zealand SMEs were using cloud services in 2013, but by 2014 this was up to 32%. Sixty percent of New Zealand businesses reported that they use, or intend to use in the near future, at least one type of cloud computing technology.[81]

[81] Boosting productivity in the services sector 2nd Interim Report Competition and ICT topics

In August 2012, the New Zealand Government adopted a "cloud-first" policy towards its own IT developments and has a highly developed policy and roadmap for a transition to cloud computing. In addition, the government has made Universal Fast Broadband (UFB) rollout a flagship policy and created a NZD1.5 billion revolving fund to subsidise its construction. These measures, combined with the industry's development of a Cloud Computing Code of Practice, make the country a leader in cloud computing policy and infrastructure. However, there has been little in the way of policy specifically around encouraging cloud computing uptake by SMEs.

The majority of New Zealand SMEs are small, have not been in existence for long and are run by a very hands-on first-time business owner. They can be defined by these characteristics:

- Highly personal and personality-led process: It's highly likely a pitch will be made to the owner, who is also the sole and final decision maker.
- Risk aversion: SMEs die at a high rate and owners are generally aware of constant threat to their survival.
- Price sensitivity: SMEs are less profitable by size than larger businesses and more likely to feel severe cashflow restrictions and have difficulty raising capital.
- Consideration of ideas on merit: the decision maker needs to be convinced solely of business value, they are not also managing a career and superiors.

A clear prioritisation of the most favourable sectors and regions, a clear value proposition, and an understanding of New Zealand business culture will be critical to capturing potential growth.

Market Size

In 2014, there were 459,300 micro and small businesses in New Zealand. This represented over 98.00% of all businesses. Of those, 326,000 had zero-employees and 133,300 had 1-19 employees. Small-Medium Enterprises numbered 8,800 and include businesses that have between 20-49 employees. The SME sector therefore consists of 468,100 businesses in 2014.

Table 65: Number of Small Businesses and Employment in New Zealand

	Number	%
Businesses with 0 employees (Zero)	326,000	69.00%
Businesses with 1-5 employees (Micro)	97,400	21.00%
Businesses with 6-19 employees (Small)	35,900	7.60%
Businesses with 20-49 employees (Small to Medium)	8,800	1.90%
Number of employees	964,000	99.00%
Contribution to economy	NZD72 billion	42.00%

Source:
MBIE, New Zealand, 2014

SMEs employed over 964,000 people, and contributed 42% of New Zealand's Gross Domestic Product (Table 65). In 2013, New Zealand's GDP was USD171 billion (real GDP) and small and medium sized businesses contribute nearly 50% to the GDP.

SME Definition

The New Zealand Ministry of Business, Innovation and Employment defines small businesses as consisting of fewer than 20 employees. This chapter also includes 'small to medium' sized businesses which are defined as those with 20-49 employees. This sector can be further divided into businesses with no employees (zero), businesses with 1-5 employees (micro) and those with 6-19 employees.

ICT Market Access

Ranked 28th in the world, New Zealand has 1,315,901 fixed broadband subscribers. It needs to be noted that total access to broadband is significantly greater, as a single account will often have multiple users. In 2013, New Zealand ranked 26th in the world for mobile broadband use.

The New Zealand government has invested NZD1.5 billion in a UFB Initiative to bring fibre option technology to homes, schools, hospitals etc. By 2020, 75% of New Zealanders will be connected. By 2015, 90% of businesses will be connected. In rural areas, homes and businesses are connected through the Rural Broadband Initiative, which has enabled over 187,000 rural homes and businesses to access new fixed wireless broadband and improved fixed line broadband for over 66,000 more.

In 2013, it was found that about half of businesses in New Zealand currently using cloud computing spend more than 10% of their total IT budget and 32% spend more than 20% of their total IT budget on cloud solutions or services.[82]

Table 66: Mobile, Internet and Broadband Connectivity and Penetration

	Mobile	Internet	Mobile Broadband
Connectivity	3,209,000 (76.00%)	1,871,000 (44.00%)	1,800,000 (43.00%)
Penetration	76.00%	80.00%	67.00%

Source:
Total fixed and wireless broadband subscriptions by country (June 2013).

[82] Frost & Sullivan: New Zealand organisations steadily embracing cloud computing for IT solutions

Market Characteristics

New Zealand has the highest density of SMEs of all OECD countries. The SME market is highly heterogeneous, accounting for over 95% of enterprises in all major sectors, and distributed throughout the country. Small and large businesses account for the great majority of employment in New Zealand – with 30% of employment being at enterprises of fewer than 20 employees, and 48% at those with more than 100. Only 22% of the workforce works at mid-size firms. According to the leading annual survey of business leaders, New Zealand's competitiveness has been steadily declining over recent years to 25th of the 60 countries surveyed in 2013.

The chief advantages of the country are:

- Policy stability and predictability
- A business-friendly environment
- The ease of starting a business
- Low redundancy costs
- Low tariff barriers
- A lack of bribery and corruption
- Government subsidies.
- The least attractive characteristics were:
- Access to financing
- Cost competitiveness
- The quality of corporate governance
- An R&D culture
- Dynamism of the economy[83]

Table 67 shows expenditure by sector, to illustrate relative sector purchasing power, along with SME employment levels on a percentage basis.

SMEs dominate all sectors of the New Zealand economy, accounting for over 90.00% of all enterprises in all sectors except Public Administration and Safety, and Education and Training, and so their number closely tracks the division of the economy as a whole.

The top sectors for SMEs are Rental, Hiring and Real Estate Services (21%), Agriculture (15%), Construction (11%) and Professional, Scientific and Technical Services (11%). Of note, once zero employee businesses are removed; Rental, Hiring and Real Estate Services drop to only 4%. The other top sectors roughly maintain their shares.[84]

[83] World Competitiveness Survey, 2013

[84] New Zealand Business Demography Statistics: February 2012, MED

Table 67: Sectoral Difference 2009-11

	2009	2010	2011	% change 2009-11	Employ 0-19	Levels 1-19
Agri, forestry & fishing	19,679	18,567	20,696	5.00%	15.00%	15.00%
Mining	3,381	2,926	3,300	-2.00%	0.00%	0.00%
Manufacturing	60,778	58,255	65,274	7.00%	4.00%	7.00%
Electricity, gas, water & waste	9,641	9,750	9,804	2.00%	0.00%	0.00%
Construction	24,192	21,361	22,199	-8.00%	11.00%	12.00%
Wholesale trade	9,557	9,548	10,249	7.00%	3.00%	5.00%
Retail trade and accommodation	10,819	10,694	10,974	1.00%	9.00%	18.00%
Transport, postal & warehousing	12,167	10,261	10,728	-12.00%	3.00%	3.00%
Information media & telecom	7,574	7,684	8,503	12.00%	1.00%	1.00%
Financial and insurance services	10,888	10,757	13,591	25.00%	6.00%	2.00%
Rental, hiring, real estate	6,791	6,210	6,097	-10.00%	21.00%	4.00%
Pro, scientific, tech, admin	16,382	15,823	16,563	1.00%	11.00%	10.00%
Public admin & safety	11,514	11,801	20,368	77.00%	3.00%	3.00%
Education and training	3,580	3,729	3,851	8.00%	1.00%	3.00%
Health care	11,467	12,010	12,335	8.00%	3.00%	5.00%
Arts, recreation and other	7,716	7,727	7,727	0.00%	2.00%	2.00%

Source:
Statistics New Zealand, Annual Enterprise Survey 2011

Industries Most Likely to Adopt Cloud Computing Solutions

A 2014 report published by the New Zealand Productivity Commission details the adoption of cloud computing by businesses in New Zealand. Through surveys, the report found that 60% of businesses either use or intend to use at least one type of cloud computing technology in the near future. This is highest in the Services Sector followed by the Goods Producing Sector (Manufacturing) and then the Primary Sector. The surveys also demonstrate a higher adoption of consumer oriented cloud applications than business oriented cloud applications.

Using historical data for the take-up of computers and Internet adoption, as well as for wide area networks (WAN), provides good indicators for which sectors of the market are traditionally early adopters, although it will be skewed somewhat towards business with an international marketing imperative such as accommodation and tourism (Table 68). Wide area networks share many features with cloud computing solutions and their early adoption rates (in this case for 2001) can provide a reasonable proxy for uptake of cloud computing in 2014.

Table 68: Industrial Adoption of Computer, Internet and WAN 2001

Industry	Computers	Internet	WAN use	Total Score
Accommodation	99	99	14	212
Insurance	100	92	59	251
Motion Picture, Radio and Television Services	95	95	20	210
Finance	99	93	51	243
Education	98	89	17	204
Property Services & Business Services	98	94	19	211
Wholesale Trade	94	88	25	207
Communication Services	92	84	33	209
Transport and Storage	92	78	27	197
Construction	90	89	18	197
Commercial Fishing	88	88	20	196
Retail Trade	86	73	30	189
Manufacturing Sector	89	80	14	183
Mining	86	71	17	174
Health and Community Services	89	69	9	167
Cafes and Restaurants	77	62	9	148
Agriculture	67	57	16	140
Forestry and Logging	71	59	10	140

Source:
Information Technology Use in New Zealand, 2001, Statistics New Zealand

Of note, is New Zealand's **ICT sector**, which was not tracked since 2001 but is expected to score very highly in uptake of new technology. The ICT sector in New Zealand is performing very strongly, with twice the average salaries, export growth of 10% pa since 2002 and four-times the average expenditure on R&D. It accounts for 5% of GDP and 3.2% of the workforce.[85] Both the manufacturing and services industry which lead in the adoption of cloud technology, correspondingly also invest more than four times the amount of money into R&D compared to the primary sector. Software as a Service (Saas) currently leads in accounting for cloud revenue, followed by Infrastructure as a Service (IaaS) and Platform as a Service (PaaS).

Tourism: The tourism industry in New Zealand directly contributes about 9% to GDP, and about 1 in 9 individuals in New Zealand are employed in the sector. It is New Zealand's second largest export industry, after dairy. Tourism is also one of the single largest users of Internet, and now increasingly, cloud-based technologies, for example cloud based booking and property management systems, such as local company, NewBook .

Research funded by the Department of Labour Future Work Programme in New Zealand (2013), shows that 97% of hotels in New Zealand have an online reservation system for guests.

Financial Services: Over 42% of businesses in the financial services sector have their own website and, according to government statistics, 13% of finance and insurance businesses are already using cloud based solutions – the biggest such reporting sector after property and accommodation. The findings of the productivity commission show that this is not yet always permeating to SMEs yet however, with larger businesses not surprisingly tending to spend more on cloud computing. Specifically, businesses of over 500 employees are twice as likely to use cloud solutions, than smaller firms – suggesting a lot of potential for market expansion.

Xero, a provider of cloud-based accounting software for small and medium-sized businesses, provides an example of a world-class New Zealand-based software company forging the market successfully for such solutions. Headquartered in Wellington, Xero now has offices globally. Along with Vend a retail software company that also operates on the cloud these companies are considered leaders in cloud adoption in the country and are an encouragement to others to do the same.

Creative Industries, Motion Pictures: The film and television industry in New Zealand generated more than NZD3.79 billion in revenue in 2011, and created the equivalent of full-time employment for over 21,000 jobs.[86] It is benefitting directly from using technology, particularly cloud technology that enables organisations to access super computing power in rendering render high-quality, photorealistic images using 3D modelling or animation software. An example, is GreenButton by New Zealand company, Intergrid, which has partnered with HK Cyberport to bring this capability into the Hong Kong creative industry.[87]

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[85] Information and Communications Technology Report, 2013, Ministry of Business, Innovation and Employment

[86] New Zealand Film and TV Industry boosts economy by more than 3 billion

[87] Cyberport and NZ

SME Demand Drivers

According to the MYOB Business Monitor, only 10% of New Zealand SMEs were using cloud services in 2013, but by 2014 this was up to 32%.[88]

The top reasons cited by SMEs for adoption of cloud computing were:

- Ability to work from whatever locations they want, or need, to work from (68%)
- Data is better protected and safer online rather than on their own server (49%)
- Enables one or more staff members to work remotely (42%)
- Enables accounting software to receive direct feeds of bank transactions (36%)
- Enables employees and the business owner/manager to be more productive (29%)

The top reasons cited by SMEs for *not* adopting cloud computing were:

- Not knowing enough to make the right business decisions about it (33%)
- Not tech-savvy enough and don't feel confident about starting to look at it for their business (22%)
- Unsure of data safety when using overseas servers (19%)

Key Characteristics to be Noted

Most New Zealand SMEs are small, have not been in existence for long and are run by a very hands-on first-time business owner. Therefore it is reasonable to deduce a high frequency of the following purchasing characteristics:

- **Highly personal and personality-led process**. SMEs will not have dedicated procurement departments or make decisions by committee. It is highly likely for a pitch to be made to the owner, who is also the sole and final decision maker.
- **Risk aversion**. SMEs die at a high rate and owners are generally aware of constant threat to their survival.
- **Price sensitivity**. SMEs are less profitable by size than larger businesses and more likely to feel severe cashflow restrictions and have difficulty raising capital.
- **Consideration of ideas on merit.** The decision maker needs to be convinced solely of business value, they are not also managing a career and superiors.[89]

A clear prioritisation of the most favourable sectors and regions, a clear value proposition, and an understanding of New Zealand business culture will be critical to capturing potential growth.

[88] MYOB business monitor March 2013

[89] Special report: Small Business in New Zealand: Myths and realities (Part 1), Research New Zealand, 2009

Sectors and Regions

While SMEs in New Zealand are widely distributed across regions and sectors and heterogeneous in nature, there will be distinct advantages to a focused approach. Technology-savvy, ambitious, fast-growing companies are predominantly located in Auckland—by far New Zealand's largest city—and to a lesser extent Wellington, the capital.

Certain sectors have an inbuilt predisposition to view technical innovation favourably, and with the skillset to evaluate the business case of new IT propositions. Chief amongst them: software development, high technology manufacturing, biotechnology, health sciences and engineering.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

The table below shows that the cost of basic SaaS business services such as email, backup and shared contact management services is fairly insignificant compared to the average GDP per capital. Even when compared to the more expensive option presented in the table above, the Salesforce Professional Service Cloud, the cost remains a small investment as compared to per capita income. On the other hand, a survey of 1,000 businesses revealed that those using cloud computing are 13% more likely to have had revenue growth over a few months and are 43% more likely to have more work in the pipeline for the next quarter.[90] Therefore, the benefits of adopting cloud technology in New Zealand seem clearly beneficial.

In general, access and purchase of various SaaS is fairly easy in New Zealand with most companies having a "New Zealand," version of their website with local prices.

Average GDP per capita = USD36,253.92

Table 69: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business	Salesforce Professional Service Cloud
Cost	NZD120 (USD102)	NZD92.40 (USD78.65)	NZD1,140 (USD970.31)
Cost (as % of GDP/capita)	0.30%	0.28%	3.50%

[90] Research reveals businesses with websites do better

Table 70: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Salesforce (Force.com Enterprise App)	Rackspace	Qrimp
Cost	NZD324.24 (USD276)	NZD1278 (USD1088)	NZD9732 (USD8283)
Cost (as % of GDP/capita)	1%	3.95%	30.1%

Table 71: IaaS (per Month)

	OpenHost (Linux, 10GB disk, 60GB data, 1GB RAM)	Microsoft Azure
Cost	NZD69 (USD59)	NZD58 (USD49)
Cost (as % of GDP/capita)	0.2%	0.16%

The tables above show a selection of PaaS and IaaS solutions priced at a basic level of subscription. Given the GDP per capital in New Zealand, all options, even the more expensive ones remain viable from an affordability perspective.

One issue of concern that has surfaced however, is, that it is considerably more expensive to use local cloud providers, rather than international players. The government of New Zealand, while being a strong adopter of cloud computing has decided not to use overseas hosted services. Therefore, by using local services, the government is incurring greater cost.

To illustrate this, the Productivity Commission of New Zealand carried out a comparison of the prices of US and New Zealand cloud providers. It found that US providers were able to offer more options and significantly lower prices. In one comparison, of a similar IaaS service, the price in New Zealand was NZD25 cheaper a month in the US, which the Commission referred to as being significantly more expensive.[91] This has led to a call for the government to change its stance on using local providers exclusively and to use international providers instead.

[91] Boosting productivity in the services sector 2nd Interim Report Competition and ICT topics

Existing Government Programmes

The New Zealand Government adopted a "cloud-first" policy towards its own IT developments in August 2012 and has a highly developed policy and roadmap for a transition to cloud computing. In addition, the government has made UFB rollout a flagship policy and created a NZD1.5 billion revolving fund to subsidise its construction. These measures, combined with the industry's development of a Cloud Computing Code of Practice, make the country a leader in cloud computing policy and infrastructure. However, there has been little in the way of policy specifically around encouraging cloud computing uptake by SMEs.

That said, SMEs are represented by a number of governmental and non-governmental bodies. **The Small Business Development Group**, within the **Ministry of Business, Innovation and Employment**, advises government on issues affecting SMEs and helps government agencies communicate more effectively with them.

In addition, a social media-led advocacy group, the **New Zealand Small Business Network,** founded in 2009 to act as a lobby group, has become effective, growing to more than 5000 members. BusinessNZ is New Zealand's largest advocacy group for enterprise, and while not specifically SME focused campaigns for many issues important to SMEs.[92] **New Zealand Trade and Enterprise**, the government agency responsible for growing the international success of New Zealand businesses, provides a range of services from market data to business incubators.

Incubators

New Zealand Trade and Enterprise (NZTE) Capability Development Vouchers are available to business of fewer than 50 employees. They are worth up to NZD5000 and Vouchers may be used to help pay up to 50% of the cost of services from registered providers that improve management capabilities. By 2014, three providers of Cloud Computing services were registered providers.

NZTE also runs **an Incubator Support Programme**, helping incubators help new business with capability development and technology validation, among other things. The most successful of these has been the **ICEHOUSE** which in 2011 was named one of the Top 10 Technology Incubators of the World by Forbes magazine.

Incubators New Zealand was formed on May 1, 2003 as the incubation industry's national association. Today New Zealand has fourteen incubators assisting more than a hundred resident companies, with an additional three incubators in the planning stages.

[92] www.businessnz.org.nz

14 **regional business partners** support business development and growth in their regions, and are tasked with helping local businesses find sources of finance. These typically prioritise management capability development, innovation and research and export development.

The New Zealand Venture Investment Fund – established by the government—administers a NZD40 million fund to match investments by co-investment partners in early stage, high potential businesses.

Investment partners often come from the **Angel Association of New Zealand**, who work with government to develop a world-leading angel investment network for the benefit of New Zealand business and investors.

Callaghan Innovation is a stand-alone Crown Entity charged with assisting the commercialisation of innovation by New Zealand firms. They administer R&D grants, although the exact nature of this is subject to imminent change after the latest Budget. They also administer the Global Expert programme which assist in connecting New Zealand businesses with international experts in areas including ICT.

ACCA's 2015 Asia Pacific SME Cloud Market Study

PHILIPPINES

PHILIPPINES
Executive Summary

With the Philippines tipped to enter a promising period of economic development, the SME sector is seen to be poised to also reap a windfall, as they are seen to be the engine of forthcoming national growth. The country is now one of Asia's fast growing economies, with an annual growth rate of over 6% since 2012.

The Philippine government, previously noted for its slow technology adoption, has recently begun an aggressive push for cloud computing. This includes GovCloud, a private cloud for government agencies and their employees along with basic cloud applications such as GovMail (unified government e-mail system), web hosting and payment gateway applications, as well as the Cloud Top Project, put in place to reduce hardware and software cost through the use of 'thin clients' for a variety of cloud applications.

The emphasis on SMEs has also increased. In 1991, the Philippines enacted its "Magna Carta for Small Enterprises" (Republic Act 6977). This was envisioned as the pioneering and pivotal legislation to spur development of the country's small and mid-sized industries by opening up financial access to the sector. In 2008, the Act was expanded to become the "Magna Carta for Micro, Small and Medium Enterprises" (Republic Act 9501). This law mandated banks to increase minimum loan portfolios for micro and small businesses, enabled broader financial access for the sector.

Both the old and the amended versions of the law carry a provision to encourage small and medium-sized industries to adopt necessary technologies. It reads: "To promote the productivity and viability of MSMEs by way of directing and/or assisting relevant government agencies and institutions at the national, regional and provincial level towards the provision of support for product experimentation and research and development activities as well as access to information on commercialized technologies."[93]

[93] The LawPhil Project, "Republic Act No. 9501," 2008

Further, the Barangay Micro Business Enterprises (BMBEs) Act of 2002, aiming to integrate micro enterprises into the mainstream economy. Incentives include tax exception, exemption from minimum wage requirements, and training and marketing assistance from the government. Yet, despite the regulations, the sector's contribution to the country's economy has remained small to date, contributing around 35% to GDP, while making up 91% of the sector. The ability to increase both reach and productivity while controlling costs is therefore seen to be a compelling proposition, not only for the mid- and large enterprises, but for the SME sector as well. Cloud solutions that can help ease the entry of start-ups into the market are being touted as particularly attractive.

The three industries likely to lead cloud computing adoption in the Philippines are identified as the business process outsourcing (BPO) sector, technology start-ups and retail.

Market Size

In 2011, 816,759 of the country's 820,255 business enterprises (99.6%) were MSMEs. Of these, roughly 743,250 (91%) were micro enterprises. Small enterprises totalled 70,222 (8.6%), while 3,287 (0.4%) were medium-sized enterprises. The number of large enterprises operating in 2011 was 3,496 (Table 72). MSMEs employ more people in the Philippines than all large companies combined. In 2011, the sector employed 3.87 million workers, compared to 2.47 million workers employed by large enterprises. Around 1.7 million jobs were from micro-enterprises, 1.64 million jobs from small companies and 451,561 jobs from medium-sized enterprises.

Table 72: Philippine Enterprises by Employment and GDP (2011)

	Micro Enterprises	Small Enterprises	Medium Enterprises	MSME Total	Large Enterprises
No. Enterprises	743,250 (91.00%)	70,222 (8.60%)	3,287 (0.40%)	816,759 (99.60%)	3,496 (0.40%)
No. Employees	1,778,353 (28.00%)	1,642,492 (25.90%)	451,561 (7.10%)	3,872,406 (61.00%)	2,473,336
GDP Contribution	4.90%	20.50%	10.30%	35.70%	64.30%

Source:
Department of Trade and Industry, "MSME Statistics," 2014

Contribution to the Economy (GDP)

Typical for a developing country, the size of the small and mid-sized market in the Philippines is not commensurate to its economic contribution. In 2011, the MSME sector contributed 35.7% to the country's gross domestic product (GDP) versus the 64.3% contribution of large enterprises. Micro enterprises contributed 4.9%; small businesses 20.5%; and medium-sized businesses 10.3%. The MSME sector accounted for only 25% of the export revenues for that year.

SME Definition

The Philippine government primarily uses asset size, excluding land, to categorise micro, small and medium enterprises. The Magna Carta for MSMEs is the law that classifies enterprises according to assets. Under this law, a micro, small or medium enterprise can be a single proprietorship, cooperative, partnership or corporation, provided its total assets are PHP100 million (USD2.3 million) and below. The DTI also provides a second operational definition for MSMEs that is based on employment (Table 73).

Table 73: MSME Categories

Category	Total Asset Value	Number of Employees
Micro enterprises	<P3 million	1-9
Small enterprises	P3 million - P15 million	10-99
Medium enterprises	P15 million - P100 million	100-199

Source:
Department of Trade and Industry, "SME Laws and Incentives," 2014

ICT Market Access

Internet and broadband penetration in the Philippines is still relatively low. In 2013, the number of fixed wired broadband subscriptions was 2.57 million or about 2.61% of the population. The country's Internet penetration has nearly doubled in the past four years. In 2013, the Internet penetration rate was at 37%. Still, Internet access remains limited to less than half of the country's 97.5 million people. Most of those with Internet access are living in the capital Metro Manila and in the country's other major cities and urbanised areas.

As of end-2013, cellular mobile telephone density in the country was 104.5% , with the number of mobile phone subscribers at 102.8 million. A surge in smartphone use is now likewise making up for the still low and slow broadband penetration. A key driver to the rise in smartphone use

Table 74: Philippines ICT Connectivity Statistics (2013)

	Mobile	Internet use	Fixed Wired Broadband
Date	2013	2013	2013
Total number	102,823,569	36,038,000	2,572,800
% penetration	104.50%	37.00%	2.61%

Source:
International Telecommunications Union (ITU), "Time Series by Country," 2013

is the availability of affordable units with local mobile phone brands now offering units below PHP4,000 (USD92). A survey from market research firm TNS shows that Metro Manila leads in smartphone usage with 53% of the respondents claiming to be smartphone owners.

The low broadband and technology penetration among the country's small and mid-sized businesses is proving to be both a challenge and an opportunity for providers. All the leading telecom operators in the country and most technology solution providers have programmes targeting the SME market. In 2008, when PLDT formed its specialized SME marketing and sales arm, the group observed that only 10-20% of the country's SMEs had Internet access and only 2-5% had web sites of their own. In 2013, PLDT reported an SME client base of 65,000 with targets in place to more than double that number by year-end. The core product and service portfolio includes call, broadband, mobile, private networks and cloud computing.

Market Characteristics

A majority of MSMEs are in wholesale and retail trade, and motor vehicle repair, totalling some 383,636 businesses (47%). The second biggest industry sector is manufacturing with 111,765 MSMEs, followed by health and social services, financial, insurance and other service industries, accommodation and food services (Table 75). These five industry sectors make up 97.2% of all MSME enterprises in the country.

Over 63% of MSMEs are concentrated in only five regions of the country (out of 17 regions in total), of which over 40% operate in the National Capital Region (NCR), or Metro Manila, a region composed of the city of Manila and its 15 surrounding cities. The Philippine government's "Digital Strategy Plan" has been seeking to fast-track development outside Metro Manila and Metro Cebu. It also sets a mechanism to enable micro, small and medium enterprises to use the Internet as a market expansion tool. By 2011, the number of MSMEs in the Philippines with websites was below 50%, while e-commerce use among them was below 20%. The government's plan targets Internet adoption among MSMEs to reach over 90%, website use at over 60%, and e-commerce use at over 30% by 2016.

According to a 2012 study commissioned by Globe Telecom, half of the country's small and medium-sized businesses will go bankrupt or close shop by the third year of their operation. And of the remaining half, only one of 15 will go past the fifth year. The study cited limited resources as well as the lack of business background of the owners.[94]

Table 75: Top MSME Industry Sectors

Top Industries for MSMEs	Number of MSMEs	Percent MSMEs
Wholesale & retail trade, motor vehicle repair	383,636	47.00%
Manufacturing	111,765	13.70%
Health & social services, financial, insurance and other service industries	109,440	13.40%
Accommodation and food services	105,123	12.90%
ICT, admin and support services; pro scientific and technical, education, arts & recreation	85,554	10.50%

Source:
Department of Trade and Industry, "MSME Statistics," 2014

Industries Most Likely to Adopt Cloud Computing Solutions

The Government's Digital Strategy Plan has, since 2008, been focused on driving the adoption and usage of technologies by MSMEs, including seeking to fast-track development outside Metro Manila and Metro Cebu. One of its central tenets has been the enablement of MSMEs to use the Internet as a market expansion tool.[95]

Based on the Digital Strategy Plan, the government targets that by 2016, Internet adoption among MSMEs will reach over 90%; website use will be over 60%; and e-commerce use will be over 30%. Moreover, in many MSMEs that are already employing digital technologies, many are still only using ICTs for simple activities such as spreadsheet and document processing.

The top three SME industry sectors likely to be early adopters of cloud computing are the business process outsourcing (BPO) industry, technology start-ups, and retail services.

BPOs: One of the big users of emerging cloud computing services in the Philippines has been the business process outsourcing (BPO) sector. Users include technology-centric industries

[94] Sun Star Cebu, "Globe Business offers technology solutions for small businesses," 2012

[95] National Computer Center, "The Philippine Digital Strategy," 2010

and particularly those companies engaged in healthcare, financial, and insurance industries. With offices and clients scattered across the country and, often, the globe, cloud computing is taken many aspects of the business process outsourcing approach and accelerating both its logic and its appeal. BPOs are able to maximise the shared features of cloud solutions where, in many cases, their employees do *almost* similar tasks consistently and repetitively, and with IT requirements very similar for everyone.

BPO providers operating in the country are a mix of subsidiaries of large foreign BPO companies and homegrown BPO providers and, according to the Business Process Association of the Philippines (BPAP), members have mostly been adopting cloud computing to lower costs to date. This business rationale has made some large BPO providers uncomfortable in talking about their use of cloud computing. But with revenues of USD15.5 billion generated in 2012, and the industry being the first or second single largest contributor to the economy, the government is beginning to put further efforts into supporting the transition, and there is an emerging focus on moving the focus of cloud computing solutions to an increase in revenues as well as a cost cutting solution.

One of the forerunners of this trend is expected to be a greater focus on the use of big data and business analytics. In addition, cloud computing is being seen as particularly useful for smaller BPO players. One such example of a smaller BPO cloud computing client is the start-up software developer Orange & Bronze. As the smaller players begin to expand with access to these enterprise grade tools, the single interface of a cloud computing solution becomes particularly appealing to BPOs operating from the Philippines.

Technology Start-Ups: Working with minimal resources, technology start-ups can make the most of cloud computing solutions. The Philippines now has a growing start-up community that has attracted investors from Japan, Singapore and the United States. The country's two leading conglomerates, the Ayala Group of Companies and the Philippine Long Distance Telephone (PLDT) Group, have venture capital companies. The Kickstart Ventures of the Ayala Group and the Ideaspace Foundation of PLDT are seeking to assist technology entrepreneurs and make the Philippines an attractive location for foreign technology start-ups by running incubation programmes and encouraging start-ups from around the region to establish offices in the country.

Most of these start-ups are experimenting with solutions in **e-commerce**, **mobile applications**, and **transport applications**. And, most are being encouraged to adopt and leverage cloud based solutions so as to plan for scale. The growth of the start-up community in the country is driven by the improving economy, increasing Internet and smartphone adoption, and easier access to funding. Two examples of home-grown start-ups that are using cloud computing solutions are Kalibrr and PayrollHero. Kalibre uses cloud services to build SaaS solutions for BPO clients. PayrollHero counts BreadTalk, Candy Corner, Krispy Kreme Donuts, The Coffee Bean and Tea Leaf, Zendesk, and Faburrito as clients for its SaaS solutions.

Retail Services: Most of the country's SMEs are engaged in retail. They range from mom-and-pop *sari-sari* stores or neighbourhood convenience, to medium-sized grocery stores, to franchised stores at malls and big grocery and department stores, and to online stores. The increasingly competitive environment in the industry can trigger players to resort to cloud computing solutions. These days, retailers are not only faced with the traditional challenges such as inventory and human resources, they also need to cope with the changing market demands brought by competition in the online space and the higher expectations of customers. Cloud solutions can help simplify the back-end and front-end requirements of retailers.

The Philippine retail industry is also in growth mode. The expansion can result in more sophisticated challenges for retailers. The Philippine Retailers Association (PRA) estimates the size of the sector to reach USD40 billion by 2016 and, according to the Philippines' Central Bank the wholesale and retail sector is the most optimistic business sector in the country. Growth will be buoyed by the strong economy, higher consumer spending, and booming inwards remittances from the more than 10 million Filipino migrants. Already, the retail sector has attracted more global brand owners to enter the market, from fashion chain H&M to foreign supermarket chains FamilyMart (Japan) and Wellcome (Hong Kong). Cloud computing solutions provider DataOne Asia has listed the retail industry the sector that will lead cloud deployment in the country.[96]

SME Demand Drivers

In 1991, the Philippines enacted Republic Act 6977 or the "Magna Carta for Small Enterprises". This was envisioned as the pioneering and pivotal legislation to help spur the development of the country's small and mid-sized industries by opening up financial access to the sector. In 2008, the Act was expanded to maintain its relevance, becoming the "Magna Carta for Micro, Small and Medium Enterprises" (Republic Act 9501). The law enabled broader financial access for the sector, mandating banks to increase minimum loan portfolios for micro and small businesses.

This law, both the old and the amended versions, additionally carries a provision to encourage small and medium-sized industries to adopt necessary technologies: "To promote the productivity and viability of MSMEs by way of directing and/or assisting relevant government agencies and institutions at the national, regional and provincial level towards the provision of support for product experimentation and research and development activities as well as access to information on commercialized technologies."[97]

A more recent regulation from the Central Bank will further spur the adoption of cloud computing in the Philippines, especially in the financial sector. In 2013, the Bangko Sentral ng Pilipinas (BSP) released the new framework on use of IT in the banking industry, the "Enhanced Information Technology Risk Management Framework." This framework *encourages* banks and financial

[96] The Philippine Star, "In Phl this year, retail, banking, logistics to lead cloud migration," 2014

[97] The LawPhil Project,"Republic Act No. 9501," 2008

institutions to adopt cloud computing solutions: "Seeing the inclination of banks, particularly rural and thrift banks, to use cloud computing technology to leap frog their financial services,the enhanced framework *also provides direction on the adoption of cloud computing in the financial service industry*."[98]

The development of cloud computing in the Philippines will also be driven and shaped by the growth of mobile users in the country. Adoption of cloud computing will be a natural move for businesses targeting the rapidly growing number of smartphone and mobile Internet users.

Key Characteristics to be Noted

Price Sensitive, Limited Budget: Philippine SMEs have limited budget for IT products and services. They choose to spend most of their resources on sustaining their day-to-day operations, for salaries, basic utilities and rent. Among the IT products and services, hardware accounts for the bulk of the IT spending of enterprises in the Philippines. According to estimates for 2014, 76% of IT budgets will go towards hardware, 18% to IT services and 7% to packaged software.

Minimal-to-no IT Staff: Most local SMEs have minimal numbers of staff or completely no IT staff. The owners are the ones responsible for choosing the IT products and services. SMEs will prefer technology products and services that are easy to install and manage.

Word-of-Mouth Marketing Matters: In the Philippines, the owners of small and mid-sized enterprises all too often rely on recommendations from family and friends when choosing products and services for their businesses. This is particularly true for the small and tightly-knit organisations dominating the SME sectors in the Philippines.

Bundled Services: Bundled services are popular among enterprises in the Philippines, as consumers believe they receive better value from bundled offerings. The country's two telecom operators, PLDT and Globe Telecom, both offer such packages available for SMEs. PLDT, for example, offers its "My DSL Biz" high-speed broadband package for SMEs, bundling free hardware and software such as laptop, tablet or smartphone with 15Mbps access speeds and various add-ons.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Cloud computing solutions are still expensive in the Philippines. The costs of the solutions against the country's GDP per capita range from 1.8% to almost 60%. For some SMEs the price can be an issue as communication costs are already high. By comparison, an *unlimited* text and call mobile phone package starts at PHP499 (USD11.60) monthly or USD139.20 a year. An Internet-enabled mobile phone package starts at PHP1,500 (USD34.80) or USD417.60 a year, a basic monthly Internet plan costs PHP1,200 (USD23) or USD276 per year, and an office-grade fixed

[98] BSP, "Monetary Board approves the Enhanced Information Technology Risk Management Framework for BSP-Supervised Institutions," 2013

broadband for homes starts at PHP3,500 (USD81) or USD972. While Internet service remains expensive for average consumers and small business owners, the local market is flooded with cheap smartphones from both foreign mobile phone makers and homegrown providers which sell branded mobile and smartphones from China.

Table 76: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	PHP2,200 (USD50)	PHP6,600 (USD150)	PHP71,280 (USD1,620)
Cost (as % of GDP/capita)	1.80%	5.42%	58.58%

Table 77: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure	AWS Virtual Cloud (EC2)	PLDT Cloud
Cost	PHP264,000 (USD6,000)	PHP7,603.20 (USD172.80)	PHP29,304 (USD666)
Cost (as % of GDP/capita)	217.00%	6.25%	24.00%

Table 78: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	IBM Smart Cloud	FUJITSU Cloud Iaas Trusted Public S5
Cost	PHP14,572.80 (USD331.20)	SGD1,322[99] (USD1,639.28)
Cost (as % of GDP/capita)	11.98%	59.28%

Existing Government Programmes

The Philippine government, previously noted for its slow technology adoption, has recently begun an aggressive push for cloud computing. It now has GovCloud, a private cloud for government agencies and their employees along with basic cloud applications such as GovMail (unified government e-mail system), web hosting and payment gateway applications. In addition is the Cloud Top Project, which aims to "reduce the acquisition costs of computer hardware and software by promoting the use of thin clients for educational purposes and government cloud applications such as GovCloud."[100]

Agencies Responsible for SMEs

The **Department of Trade and Industry** (DTI) is the primary agency handling the development of the SME sector. The DTI oversees the MSME Centres, envisioned to be the focal point for enterprises seeking assistance and information on government and private sector programmes and services. According to the DTI, the suite of services being offered at these centres include business consultancy and advisory services, and referrals; provision of MSME information brochures, business reports, and viewing of livelihood tapes; preparation of feasibility studies and business plans; facilitation of business linkages between buyers and suppliers; facilitation of business name registration; and coordination of entrepreneurship and management training programmes.

While there are no industry-driven organisation solely responsible for the development of the SMEs, the **Philippine Chamber of Commerce and Industry** (PCCI), the largest business group in the country, includes the development of the sector in its advocacy. In addition, the World Bank's International Finance Corporation (IFC) and the country's largest private development bank Planters Development Bank have partnered on the SME portal: SME.com.ph. The portal is envisioned to provide information and support to the sector.

Finance Support for SMEs

According to government think tank **Philippine Institute for Development Studies** (PIDS), one of the top concerns of Philippine SMEs remains the lack of access to financing, with the largest proportion of SME funding coming from the personal resources of business owners and family members including borrowings from friends and loans from informal lenders. This dependence

[99] Price in ASEAN

[100] Newsbytes Philippines, "DOST, DepEd roll out cloud-based e-learning project," 2013

of SMEs on internal sources of financing remains during both the start-up phase and during the on-going operations of the business.[101]

The **Department of Science and Technology** has an assistance programme for SMEs, the "Small Enterprise Technology Upgrading Programme" (SETUP). It is a nationwide programme designed to encourage and assist SMEs to adopt technological innovation to improve their operations and thus boost productivity and competitiveness. It enables enterprises to address operational problems through technology transfer and interventions to improve productivity through better product quality, human resources development, cost minimization and waste management.

In addition, under the Magna Carta for MSMEs, banks are required to allot at least 8% of their total loan portfolio to micro and small enterprises and at least 2% to medium enterprises. Many banks, however, prefer to absorb the penalties than take the risk of lending to micro and small enterprises. In 2013, the banking industry reported PHP185.1 billion (USD4.3 billion) in total loans to the sector, well short of the required PHP264.8 billion (USD6.1 billion).

[101] Philippine Institute for Development Studies, "SMEs Access to Finance: Philippines," 2011

ACCA's 2015 Asia Pacific SME Cloud Market Study

SINGAPORE

SINGAPORE
Executive Summary

Singapore is a small and comparatively well-connected country, with a general expectation for business productivity tools to be in place. But while Singapore is correctly seen as a leader regionally in the adoption of technology tools, less than 50% of SMEs have an online presence, let alone any experience with cloud-based productivity solutions. Nevertheless, there is sizeable awareness and ready demand for business-oriented solutions, and for basic office management solutions.

Singapore has a market of 407,298 SMEs, 99% of all enterprises. SMEs employ 70% of the workforce, 2.46 million people, and contribute 50% of Singapore's GDP of SGD371.8 billion. The sectors most likely to lead as early adopters of cloud computing solutions are commerce (wholesale and retail), accommodation and food services, and property. While the information and communications sector is also an early adopter of new technologies, it plays a far more fundamental role in enabling these other industries.

The Singapore SME market is notably price-sensitive, allocating comparatively small IT budgets, and thus expenditure identified as being for IT rather than for business process is consistently vulnerable. Singapore is also not a do-it-yourself culture, but expects to have service provided, and purchasers in SMEs in Singapore tend to be non-technical.

Other important barriers to infocomm usage in businesses in general in Singapore are the lack of perceived benefits, the perception that technology is too complicated, the belief that skillsets are too low among employees, that infocomm costs are too high, and that there is a lack of alignment between tech services provided and the needs of the organisation.

That said, there is a general expectation in Singapore that businesses should have basic IT access and provisioning. Current cloud offerings are seen to be commercially accessible with

common SaaS packages running at between 0.42-5.21% of SME IT spend, and common PaaS access running at between 1.63-13.63% of SME IT spend.

The Singapore government has put extensive effort into promoting infocomm tools and next-generation infrastructure and services for SMEs over many years. In recent years the government has re-focused its efforts on cloud computing services, putting various incentives, training and support programmes in place to try to help push SMEs along the development trajectory. Programmes of particular note include the Productivity and Innovation Credit (PIC) scheme, which grants businesses 400% tax deductions for each of five years against the acquisition of cloud services and IT equipment, and SPRING Singapore's Capability Development Grant (CDG), which can defray up to 70% of SME project costs as they relate to ten key capabilities including cloud computing.

These outstanding programmes, it should be noted, have met with limited success. ACCA is a strong advocate of these programmes and the government's drive in this area, and sees much to recommend to other governments in adopting aspects of these programmes. But the limited success to date, illustrating the difficulties in sponsoring and promoting SMEs to adopt such tools and programmes, needs to also be recognized – and learnt from.

Market Size

In Singapore, 99% of all enterprises are SMEs, employing 7 out of 10 workers, and contributing nearly half of national GDP. In 2012-13, the Accounting and Corporate Regulatory Authority (ACRA) reported 411,412 registered enterprises, growing annually at 3.5%. At 99% of all enterprises, the total number of SMEs is 407,298 (see Table 79). Total employment in Singapore in March 2014 was 3,518,700, meaning the total number of employees hired by SMEs was 2.4 million workers. Figures from DP Information Group's "SME 1000" 2013 report have also revealed that half of the SMEs in Singapore contribute approximately 75% of all SME sales volume, illustrating that the market is skewed in size, with smaller businesses making up nearly 50% of all SMEs (sales revenues of SGD21.6 million or less.)

Contribution to Economy

SMEs contribute nearly half of Singapore's GDP according to the government. Singapore's board of statistics reported a GDP of SGD371.8 billion in 2013, suggesting that SMEs contribute approximately SGD186 billion to Singapore's economy.

Table 79: Singapore Enterprises by GDP and Employment

	GDP	Employment	All Enterprises
Date	2013	Mar-14	Mar-13
Total	SGD372.81 billion	3. 52 million jobs	411,412 entities
SME contribution (%)	50.00%	70.00%	99.00%
SME contribution (absolute)	SGD186.41 billion	2.46 million	407,298

Source:
GDP and Employment numbers from Department of Statistics Singapore, "National Accounts", 2013
Enterprise numbers from Accounting and Corporate Regulatory Authority (ACRA), Annual Report 2013/4
"Labour", 2013

SME Definition

SPRING Singapore, the agency tasked with helping Singapore businesses and enterprises develop, defines SMEs in terms of annual sales turnover and number of employees:

1. Enterprises with annual sales turnover of not more than SGD100 million; OR

2. Enterprises with employment size of not more than 200 workers

ICT Market Access

Singapore had some 8.44 million mobile subscriptions as of March 2014 across a total population of 5.4 million people – a penetration of rate of 156% (Table 80).Total broadband subscriptions numbered 11.4 million, a penetration rate of 211%, while wireless broadband connections totalled 9.99 million, a 185% penetration rate.

With such high mobile and Internet penetration rates (156%), the use of mobile devices by Singaporeans can be described as profligate. IDA also notes that at the end of 2013, Singaporeans were consuming 7.66 petabytes of mobile data per quarter. Many Singaporeans own more than one mobile device, and wireless networks are available nearly everywhere on the island-state, accessed via cellular networks (3G/4G) or through the public broadband Wi-Fi network called Wireless@SG.

As a result of near universal-access to high speed broadband, usage for mobile app cloud services such as DropBox, Evernote, Group On have gained popularity amongst Singaporeans, and many smartphone users are using these cloud services. Many companies in Singapore have also been slowly but steadily moving into a Bring Your Own Device (BYOD) office model, especially small

firms, which suggests the high likelihood that Singapore SMEs are poised to use mobile cloud apps to support their business processes.

Table 80: Singapore Infocomm Statistics

	Mobile	Broadband	Wireless Broadband
	Mar-14	Mar-14	Mar-14
Population Sep-13	5,399,200	5,399,200	5,399,200
Total number	8,438,100	11,379,300	9,979,800
% penetration	156.00%	211.00%	185.00%

Source:
Population numbers from Department of Statistics Singapore, "Population"
InfoComm Statistics from the Infocomm Development Authority of Singapore, "Statistics on Telecom Services", 2014

Market Characteristics

Singapore's economy is categorised into 22 major segments (Table 81). The largest employers are the community, social and personal services sector (20.7%), the manufacturing industry (15.9%), business services (14.1%), wholesale and retail trade (13.9%) and construction (13.2%). In terms of contribution to GDP, the largest contributions come from the manufacturing (20.7%), wholesale and retail trade (17%), business services (14.6%), as well as financial and insurance services (11.9%).

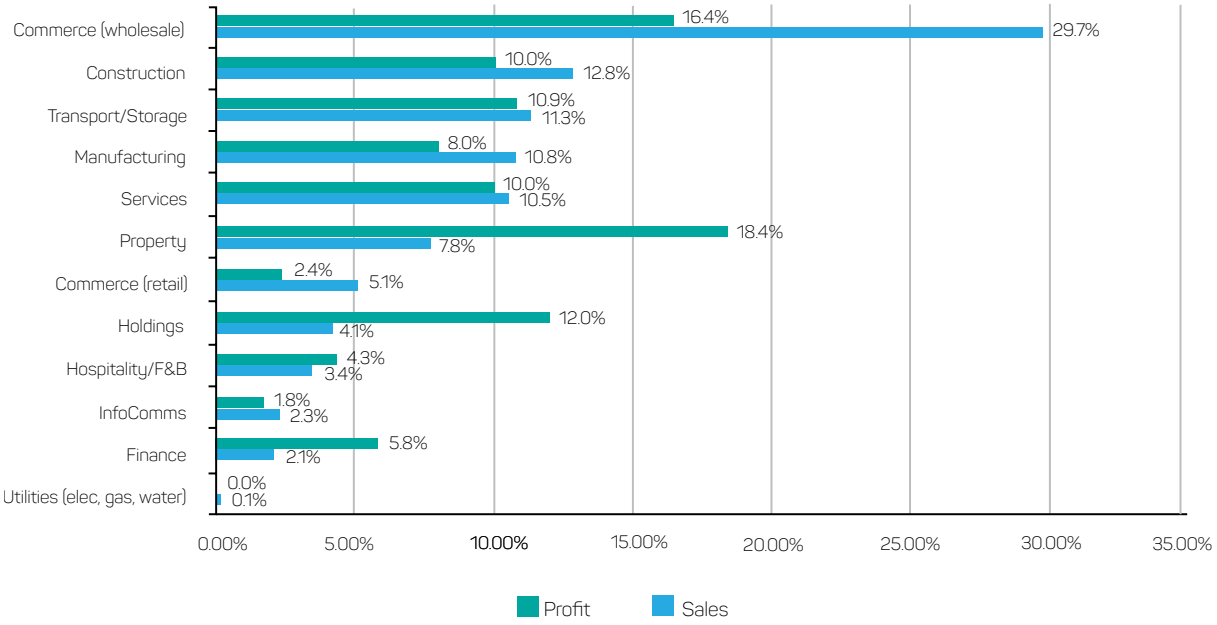
Table 81: Singapore Industrial Breakdown by Employment and GDP

Economic Sector	Employment (%)	GDP (% share)
Community, Social and Personal Services	20.70	
Manufacturing	15.90	20.70
Business Services	14.10	14.60
Wholesale and Retail Trade	13.90	17.00
Construction	**13.20**	4.40
Transport and Storage	6.50	7.70
Accommodation and Food Services	6.50	2.50
Financial and Insurance Services	5.50	**11.90**
Information and Communication	3.10	3.80

Source:
Singapore Department of Statistics, "Manpower Statistics in Brief Singapore 2013"

Composition of SME Market

Figure 14: Singapore's SME Sectors by Industry, by Profit and Sales



Source:
DP Group, "SME 1000", 2013

As Singapore is a small country, all SMEs can be said to be urban-located. The largest SME sector by sales is the commerce (wholesale) sector at 29.7%, followed by a second size band of industries: construction (12.8%), transport/storage (11.3%), manufacturing (10.8%), services (10.5%), and property (7.8%), as illustrated in Figure 14.

As Singapore is a comparatively well-connected country, there is a general expectation for business productivity tools to be in place – starting from a website and the availability of an online system, to email and/or transaction tracking, automated invoicing, and even support for mobile applications or access to information via mobile. A 2012 survey by IDA showed that software services in use by SMEs in Singapore fall generally into 15 types of business processes (see table 82).

Notably, one of the opportunities that this survey fails to capture, or at least break out explicitly, is marketing and sales tools. And, while Singapore is correctly seen as a leader regionally in the adoption of technology tools, it has also been illustrated elsewhere that less than 50% of SMEs have an online presence (e.g. website), let alone any experience with cloud-based productivity solutions. Nevertheless, the survey also indicates a fairly sizeable level of awareness and ready demand for business-oriented solutions, and for basic office management solutions, many of which are available as ready-to-use cloud services.

Table 82: Infocomm Solutions used by Singapore SMEs

	Infocomm Solutions	Currently using	Planning to use within 12 months	No plans to use
1	Accounting and Finance	44%	8%	48%
2	Payroll	23%	7%	70%
3	Human Resource Management	13%	6%	81%
4	Point of Sales (POS)	10%	5%	84%
5	Customer Relationship Management (CRM)	8%	6%	86%
6	Video Conferencing	7%	5%	89%
7	Software Development Tools	6%	3%	91%
8	Enterprise Resource Planning (ERP)	5%	4%	90%
9	Supply Chain Management	5%	4%	91%
10	Software Testing Tools	4%	4%	92%
11	Events Management	4%	4%	93%
12	Mobility Solutions	4%	5%	92%
13	Healthcare Management	3%	3%	94%
14	Software Lifecycle Management Tools	3%	4%	93%
15	Fleet Management	3%	3%	94%
16	Augmented Reality	2%	3%	95%

Source:
IDA, "Business Infocomm Usage Survey 2012"

Industries Most Likely to Adopt Cloud Computing Solutions

The three industries in Singapore likely to lead as early adopters of services and solutions are:

Commerce (wholesale and retail): Combined, wholesale and retail commerce comprise over a third of all SME turnover in Singapore. And while there are notoriously tech-laggards throughout this sector, there are already a number of reasons for seeing this part of the economy as an early lead in cloud technologies adoption. First, with costs rising on already expensive storage premiums it has become crucial for both wholesale and retail SMEs to manage inventory effectively, knowing where and how much stock they have. A range of these service providers run branch operations (e.g. retail, clothes stores, furniture outlets, musical instruments, auto parts, etc.), and having integrated and constantly updated sales stock databases not only enables cost savings through achieving more efficient operations, but enables increased revenues through marketing and better anticipating customer needs.

Second, many of the more exciting developments in the SaaS and, to a lesser degree, PaaS space have been focused on the commerce sectors, as this is where customer demand is both apparent and immediate, and participants see the prospects of early monetization. This includes integrating websites and marketing solutions with loyalty schemes, customer relations management platforms, and payment solutions; location-based services married to delivery options; timely expiry options (think flowers or food needing to be cleared at cut-rate price), or crowdsourced options.

Case Study 14: Perx - Mobile CRM

For example, mobile loyalty scheme app Perx is a mobile CRM app which allows Singaporeans to collect virtual "rubber stamps" on their phone for every purchase from a store, such as a coffee shop. When a certain number of virtual stamps are collected, they can be exchanged for a product – such as a cup of coffee.

Third, for many wholesale and niched retail operations, Singapore is a very small market and success requires that they expand Singapore into regional operations. Cloud-based services are collapsing the time frames required to achieve this, with SMEs able to target regional opportunities through marketing, service and delivery operations, followed up by integrating these operations together efficiently and effectively. Local online grocery store RedMart (redmart.com) optimised their global supply chain with a cloud-based warehouse management system (WMS), allowing them to scale up operations quickly as the convenience of 24/7 grocery shopping found traction with many late-working Singaporeans.

Accommodation and Food Services: Singapore has been at the forefront regionally of the emergence of the crowdsourcing and sharing economy developments, with successful ventures such as Chope.sg and HungryGoWhere. HungryGoWhere crowdsources the review of restaurants to users, and restaurant rankings depends on these reviews. Chope.sg is a real-time table reservation mobile app that food outlets can link to on their websites or social media pages and use immediately.

These ventures are helping to do more than disrupt these sectors, by turning the traditional planning and development cycles on their head: rather than only having the more risk-prepared niche companies taking a lead and test the market, providers and vendors are finding themselves having to respond to immediate consumer demand and pricing pressures in a very time-sensitive fashion. Chope.sg for example, allows customers to see if there are tables available at their favourite restaurant, and make alternative plans efficiently without needing to call up the restaurant, and thus saving valuable service staff time.

Property: Many property transactions are dependent on updated information, such as online listings and property databases, current interest and loan rates and other financial data, availability of property, and access to customer data. This is evident from the home pages of

Singapore's property websites, such as PropertyGuru.com.sg, or iProperty.com.sg, which often features available apartments for rent, events such as property launches, or realtor commentary on the latest property news.

Several points here:

- The property sector is a large part of the SME sector in Singapore, commanding 18.4% of all profits, but has been traditionally dominated by well-established property agencies. Information on property, loans, and available government grants is fragmented across a number of agencies, and often needs an experienced (and licensed) agent to navigate. With these online tools, information and power is shifting to the user/customer, who is no longer constrained by the properties that their agent knows about.

    · Small operators and ancillary services have an opportunity to take advantage of these tools to disrupt Singapore's property industry. PropertyGuru and iProperty have focused their efforts on matching buyers to property and agents, and have been fairly successful as they are agency-agnostic – they list property and agents from all companies.

    · However, the offerings and services in Singapore are limited – there is a heavy focus on property purchase, and limited information on the rental market. There is an opportunity to develop other services, such as short-term leases of residential properties – such as that offered by AirBnb, or niche markets such as finding appropriate accommodation for university students on a semester-by-semester basis, which Manchester-based Rentlord.com specialises in.

SME Demand Drivers

All businesses in Singapore are now expected (by government, if not the market) to have a certain level of computerization and online presence – which does not mean that all do. Indeed, Singapore is still far from this ideal. The IDA's "Survey on Infocomm Use by Enterprises 2012" found that 79% of employees in enterprises of less than 10 people used the Internet at work at least once a week. Table 83 illustrates the basic productivity tools demand drivers across a range of Singapore sectors.

The primary SME sectors in Singapore have been mapped against a list of basic digital cloud tools which they could be expected to use. For example, an insurance agent in the financial

Table 83: Digital Tool Capability Expectation

Sector	Business Surveyed	Email	Website	Word Processing	Inventory Management	File Storage	CRM	Online Payment
Commerce (wholesale)	Dried foods wholesaler	√	√	√	√			√
Construct	Cement company	√			√			
Transport	Bus rental company	√	√	√	√			√
Manufacturing	Computer parts	√	√	√	√			
Services	Nursing home	√	√	√	√		√	√
Property	Property sale agent	√	√	√		√	√	
Commerce (retail)	Supermarket	√	√	√	√			√
Holdings	Investment company	√		√	√			
Hospitality/ F&B	Hotel	√	√	√	√	√		
InfoComms	Web hosting company	√	√	√		√	√	√
Finance	Insurance agent	√	√	√	√	√	√	√
Utility	LPG gas supplier	√	√	√	√	√		

sector can be reasonably expected to use email to communicate, have a website to promote his services, use a word processing application, and file storage in the course of his work, manage his customers on a CRM system with inventory management of his products, and also possibly have an online payment facility available for busy clients to pay premiums conveniently.

In comparison, a cement company in the construction sector is likely to only use email and an inventory system to track stock – compared to the insurance agent, there is relatively not much need or priority for a website, a customer relationship management system (CRM), file storage, or online payments.

Key Characteristics to be Noted

Price-Sensitive, Small IT Budgets: Singapore SMEs spend an average of 2.5%, or SGD36,000 on IT purchases[102] – assuming a portion of this amount goes into buying equipment like computers, routers and other telecommunications hardware, SMEs are likely to be price-sensitive when it comes to purchasing decisions. This will be particularly key if decisions on cloud services are framed as an IT decision, rather than revenue opportunity or business operation cost. Anecdotal evidence suggests that SME owners will very often defer IT spend decisions as long as feasible in many cases – explaining much of the outdated and legacy equipment that can be found across the island.

Purchaser not technically trained: For SMEs, the purchasing decision for IT items is very often likely to be the owner, or a manager for whom IT is only one component of their job. In Singapore these decisions will often be taken by the SME owner, a member of their staff who happens to be IT-inclined such as an office manager tasked with purchasing IT services for the company, or one of the his children – it is regularly the last for smaller family-owned operations.

Singapore not having a DIY culture: As a result, cost evaluations are crucial to the decision making process, with SMEs looking for (1) clear and transparent information on pricing and other costs involved with cloud services, (2) a trial period whereby the evaluator can try the product, and (3) extensive FAQ or Forums where they can troubleshoot problems without engaging further costs in support – the latter can be an automatic deal-breaker.

News of Good Products Spreads Fast: The Singapore business community is a very small, and very interconnected group, and in the entrepreneur, developer, and SME communities word of mouth spreads fast. According to the IDA Annual Survey on Infocomm Usage by Enterprises 2011, the top three sources of information for Singapore SMEs are the Internet (54%), newspapers and magazines (42%), and friends of business associates' recommendation (40%).

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[102] Using total asset value of SMEs as a proxy for purchasing power, most SMEs spend about SGD600,000 on assets. Using Singapore's 2013 balance of payments as a guide to spending, the nett spending on telecommunications, computer and information was SGD1.7 billion, against a total of SGD68.3 billion account balance - or 2.5%, amounting to an average of SGD36,000 spent on IT purchases. BoP 2013 figures from Singstat, International Accounts.
SME total asset value from DP Group, "SME 1000", 2013

Convenience is important: Singaporeans SMEs will try services and are likely to sign up for bundled packages, if they are convenient to turn on and off. Some examples of telcos offering value added cloud services include those by the carriers: Singtel, Starhub and M1. For example, Starhub offers a point-of-sale (POS) solution for retail businesses, integrating inventory management and cashier functions in a cloud platform which, priced at SGD250 per month. SMEs who are already Starhub customers may choose to turn this function on, and it will be integrated into their monthly bill, and enabling/disabling the service is easier as SMEs only need to deal with one service provider.

The top barriers to infocomm usage in businesses in general in Singapore are the lack of perceived benefits, the perception that technology is too complicated, the belief that the level of infocomm skills is too low among employees, a perception of high infocomm costs, and a lack of alignment between tech services provided and the needs of the organisation (Table 84). SMEs in particular perceived additional barriers to Internet usage and e-payment services, such as loss of productivity due to non-work related uses, security concerns, and confusion over what and how to choose.

Table 84: Barriers to ICT Adoption for Singapore SMEs

1. Lack Of Perceived Benefits, The Technology Is Too Complicated
2. The Level Of Infocomm Skills Is Too Low Among The Employed Personnel
3. The Cost Of Infocomm Expenditure/Access/Implementation Is Too High
4. And The Supply Of Infocomm Technology Does Not Meet The Needs Of The Organisation
5. Not Sure Which Technology To Implement
6. The Possible Loss Of Productivity Due To Non-Work Related Uses
7. Security Concerns Like Hacking And Viruses

Source:
IDA, "Business Infocomm Usage Survey 2012"

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Average GDP per capita in 2013 = SGD69,050 (Singapore Department of Statistics, 2014)

Average SME IT spend = SGD36,000

Table 85: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	SGD150 (USD 120)	SGD188 (USD150)	SGD1,875 (USD1,500)
Cost (as % of IT spend)	0.42%	0.52%	5.21%
Cost (as % of GDP/capita)	0.22%	0.27%	2.72%

Table 85 shows that the cost of basic SaaS business services such as email, backup and shared contact management services is fairly reasonable vis-a-vis Singapore IT spending. Even when compared with the more expensive SaaS on our list, Salesforce Sales Cloud, the expense turns out to be 5.2% of total IT spend – a comparatively small investment if it helps SMEs close more sales leads.

In comparison, consider that the average cost of a business-tier 1Gbps fibre broadband line is SGD3,100 per annum (4.5% of GDP/capita or 8.6% of total IT spend)[103], and that a basic mobile phone subscription plan will cost approx. SGD50 per month – that is about a third of what Google Apps or Office 365 will cost – *per annum*.

In general, estimating purchase costs for SaaS appears straightforward enough for SMEs in Singapore – prices and packages are clearly listed, and purchases can be made with credit cards or debit cards, which are commonly held by individuals in Singapore. This ease of purchasing cloud services, alongside the affordability of SaaS offerings, bodes well for cloud SaaS uptake for Singapore SMEs.

[103] Hardwarezone comparison of fastest fibre plans, 2014

Table 86: PaaS (Lowest Tier Pricing, or One Instance of Everything; per User, pa)

	Windows Azure	Google App Engine	Red Hat Openshift	Heroku	AWS Elastic Beanstalk Default[104]
Cost	SGD4,905 (USD3,924)	SGD2,219 (USD1,775)	SGD1,310 (USD1,638)	SGD653 (USD522)	SGD586 (USD469)
Free plan available?	Yes	Yes	Yes	Yes	Yes – 1 yr
Cost (as % of IT spend)	13.63%	6.16%	3.64%	1.81%	1.63%
Cost (as % of GDP/capita)	7.10%	3.21%	1.90%	0.94%	0.85%

Table 86 shows a selection of PaaS solutions, priced with some assumed basic PaaS functions as would be needed for an SME – one instance of an app engine that runs for a month (24 hours at 31 days a month, or 744 hours), 10GB of incoming/outgoing data, 100GB storage etc.

Prices range between a few hundred dollars to a few thousand dollars a month, due to differences in customizations and vendor-specific offerings which are available for purchase. In general PaaS offerings are within reach of most SMEs – AWS Elastic Beanstalk is priced at SGD586 pa, Heroku at SGD653 pa, and Red Hat Openshift at SGD1,310 pa.

Even the pricier PaaS offerings are within reasonable limits of SME budgets when priced on a monthly basis: Windows Azure costs SGD409 per month, and Google App Engine, SGD185 per month. In addition, many of the PaaS solutions have a free plan available, for businesses to test out the platform interfaces and performance prior to any money changing hands.

From the price comparisons, PaaS solutions do have a higher sticker price than the basic SaaS solutions – and procurement gets very complicated, especially when using the popular market leader brands. An SME exploring the possibility of moving onto the cloud may have heard of Windows Azure, Amazon Web Services, or Google App Engine as PaaS solution providers - but looking on the vendor website throws up a dizzying array of services and technical terms which will discourage all but the most determined SME owner. Ironically, it is the niche brands such as Red Hat and Heroku which have simpler-to-understand pricing schemes.

[104] After free first year

Existing Government Programmes

The Singapore government has put an extensive effort into promoting infocomm tools and next-generation infrastructure and services for SMEs over many years. In recent years the government has re-focused its efforts on cloud computing services, putting various incentives, training and support programmes in place to try to help push SMEs along the development trajectory. Programmes of particular note are the PIC and SPRING programmes:

- **The Productivity and Innovation Credit** (PIC) scheme run by the Inland Revenue of Singapore (IRAS) grants businesses 400% tax deductions for each of five years against: the acquisition of IT equipment, acquisition and licensing of intellectual property rights, staff training, research and development, registration of patents and trademarks, and design projects.
- SPRING Singapore's Innovation and Capability Voucher (ICV) provides SMEs a SGD5,000 voucher to pay for services in four areas: innovation, productivity, HR, and financial management. The voucher can be used with an accredited service provider (listed on the website).
- SPRING Singapore's Capability Development Grant (CDG) helps to defray up to 70% of SME project costs as they relate to ten key capabilities: consultancy, manpower, training, certification, upgrading productivity and developing business capabilities for process improvement, product development and market access.

These outstanding programmes, it should be noted, have met with limited success. ACCA is a strong advocate of these programmes and the government's drive in this area, and sees much to recommend to other governments in adopting aspects of these programmes. But the limited success to date, illustrating the difficulties in sponsoring and promoting SMEs to adopt such tools and programmes, needs to also be recognized.

Two of the primary institutional voices for SMEs are the **Singapore Business Federation** (SBF) and the **Association of Small and Medium Enterprises** (ASME). Neither of these are government-run; SBF is run as a private business; ASME is a not-for-profit association with some 6,500 corporate members and 10,000 individual members. Another group, the **Action Community for Entrepreneurship** (ACE) is a network formed to support Singaporean Entrepreneurs through knowledge transfer, mentorship and building of networks.

There is no one government SME association in Singapore and no single ministry responsible for SME development; instead, the Singapore government manages SMEs as a special cross-section of the economy, with the relevant ministries and statutory boards aiming to cater to SME needs.

The government agency most relevant to SME development is **SPRING Singapore**, a statutory board under the Ministry of Trade and Industry (MTI). SPRING's mission is to help Singapore

enterprises grow, and to build trust in Singapore products and services. SPRING has a separate resource website EnterpriseOn, offering a one-stop portal for businesses to set up and run in Singapore.

SPRING Singapore helps facilitate a number of business accelerator programmes, such as:

- SPRING *Startup Enterprise Development Scheme* (SEEDS), an equity-based co-financing option for start-ups with innovative products or processes and strong growth potential;
- The *Business Angel Scheme* (BAS), to match pre-approved business angel investors to develop nascent start-ups.

To encourage incubator programmes, SPRING also runs complementary programmes such as:

- the *Angel Investors Tax Deduction Scheme* (AITD) encouraging angel investors,
- the SGD30 million *Incubator Development Programme* (IDP) providing 70% grant support to help nurture and mentor start-up companies.

Other SPRING business and entrepreneur support programmes include:

- the *Technology Enterprise Commercialisation Scheme* (TECS), a competitive grant scheme for start-ups based on strong technology IP;
- the *Local Enterprise and Association Development* (LEAD) Programme, which offers training grants of up to 90% to enhance SME abilities to execute proposed programmes;
- the *Customer-Centric Initiative* (CCI), a 70% assistance package for SMEs to upgrade service standards;
- the *Partnerships for Capability Transformation* (PACT) project which aims to identify and implement collaborative projects between large enterprises and SMEs to aid in knowledge transfer and capacity building between both;
- One recently inaugurated programme under PACT is the *P&G Leadership College*, a knowledge transfer training programme which allows SMEs to access P&G's Leadership Development curriculum under a partnership project with the US-ASEAN Business Council (USABC) and the US Agency for International Development (USAID). Alliance for Competitive SMEs.
- the *Collaborative Industry Projects*, which works with trade associations to identify industry-specific productivity challenges, and to issue calls-for-solutions that have the potential for mass adoption in the sector.

The **InfoComm Development Authority** (IDA) plays an important role in nurturing the uptake of technology by SMEs through their Infocomm@SME initiative.

There are three specific SME Infocomm Resource Centres (SIRC) set up to help SMEs with infocomm solutions:

- SIRC at Singapore Institute of Retail Studies
- SIRC at Singapore Polytechnic
- SIRC at Singapore Chinese Chamber of Commerce

The **Singapore Media Fusion Plan** (SMFP), under the Media Development Authority (MDA), aims to develop the creative industries in Singapore. The SMFP has an SME Centre online. A key partner for technology vendors targeting the SME market in Singapore is the **Economic Development Board** (EDB), the lead agency for planning, supporting and executing strategies (such as cloud adoption) to create the most conducive environment for business to flourish in Singapore.

Another key partner is International Enterprise Singapore (IE Singapore), which supports local business efforts to expand regionally and globally.

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SOUTH KOREA

SOUTH KOREA
Executive Summary

South Korea has an economy composed predominantly of services industries. However, because South Korea has transformed so rapidly, the country still maintains a large manufacturing sector and is more dependent on exports than most OECD countries. Manufacturing contributes at least 25% of GDP, far more than any other individual sector. In 2013, there were over 3.3 million SMEs in South Korea, some 99.9% of all enterprises, employing around 12.6 million people, or 87.7% of the workforce, and contributing around 50% of GDP.

In 2013 also, the government directed USD500 million towards cloud computing as part of its vision to establish a creative economy ecosystem and strengthen the country's capabilities in R&D and innovation. Not surprisingly then, demand for cloud computing solutions has largely been driven by government policies and the associated spending first, and by large corporations second. The three drivers for cloud computing investment are:

1. Improving the business efficiency process
2. Improved governance
3. New routes to market

And the industries that are proving to be early adopters of cloud computing in Korea are:

1. Financial services and insurance
2. Information and communications
3. Manufacturing
4. Education

Cybercrime has been cited as the number one concern for prospective cloud computing consumers, and there is good reason for South Koreans to be concerned: South Korea is ranked 14th in Bloomberg's survey of countries with the most cybercrime (3rd in Asia, behind China and India). And a distributed-denial-of-service attack crippled 80,000 Korean computers in 2009, creating a sense of insecurity over the Internet in Korea in general. Any cloud computing provider that hopes to be successful in Korea must therefore have solid security measures in place.

Market Size

In 2012, there were 3,351,404 SMEs, constituting 99.9% of all enterprises in South Korea. 13,059,372 people worked in SMEs making up 87.7% of total employment (Table 87).

Table 87: Percentage of Establishments by Number of Workers and Size of Establishment

No. workers	% of businesses	% private sector workers
1 - 4 workers	83.00%	28.80%
5 - 9 workers	9.10%	11.40%
10 - 49 workers	6.70%	24.50%
50 - 99 workers	0.80%	9.90%
100 - 299 workers	0.40%	10.90%
300 and more workers	0.10%	14.40%

Source:
Korea Statistical Information Services

Contribution to Economy (GDP)

According to the Small and Medium Business Administration (SMBA) of Korea (a government organisation), the total amount of production and value add in Korean SMEs accounted for 46.4% and 49.2% of the national output respectively in 2010. Manufacturing is Korea's largest sector in terms of value-add, contributing 28% of all private sector GDP. It is worth noting that between 1963 and 2011 SMEs were responsible for 47.3% of value-add from manufacturing according to the SMBA.

SME Definition

Korean SMEs were first defined under Article 2 of the Framework Act on SME and Article 3 of the Enforcement Decree of the Act (Table 88), which were enacted in 1966. The definition of SMEs per sector has gone through multiple adjustments. The last revision became effective in January 2012.

Table 88: Korean SMES are Defined by Sector

Sector	Category	Requirements
Manufacturing	SME	<300 employees & <KRW8 billion capital
	Small	< 50 employees
	Micro	< 10 employees
Mining, Construction & Transport	SME	< 300 employees & <KRW3 billion capital
	Small	< 50 employees
	Micro	< 10 employees
Publication, Info & Comm, Admin & Support, Health & Social Work, Professional Scientific & Technology	SME	< 300 employees & <KRW30 billion sales
	Small	< 10 employees
	Micro	< 5 employees
Agri, Forestry & Fishery; Elec, Gas, Steam, Waterwork; Whole/ Retail Trade; Accomm & Food; Arts and Recreation	SME	< 200 employees & <KRW20 billion sales
	Small	< 10 employees
	Micro	< 5 employees
Sewerage, Waste Management; Education, Repair & Other	SME	<100 employees & <KRW10 billion sales
	Small	*no definition*
	Micro	*no definition*
Real Estate, Rental and Leasing activities	SME	< 50 employees & <KRW5 billion sales
	Small	*no definition*
	Micro	*no definition*

Source:
The Small and Medium Business Administration of Korea

ICT Market Access

Mobile penetration in Korea reached around 110% as of 2013 (Table 89). Broadband penetration among businesses with 10 employees or more was already 98.4% in 2010, and 97.4% for households. It is equally safe to assume SME broadband penetration to be on par: South Korea's general population was the first to top 100% out of all OECD countries, according to the OECD in 2012. In addition, South Korea boasts the lowest median prices for broadband services among OECD countries, making broadband service easily available to SMEs even in rural locations. South Korea also has the highest median advertised download broadband speed among OECD countries.

Table 89: South Korea Connectivity Statistics (2013)

	Mobile	Internet	Broadband	
Total number of subscriptions	53,624,427	40,080,000	Fixed	Wireless
			18,866,582	51,456,440
Penetration	109.40%	82.10%	37.20%	102.90%

Source:
ITU Statistics, OECD Key ICT Indicators, KCC, KISA

The ubiquity of smartphones and deep penetration of broadband in Korea are key drivers to the adoption of cloud computing by SMEs. As of 2013, the proportion of smartphone users in Korea exceeded 95%, with 73% of mobile Internet users connecting to the Internet through Wi-Fi and 63% already doing so over LTE.

Given the long-standing and ubiquitous use of mobile phones by the population at large, mobile cloud applications targeting individuals as well as SMEs are well positioned for rapid uptake.

Market Characteristics

South Korea has an economy composed predominantly of services industries, with GDP by composition being: 57.5% - services, 39.8% - industry and 2.7% - agriculture. However, because South Korea has transformed so rapidly, the country still maintains a large manufacturing sector and is more dependent on exports than most OECD countries. South Korea classifies the economy into 18 categories (Table 90). The largest four sectors by of number of SME are wholesale and retail, accommodations and restaurants, transportation, and manufacturing.

Table 90: Composition of SMEs by Private Economic Sector

	SMEs		Ratio of SMEs/Total Businesses		SME Ratio by Industry	
	No. Enterprises	No. Employees	% SMEs in sector	% SME employees in sector	% of All Enterprises	% of All Employees
ALL Industries	3,351,404	13,059,372	99.90	87.90	100.00	100.00
Agri, forestry & fishing	805	9,855	100.00	100.00	0.00	0.10
Mining & quarrying	1,831	12,904	99.90	93.50	0.10	0.10
Manufacturing	357,539	2,963643	99.80	80.40	10.70	22.70
Electricity, gas, steam & water	486	14,756	97.00	57.20	0.00	0.10
Sewage, waste, materials recovery and remediation	5,955	8,442	99.50	93.50	0.20	0.40
Construction	108,850	853,484	99.80	81.60	3.20	6.50
Wholesale & retail trade	934,942	2,635,737	100.00	96.60	27.90	20.20
Transportation	361,145	873,562	100.00	91.70	10.80	6.70
Accommodations & food	672,218	1,871,965	100.00	98.40	20.10	14.30
Info & communications	29,783	319,625	99.60	79.10	0.90	2.40
Financial & insurance	10,777	110,129	98.90	60.10	0.30	0.80
Real estate, rental & leasing	110,253	265,797	99.70	87.90	3.30	2.00
Professional, science & tech	77,495	507,306	99.70	75.90	2.30	3.90
Business facility management	41,416	539,306	98.90	65.30	1.20	4.10
Education	146,743	482,121	99.90	96.70	4.40	3.70
Health & social work	95,617	657,695	100.00	98.70	2.90	5.00
Art, sports & related	98,563	247,430	100.00	93.00	2.90	1.90
Membership orgs, repair and other	297,014	641,397	100.00	97.50	8.90	4.90

Source: Financial Services Commission and Korea Finance Corporation

Composition of SME Market

The largest four sectors in terms of number of SME businesses are:

- **Wholesale and retail trade** with 934,9442 enterprises, making up 27.9% of total enterprises
- **Accommodation and food services** (672,218 enterprises; 20.1%)
- **Transportation** (361,145 enterprises; 10.9%)
- **Manufacturing** (357,539 enterprises; 10.5%).

The largest 4 sectors in terms of number of SME employees are:

- **Manufacturing** with 2,963,643 employees, making up 22.7% of total private sector employees
- **Wholesale and retail trade** (2,635,737 employees; 20.2%)
- **Accommodation and food services** (1,871,965 employees; 14.3%)
- **Transportation** (873,562 employees; 6.7%).

Manufacturing contributed over 27% to GDP in 2013 – far more than any other individual sector.

Current Status of Cloud Computing Adoption

Koreans are well exposed to cloud computing: according to the 2012 Survey of Internet Usage conducted by the Korea Internet and Security Agency (KISA), around 83% of smartphone users in Korea had heard of mobile cloud services with 33.1% claiming to know such services well.

Nevertheless, usage rates for cloud computing showed room for growth: 14% of Internet users had used cloud computing services at least once in the previous year, while almost 10% more had used the service in the previous month according to KISA's 2013 Survey. Adoption among smart phone users was higher; with 28% of the smartphone users indicated having used the mobile cloud at least once within the previous 12 months.

In terms of cloud computing services used, the highest use was for cloud storage services (82% for mobile cloud users, 61% for Internet-based users), trailed by editing documents (38.6%) and playing multimedia content (20.9%). 2013 was the first year KISA included a cloud computing usage category in its annual survey, which is itself an indicator of the growing importance of the cloud computing in the country.

Industries Most Likely to Adopt Cloud Computing Solutions

According to the National Statistics Office's IT Utilization Index, SMEs trail significantly behind enterprises in terms of use of ICTs: enterprise use of ICT scored over 70 (out of 100) for operational use, while SME utilization was only at 39.

The IT Utilization Index takes into account a corporation's investments, uptake, and capability to utilize and manage IT to improve corporate performance, and to create value for customers. The scores are divided according to a "maturity model" comprising four stages (Table 91):

Table 91: Korea e-Business Index (KEBIC) Maturity Model

Stage	Stage 1: Inside a business function (Intra-function)	Stage 2: Among business functions (Inter-function)	Stage 3: Among companies (Intra-enterprise)	Stage 4: Strategic innovation
Description	Operation including information flow within a function of a business is processed using IT	Operation within a company is integrated via IT	Operation with other companies is done through IT/information systems	IT used to establish strategy, analysis and to develop new business model

Source:
2013 Survey on E-business and ICT Usage by Korean Businesses, NIPA

The index is calculated by applying weights for each business size, type of industry, and business functions to four stages of the IT utilisation maturity process. The index is included in the Survey on E-business and ICT Usage by Korean Businesses, which was started in 2009 and is carried out by the National Industry Promotion Agency (NIPA).

SMEs index scores are, not surprisingly, consistently less than enterprises. Of the four areas looked at by the Index, SMEs received the highest score in intra-function processes with 54 points, followed by inter-function operations (45), inter-enterprise operation (33), and strategic innovation (22). Enterprises, in comparison, scored: 84, 80, 66 and 52 for the same four stages in 2013. While this shows that SMEs trail enterprises in leveraging IT to improve performance and value creation, it also says that there is already a sizable share of SMEs using IT to integrate their operations at least at the firm level. Moreover, that trend is steadily growing, and the gap between enterprises and SMEs has been narrowing steadily, year by year – which could potentially be aided dramatically by the strategic use of cloud computing technologies and solutions.

The top three IT utilizing sectors for SMEs in Korea have been almost exclusively consistent for in the last five years:

- Financial and insurance
- Manufacturing (electronics)
- Information and communications, media and publication

These three sectors also showed the highest appetite for IT investments. In terms of targeted adoption, a fourth sector, education, is also worth consideration.

Finance and Insurance: While the financial services industry (FSI) may be conservative in terms of adopting new technologies, there are sub-sectors that are under increasing pressure to innovate and are more likely to adopt cloud computing than others. For example, there are now some 4,300 insurance resellers that are, in part, comprised of financial consultants (FCs), almost all of whom find ERP or CRM solutions, customized for the insurance sector, to be too costly an undertaking. Most rely on standard office productivity software to manage their customer information. SaaS targeting insurance resellers would stand to cut the cost of back office operations such as HR and contract management, enhance the quality of services through an interface to compare and recommend suitable insurance products and foster financial management of the firm with an integrated view of the closing position each day. To this end, KT and Parallels have been providing a SaaS platform for SMEs since 2011, which includes server and apps management, account management, and integrated billing systems.

Manufacturing: The largest manufacturing sub-sectors with the highest level of IT utilisation amongst Korean SMEs are the electronics and automobile sector. These firms are under constant pressure to increase accuracy, enhance process speed, and capitalize on their internal intelligence and knowledge against the rapid product lifecycles and short time-to-market schedules. Piloting a protocol and stimulation are some of the areas these firms often do not have internal resources to invest. Given the dominance of high-technology firms among the Korean SMEs in manufacturing, cloud-based platforms to accelerate new product development and innovation would have a strong appeal. These firms would also be likely to invest in cloud-based SCM that allows them to manage the inventory and demand through real-time order status and forecasts.

Information and communications, media and publication: Within the sector, publication firms takes up the biggest proportion. Examples of these firms include traditional publishing companies to commercial printing firms. Regardless of size, publishing is a system-driven business with each title or project encompassing its own contract, editing and printing requirements and marketing. For SMEs in the publication, cloud offers unambiguous benefits to innovate the publishing workflow by enhancing cost-effectiveness for storing, collaboration and communication with the customers. The Ministry of Culture, Sports and Tourism (MCST) has also initiated a 5-year plan to promote the publication industry, in which establishing cloud-based One Source Multi-Format (OSMF) to promote e-book publication in Korea.

E-Commerce may be a comparatively recent phenomena, but is thriving in Korea, with some KRW55 trillion in revenues in 2013 and over 10% growth annually since 2009 (KOSA). While the market is dominated by conglomerates or Korean Internet giants such as Lotte and NHN, KISDI estimates that 29.3% of e-commerce players are SMEs, accounting for KRW6.5 trillion in revenue in 2012. Here is an example of a niche SME e-commerce player, which has taken advantage of cloud computing to stay ahead of the game.

In this environment Teamplaymall, the leading e-marketplace for customized group uniforms or clothing adopted SKT's T bizpoint Cloud Contact Service to drive customer service during seasonal sales hikes. The cloud-based CRM solution allows customer calls to be recorded without storage concerns or concerns over staffing levels – an issue that had been costing orders and profits due to seasonal spikes.

Indeed, local cloud computing providers advise paying particular attention to the SME e- and m-commerce players. Shopping via mobile only accounted for some 7.5% of retail in 2013, but m-commerce overall was already worth KRW4 trillion – a 113.5% year-on-year increase.

Education: Education, and e-Learning, in particular, is one of the fastest growing markets dominated by SMEs. In 2013, the e-Learning market was worth KRW2.95 trillion in revenue according to MOTIE. The e-Learning market has enjoyed annual growth in excess of 9.5% since 2008, according to NIPA.

The exponential growth of mobiles and tablets is further driving this growth as more and more students use their mobile devices to access academic content online. More than half of all Koreans have used e-learning services, and the amount spent on e-Learning services per person grew 57% in the last five years. More importantly, 1 out of 3 Koreans already use mobile devices to access e-learning content on a regular basis. To address the evolving demand and scale of the education market in Korea, SMEs are increasingly looking to cloud computing to offload back-office and development chores.

Case Study 15: 4Csoft on KT ucloud

4Csoft, a Learning Management Systems (LMS) company providing mobile/web-based educational content moved its servers to KT's ucloud services for its software development operation after a major data loss during a brownout. Clients include large educational institutions, government agencies and private companies. The company has subsequently seen significant cost savings from reduced electricity bills and IT operation expense, better use of limited office space and improved flexibility to pilot and test new products.

Case Study 16: Bapul on Microsoft Azure

Bapul, for example, a peer-learning K-12 education service, providing real-time and multi-media tutorial support, deployed Microsoft Azure for storage and database to enable it to rapidly expand overseas. 80,000 additional customers were then added to the service inside of 2 months with no apparent degradation in service.

SME Demand Drivers

Demand for cloud computing solutions has been driven by government spending and policies first, and by large corporations second. The three drivers for IT investment in general are:

1. Improving the business efficiency process
2. Improved governance
3. New routes to market

Key Characteristics to be Noted

Consumer Ethnocentricity: Koreans buy from other Koreans for Korea. Even after the Korean government's enlightened free-trade policies and enacting numerous FTAs, including a significant US FTA, Korean shoppers maintain a strong belief that they should buy domestically produced goods. This puts foreign producers at a disadvantage. Cloud computing, which is now dominated by local providers, is no exception. Foreign cloud providers may have to consider partnerships with local providers in order to get their products through the door. Microsoft, for example, has done just that by partnering with LG to provide Azure services to Korean consumers.

Sophisticated Regulatory Framework: South Korea has comprehensive data privacy regulations in the Personal Information Protection Act (PIPA) 2011, which are compatible with EU data privacy directives and the privacy principles of the APEC privacy framework. The Digital Signature Act 1999, gives clear legal weight to digital signatures. Korea has extensive Intellectual Property protection and has ratified and implemented the TRIPS agreement and WIPO copyright treaty. The Framework Act on Electronic Commerce 2002 contains comprehensive regulations covering e-commerce. Cybercrime is also covered by certain provisions of the Act on Promotion of Information and Telecommunication Network Use and Information Protection (APITN), however, cybercrime law is relatively weak among OECD countries.

Cybercrime Problems: Cybercrime has been cited as the number one concern for prospective cloud computing consumers, and there is good reason for South Koreans to be concerned: South Korea is ranked 14th in Bloomberg's survey of countries with the most cybercrime (3rd in Asia, behind China and India). And a distributed-denial-of-service attack crippled 80,000 Korean computers in 2009, creating a sense of insecurity over the Internet in Korea in general. Any cloud computing provider that hopes to be successful in Korea must therefore have solid security measures in place.

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

GDP per capita = USD22,589.96 (2012)
Exchange rate: USD1 = KRW1026.39

Table 92: SaaS (per User, pa)

	Google Apps for Business with Vault	MS Office 365 for Small Business Premium	Salesforce Force.com Enterprise Application
Cost	KRW123,166 (USD120)	KRW171,600 (USD180)	KRW985,334 (USD960)
Cost (as % of GDP/capita)	0.05%	0.07%	4.20%

While these are all SaaS targeted for small businesses, the details of the offerings differ. For example, Office365 Small Business Premium specifies up to 25 users while Google Apps and SalesForce.com do specify the numbers up front. Each offering has different combinations of productivity applications, storage and database usage as well but unless SMEs send an online inquiry or make a phone call to the sales number specified on the website, details are difficult to garner from simple online research.

Table 93: Comparative Pricing Index of PaaS (lowest tier pricing)

	ucloud biz Engine (KT)	Tcloud Biz (SKT) - Computing Solution	LG U+ Cloud CDN
Cost	Free (currently provided as beta service)	KRW246,000 (USD239.7)	KRW 80,000 (USD77.9)
Cost (as % of GDP/capita)	0.00%	0.10%	0.30%

Comparing PaaS offerings among existing cloud computing service providers is not as straightforward as one would imagine. The major local service providers – KT, SKT and LG U+ - have launched PaaS for mobile game developers in 2014 but require inquirers to send an online form or request a sales call to gather information on the specifications and price. The price above was calculated using the online quotation functions provided on the website. However, the details of the offerings (e.g. servers, memory and bandwidth) all differ slightly and apple-to-apple price comparison with exact specification seems difficult without devoting significant time to consult the sales from each providers. Lastly, the online calculators only offer technical information and do not offer guidance on what the appropriate specifications would be per business requirement.

Table 94: , Comparative Pricing Index of IaaS (1,000 GB of storage)

	ucloud storage (KT)	T cloud biz (SKT) - Storage Solution	U+ Cloud N – Storage(LG)
Cost	KRW60,000 (USD 54.5)	KRW118,000 (USD 115.0)	KRW 224,000 (USD 218.2)
Cost (as % of GDP/capita)	0.20%	0.50%	1.00%

For ease of comparison in IaaS, the storage solutions for 1TB among the major local providers were compared. All provided free traffic up to 1TB. It is also worth mentioning that all providers have up to 10 product offerings, ranging from servers, database and backup. Without professional IT staff – which SMEs often lack – local provider websites do not appear suited for SMEs to navigate through the cloud computing service offerings.

Difficulty of website navigation and online quotation aside, the price of cloud computing services demonstrates the strength of the various service offerings in Korea. None of these services exceed 1% of GDP per capita, except for Force.com's enterprise solution. With average annual IT spending for SMEs at KRW39.8 million in 2012, none of these services is therefore out of reach. Some offerings are on par or lower than the average mobile phone bill per household KRW159,148 – a compelling sales pitch for cloud computing.

Existing Government Programmes

There are a variety of government programmes in place, but it is important to realize that government policy is rarely articulated clearly. For SMEs, government policy has three major strategic thrusts:

- To build a creative economic ecosystem.
    - · Promote Idea-Based Startups
    - · Create a Vibrant Environment for Investment and Investment Recovery
    - · Improve Systems to Support Restart

- Reconstructing the ladder of opportunity for SMEs.
    - · Remove Obstacles to the Growth of Mid-Sized Corporations
    - · Enhance the Growth Potential of SMEs
    - · Promote Fair Competition against Big Corporations

- Making neighborhood merchants and enterprises happy.
    - · Support the Startup and Restart of Businesses
    - · Foster Vibrant Traditional Markets

These are all administered by the **Small and Medium Business Administration** (SMBA), under the Ministry of Trade, Industry and Energy (MOTIE). The SMBA and the **Small and Medium Business Corporation** (SBC) are both affiliate organizations of the MOTIE and act as intermediary voices between the government and the business community. The **Korea Federation of Small and Medium Business** (Kbiz) and the Korea Trade-Investment Promotion Agency (KOTRA) also engage in SME policy making.

The **Ministry of Science, ICT, and Future Planning** (MISP) is the highest level of government in charge of ICT policy. Directly under the ministry are 10 departments working on separate issues all of which have some impact on ICT policy. The "vision" for the ministry is to:

- Establish a Creative Economy Ecosystem
- Strengthen the Nation's Capabilities in R&D and Innovation
- Make Software and Content Industries the Core of the Korean Economy

- Promote International Cooperation and Globalization
- Pursue Development of Science Technology and ICT for the People

One example of implementation of these policies is the 2013 USD500 million investment by the South Korean government in cloud computing. The National IT Industry Promotion Agency (NIPA) also has an important role Implementing ICT adoption. NIPA's policies and goals are broken into 5 sections:

- IT Strategic Planning
- IT Industrial Growth
- Software Competitiveness
- IT Convergence and Application
- Software Engineering Center

Financing Support Plans for SMEs

The SMBA has a number of financing programmes available to SMEs. A selection of these are summarised in Table 95.

Table 95: Select Finance Schemes

Financing Plan	SMBA Description
SME Policy Funds	Promotes the creation of venture SMEs with strong technological capacity and good business value but a shortage of capital, to create jobs.
Technological Development Commercialization Funds	Fosters technology-based SMEs by promoting the commercialization of good technology owned by SMEs.
New Growth Basis Funds	Creates engines for growth by providing promising SMEs with good business value and technological capacity and the funds needed to strengthen their competitiveness.
Small Enterprise Support Funds	Supports the startup and stabilization of small enterprises to create new jobs, sustain existing jobs, and contribute to the balanced development of the national economy.

Incubator Programmes

The SMBA also administers programmes for start-up companies:

Table 96: List of Incubator Programmes

BI Support	Partly supports the cost of new construction or expansion of Startup Incubation Centers and the cost of their operation, including personnel expenses.
Global Startup Project for Young People	Local startup education and incubation programmes are provided in the US, China, and other countries for domestic startup companies to enter overseas markets and also to increase successful business startup at the global level.
Startup-Leading University Project	Provides startup-leading universities with comprehensive support through a package of policy measures for each stage of startup to form 'startup clusters' around such universities.
Venture Corporation Verification System	Identifies companies satisfying certain conditions and provides them with support for human and material resources during early stage development when they have difficulty entering the market.
New-Technology-Based Startup Cluster	To promote the creation of 'New-Technology-Based Startup Clusters' by universities and research institutes, it provides for part of the cost for infrastructure and production equipment to be shared.

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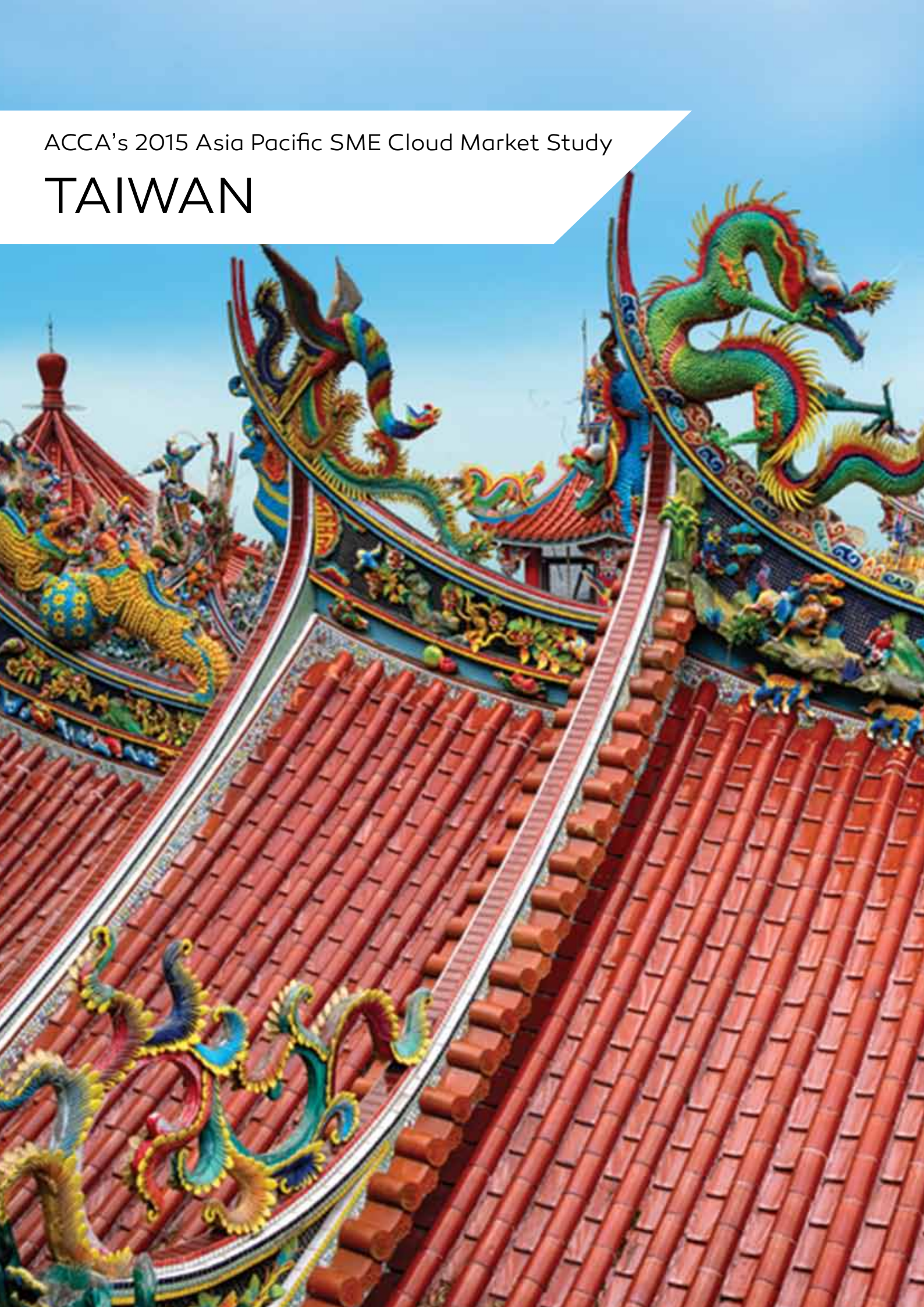
TAIWAN



TAIWAN
Executive Summary

In 2010, the Taiwan government invested USD744 million into the development of a full-fledged ecosystem for cloud solutions and services, and promoting the adoption of cloud solutions in private and public sectors. A Steering Committee for the Development of the Cloud Computing Industry was created along with the Cloud Computing Industry Promotion Office. Taiwan's Cloud Valley, subsequently launched by the Cloud Computing Association of Taiwan, was initiated to encourage the creation of more SMEs in the supply chain sector.

There are some 1.3 million SMEs in Taiwan, accounting for 97.7% of all businesses, employing 78.1% of the workforce, and generating 30% of all sales revenues. Total R&D and IT spend by SMEs has been rising every year since the turn of the century indicating an increasing orientation, driving by the government, of using technology as a fundamental component of all business processes.

Industries most likely to adopt cloud computing in Taiwan have been identified as:

1. **Information and communications**. This industry is already utilizing cloud computing to a not-insubstantial degree. The Taiwan Cloud Valley, launched in March 2012, aims to build a supply chain ecosystem for the cloud computing industry. However the share of SMEs in this sector has been falling, although the number of enterprises has been rising.

2. **Education**. Given the existing high smartphone and tablet use is now seen to be an effective way to extend educational reach both for the youth and for continuing education and reskilling. SMEs comprise 99% of all enterprises in education in Taiwan.

3. **Manufacturing**. Companies in this industry have indicated ambitions towards adopting cloud computing. This will allow manufacturing SMEs to streamline their business to

focus on key areas. SMEs may see immediate benefits through cloud simulations, which will allow them to develop new business ideas or business models, and simulate the results, in order to avoid bad investments.

With the government's emphasis on developing Taiwan as a cloud computing centre, there are already numerous programmes to encourage cloud computing adoption. The government is also actively deploying cloud solutions in schools, hospitals, and government offices. Given the government activity in promoting cloud computing for citizens and businesses in Taiwan, it is only a matter of time before SMEs catch on in a more significant way.

Market Size

According to the government, there were 1,337,890 enterprises in 2012, of which SMEs numbered 1,306,729, accounting for 97.67% of the total. SMEs employed 8,484,000 people in 2012, accounting for 78.12% of total employment, and SME sales accounted for 30.23% of total sales in 2012 (Table 97). It's worth noting that while domestic sales accounted for 85.3% of SMEs' total sales; exports by manufacturing firms accounted for 71.62% of SMEs' total exports.

Table 97: Taiwan SME figures

	Companies		Employees		Total Sales
	No.	%	No.	%	%
2011-12	1,279,784	97.60	8,337,000	77.90	29.60
2012-13	1,306,729	97.70	8,484,000	78.10	30.23

Source:
SMEA, MOEA, "White Paper on Small and Medium Enterprises in Taiwan, 2013"

SME Definition

The Small and Medium Enterprise Administration (SMEA) of the Ministry of Economic Affairs (MOEA) defines an SME as:

1. For manufacturing, construction, mining and quarrying industries, paid-in capital of TWD80 million or less; or less than 200 regular employees.

2. For enterprises involved in the agriculture, forestry and fisheries, water, electricity and gas, commercial, transportation, warehousing and communications, finance, insurance and real estate, industrial and commercial services or social and personal

services industries less than TWD100 million annual sales revenue; or less than 100 regular employees.

Micro enterprises refer to SMEs with fewer than 5 persons employed on a regular basis.

Table 98: SME Definitions

Manufacturing, construction, mining, quarrying	Commerce, transport and other services
Paid-in capital <TWD80 million;<200 employees	Revenue <TWD100 million; <100 employees

Source:
SMEA, MOEA, "The Definition of SMEs"

ICT Market Access

According to the National Communications Commission (NCC), there were 127 mobile cellular subscriptions per 100 inhabitants at the end of 2013. There were also 30 fixed broadband subscriptions per 100 inhabitants and 77.4 mobile broadband subscriptions per 100 inhabitants in 2013 (Table 99).

While Taiwan enjoys competitive broadband penetration rates compared to other Asia Pacific countries, connection speeds lag far behind those of South Korea and Japan which have average speeds of 23.6Mbps and 14.6Mbps respectively, while Taiwan's average connection speed was 8.9Mbps in Q1 2014, according to Akamai's Q1 State of the Internet Report for 2014.[105] Users also pay substantially high prices for the slower broadband connections, where according to Consumers' Foundation survey in 2012, Taiwanese consumers pay the second highest prices globally for broadband.[106]

Table 99: Taiwan Infocomm Statistics

	Mobile	Fixed Broadband	Wireless Broadband
Total number	29,701,005	7,011,934	18,099,170
% penetration	127.00%	30.00%	77.40%

Source:
NCC, "Brief Statistics of Communications 2013"
NCC, "Broadband Internet Accounts 2013"

[105] Akamai, State of the Internet Report Q 2014

[106] Consumer's Foundation, Chinese Taipei, "Broadband Network Speeds lag far behind International Standards", 2012

With the launch of 4G networks in May 2014, the use of mobile phones and mobile broadband is set to further increase. With a strong appetite for digital services such as videos, social media, games, and other content, smartphone penetration rates have risen to 58.7%, while tablet PC penetration rose to 25.4%.[107] Enterprise broadband penetration rate is well over 90%, with ADSL the most commonly used broadband access technology.

With a high usage rate of mobile devices and 77.4% of users connecting to the Internet using wireless broadband connections, the demand to access cloud apps is likely to be strong, where users may be able to access apps, data and services anytime and anywhere.

With prominent local cloud service providers such as Acer and Asustek, and a strong government push to adopt and leverage ICT, SMEs are likely to adopt more cloud services as they modernize operations, and hope to innovate their businesses using e-commerce, online and mobile marketing, and other ICT applications.

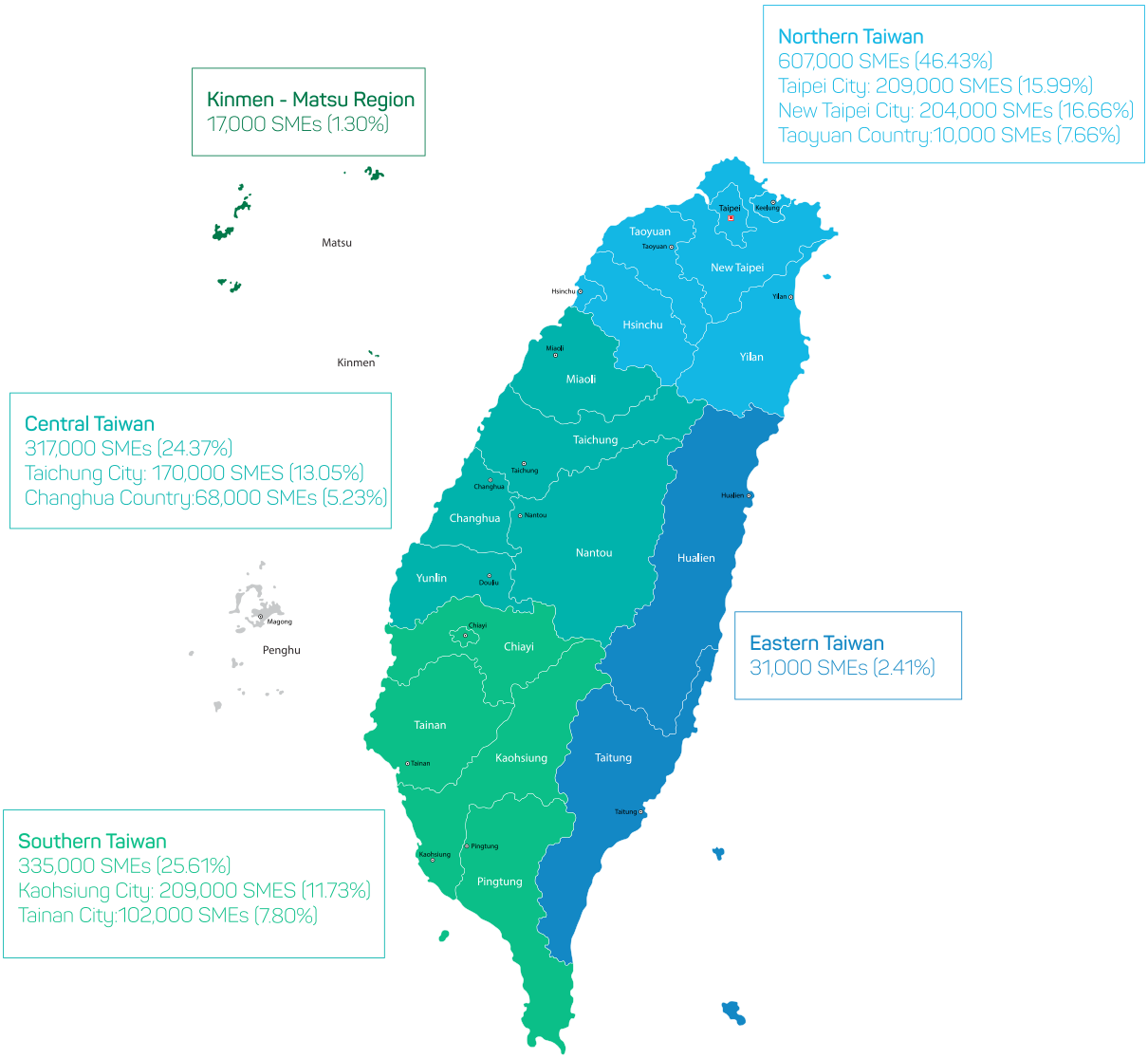
Market Characteristics

Taiwan is a developed nation, yet there still lies a divide between the urban and rural areas. While it will be difficult to introduce cloud computing solutions to significant parts of rural Taiwan, which are still focused on traditional roles such as agriculture and fishing, urban areas are largely homogenous and well developed. The SME markets in the cities cater to increasingly sophisticated, mobile and demanding populations (particularly in terms of retail and food choices), and act as vital parts of the supply chain for manufacturers, particularly those in the manufacturing and industrial zones of northern Taiwan. The infrastructure of these cities has been developed to accommodate the latest technologies. For example, New Taipei is the base of a smart city project between the city government and IBM. These areas are looking to use cloud computing solutions and tools to improve their operations, from simple SaaS tools through to renting servers.

Taiwanese SMEs are most heavily concentrated in Northern Taiwan, accounting for 46.4% of total SMEs (Figure 15). Taipei continues to be at the centre of Taiwan's economic development, where most of the country's important factories are located. These include global brands such as Asustek, Chunghwa Telecom, D-Link and others, which are all headquartered in Taipei City. Taiwan Semiconductor Manufacturing Company (TSMC), the world's largest dedicated semiconductor foundry is headquartered in Hsinchu City in Northern Taiwan. As a result, government policies for economic development favour the northern region, with resource allocations favouring the North.

[107] According to Foreseeing Innovative New Digiservices (FIND) under the Institute for Information Industry.

Figure 15: Distribution of SMEs by Region



Source:
SMEA, MOEA, "White Paper on Small and Medium Enterprises in Taiwan, 2013"

Composition of SME Market

Taiwan has a developed capitalist economy and a vital manufacturing base for electrical components and computer parts. While agriculture, manufacturing and construction remain important parts of the SME market, the services sector accounts for the largest proportion of SMEs at 80% (Table 100). Even within the services sector, wholesale and retail trade make up more than half of SMEs at 50.6%. Domestic sales accounted for 84.6% of total sales of SMEs, where the largest shares would go to consumers, followed by sales to wholesalers

Table 100: Number of Enterprises by Industry

	Sector	Number of SMEs	Percentage of SMEs
Agricultural	Ag, Forestry, Fishing, Animal Husbandry	11,817	0.90
	Total	11,817	0.90
Industrial	Mining and Quarrying	1,203	0.09
	Manufacturing	137,436	10.52
	Electricity and Gas Supply	320	0.02
	Water Supply and Remediation Services	7,127	0.55
	Construction	103,130	7.89
	Total	249,216	19.07
Services	Wholesale and Retail Trade	661,201	50.60
	Transportation and Storage	30,662	2.35
	Accommodation and Food Services	126,499	9.68
	Information and Communication	16,823	1.29
	Finance and Insurance	14,165	1.08
	Real Estate	27,180	2.08
	Pro, Scientific, Technical Services	39,549	3.03
	Support Services	29,563	2.26
	Education	1,421	0.11
	Human Health and Social Work Services	407	0.03
	Arts, Entertainment and Recreation	22,407	1.71
	Other Services	75,819	5.80
	Total	1,045,696	80.03

Source:
Ministry of Finance Tax Data Centre, Ministry of Economic Affairs

and retailers, and private sector factories. Information and communication remains a small proportion of SMEs at 1.3%.

SME Purchasing Characteristics

Total IT spending in Taiwan was predicted to rise to USD21.6 billion in 2014, driven by the demand for enterprise software, IT services and devices, according to Gartner. While purchasing power and spend patterns of SMEs are not exclusively tracked, the National Science Council does provide an overview of R&D expenditure by SMEs. Total R&D expenditure by SMEs has risen each year, with a growth rate of 17.2% in 2008, 2.1% in 2009 and 4.5% in 2010. SMEs are gradually

recognizing the need to invest more into R&D to improve business processes, innovate, and create new products to gain a competitive edge. However only 7.2% of R&D expenditure came from the services sector, and the manufacturing sector accounted for 91% of all business sector R&D expenditure. R&D leads to the invention and adoption of new technologies, new ways of utilizing products and resources, new production processes, and enhanced service quality and improved production efficiency. These include the upgrading of IT equipment, including the purchasing of new software and hardware, and exposing themselves to new IT tools and solutions.

Therein lies a huge opportunity for adoption of cloud solutions to help meet SME R&D needs. SMEs may invest into cloud to reduce overall IT costs, by significantly reducing the need to invest into new software and hardware.

Industries Most Likely to Adopt Cloud Computing Solutions

The industries most likely to adopt cloud computing are:

Information and Communications: This industry is already utilizing cloud computing to a not-insubstantial degree. While Taiwan is known as a manufacturing heavyweight for integrated circuits (IC), many SMEs form a part of the IC industry, specializing in a narrow aspect of the value chain, such as IC design, mask production, foundry service, packing, and testing. The same holds true for other ICT components where SMEs form key components of the value chain. The Taiwan Cloud Valley, launched in March 2012, aims to build a supply chain ecosystem for the cloud computing industry.

Small IT business solution providers and developers may also benefit towards using cloud solutions, as they channel their focus towards developing solutions and apps, rather than worry about IT maintenance, including hardware and software infrastructure, backup, support, and information security. Being primarily exposed to cloud and having the technical expertise to facilitate the migration towards cloud, this industry represent significant opportunities in adopting cloud.

Case Study 17: Ching Hang Information and Windows Azure

Developer of business solutions software, Ching Hang Information implemented a shared cloud platform on Windows Azure and used it to develop an Enterprise Information Portal (EIP) solution. This cloud based EIP solution has been subsequently deployed as a solution to the company's customers, accelerating growth at a fraction of per customer acquisition cost seen previously.

Education: SMEs in this sector account for 99.2% of all enterprises. The Ministry of Education has been playing an active role in pushing technology among schools, and has worked with

PROMISE Technology on a cloud storage file synchronization and sharing solution for all elementary and junior high schools. Further, there is high penetration and usage of smartphones and tablets, even among the youth, (the Child Welfare League Foundation finds nearly 10.00% of children aged 11-14 "severely addicted" to smartphones). Youths have been exposed to smart devices at a young age, and are thus able to resonate well with devices and IT, including cloud based education platforms. These could include online learning platforms for both students and teachers. SMEs involved in education could leverage on the early use of technology and cloud in schools, and integrate their own systems, or use complimentary services.

Cloud-based education platforms may be used by students, teachers, and parents to share resources, interact with others and create an equal learning opportunity for all. A social networking system may be integrated to introduce an educational wiki, online dictionary, and a sharing platform. Education need not only be for youths and students, and the government encourages lifelong learning through the use of e-learning services.

Case Study 18: National Taiwan University College of Management and Delta Electronics

Delta Electronics helped the National Taiwan University College of Management create an integrated cloud environment for academic research. The "Cloud Computing and Business Application Programme" was launched in 2010 to nurture professionals in cloud computing, business development and management. The college was the world's first business school to incorporate cloud technology into teaching and learning through the creation of an academic programme on a cloud computing application.

Case Study 19: Tainan City Education Center

Since 2013, Tainan City Education Center has begun migrating to a new centralised IT infrastructure based on a private cloud model. The datacenter solution will help replace the servers of individual schools with virtual and physical servers hosted by the Education Center, while the upcoming PaaS and SaaS phases will help to create a cloud development platform and provide software development services for teachers and administrative staff. The new infrastructure is projected to save the city USD344,000 per year in hardware costs and support costs, and reduce carbon emissions by 2,610 tons annually.

Manufacturing: According to a survey by FIND, the manufacturing industry appears to offer significant market potential for adopting cloud, with 34% of all manufacturing enterprises indicating they would consider doing so within the next year. Many industries within the manufacturing industry, such as machinery manufacturing and automotive and automotive components manufacturing are already in the early stages of cloud adoption, with over 9% having already adopted cloud computing services. While the ICT sector remains the most important part of the manufacturing sector, other sectors also indicate ambitions in adopting

cloud. The plastic and rubber manufacturing led the manufacturing sector with 46.3% indicating they would consider doing so within the next year. Manufacturing industries also budget the largest amounts for R&D, which could be channelled towards adopting cloud.

Adopting cloud will help those in the manufacturing industry streamline key areas of their business. Tasks such as production and inventory management, logistics, and customer relationship management can be streamlined and handled through cloud solutions. SMEs may see immediate benefits through cloud simulations, which will allow them to develop new business ideas or business models, and simulate the results, in order to avoid bad investments.

Taiwan harbours ambitions of transiting from a manufacturing industry towards a knowledge based and service economy, and a leading cloud computing total solution provider. The manufacturing industry has to keep pace with this transition, and the migration towards adopting cloud computing solutions should be the natural evolution as the economy transforms.

SME Demand Drivers

With the government's emphasis on developing Taiwan as a cloud computing centre, there are many programmes to encourage cloud computing adoption. The government is also actively deploying cloud solutions in schools, hospitals, and government offices. Asustek partnered the Taipei City government to create a cloud platform with five free cloud based services, including personal data storage, corporate data storage, digital education materials, remote health care and public access to city information. Enterprises, schools, hospitals and government offices will be provided 10GB of space and data access. The Institute for Information Industry created the Cloud Appliance for Enterprises (CAFE) to help SMEs with a variety of low-cost cloud computing solutions. Given the government activity in promoting cloud computing for citizens and businesses in Taiwan, it is only a matter of time before SMEs catch on in a more significant way.

IT managers indicated "Easy to install/upgrade/maintain," "Off-site backup," and "Reduce IT expenses (e.g IT devices, IT employees, IT maintenance)" as the top three benefits of adopting cloud computing.[108] Taiwan companies tend to have few IT employees and low IT budgets, as the IT department serves more as a supporting function, rather than having a core development focus. Thus firms are likely to view adopting cloud computing services as a viable substitute for their original IT systems.

Taiwan has a high percentage of employees engaged in the Bring Your Own Device (BYOD) trend with 88% of employees doing so, according to a survey by Fortinet. Strong employee adoption of BYOD, widespread broadband connections, and inclination to technology will make it easy for SMEs to transition towards cloud computing.

[108] Hsu, P.F, "Cloud Computing Adoption in Taiwan" 2012, Institute of Service Science, National Tsing Hua University, Taiwan

Key Characteristics to be Noted

Taiwan's e-commerce sector has been steadily growing, and is forecast to reach TWD1 trillion in 2015, with the Chinese mainland a key market. SMEA has been running an SME International Web marketing project since 2010 for SMEs to tap into overseas markets through the use of e-commerce platforms, such as Alibaba, eBay, Rakuten and others. These e-commerce platforms help introduce the concept of cloud services to SMEs through hosting third party services such as payment and logistics, and requiring little technical knowledge for sellers. A good first impression and confidence in using e-commerce will help change SME mind-sets and make them more open to adopting more IT solutions.

R&D, manufacturing strengths: Taiwan's strengths in R&D and manufacturing are recognized all over the world. Taiwan leads the world in manufacturing of servers, storage, networking devices, and is home to many leading IT brands. These strengths, combined with highly developed industry clusters, strong enforcement of intellectual property rights, strong support from the government on innovation and creativity, creates significant potential for the development of new products and strong brands by Taiwanese enterprises, both big and small.

Home to global brands: Taiwan is home to Asustek and Acer, the fourth and fifth largest PC vendors in the world. These two global brands provide their own respective cloud services, such as Asus Open Cloud, and Acer's "Build Your Own Cloud" service. The strong performance of local brands, including HTC has led to strong support for home-grown companies and pride for local tech companies.

Reservations about cloud: According to an empirical study done by in 2012 by the Institute of Service Science at National Tsing Hua University, the biggest concerns of cloud computing were "cloud provider cannot deliver quick response" as indicated by 93% of respondents, and "unexpected service unavailable issue" (92.5%) (Figure 16).

Figure 16: Cloud Concerns

Comparative Pricing Index of Select SaaS, IaaS Solutions

Taiwan GDP per capita: TWD623,713 (2013)

Table 101: SaaS (per User, pa)

	Google Apps for Business with Vault	McAfee SaaS Endpoint Protection	Salesforce Sales Cloud (Enterprise)
Cost	TWD3,597 (USD120)	TWD306 (USD10)	TWD44,961 (USD1,500)
Cost (as % of GDP/capita)	0.60%	0.05%	7.21%

Table 102: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure[109]	Amazon Virtual Cloud (EC2)[110]	HP Cloud Compute [111]	Red Hat Cloud Infrastructure[112]
Cost	TWD174,542 (USD5,823)	TWD94,322 (USD3,145)	TWD42,669 (USD1,424)	TWD83,869 (USD2,799)
Cost (as % of GDP/capita)	28.00%	15.10%	6.80%	13.40%

Taiwan has a mature knowledge-based economy, with an above average GDP per capita, and heavy consumers of digital content. SMEs are readily available to adopt SaaS solutions, which may range from low cost Internet protection solutions, as low as TWD306 pa – less than 0.05% of GDP per capita - to slightly dearer CRM software. Many simple SaaS solutions remain affordable for SMEs, costing lower than recent 4G data plans, and are likely to see increased adoption by SMEs.

The cost of IaaS and PaaS solutions on the other hand remain high, ranging from 6.8% to 28% of GDP per capita, and represent a significant barrier to SMEs wishing to adopt these solutions. Further, planning SME investments to IaaS and PaaS solutions remain a complicated affair, with multiple configuration options offered by different service providers. The promise of cloud

[109] The price estimated was calculated based on a selection of standard XS/S options for a Windows Virtual Machine, website and SQL standard XS server and database.

[110] Price estimated on a selection of Windows and Std. SQL Server on m3.medium.

[111] Price estimated on a selection of XS Windows server, 1 XS relational database, and 10GB storage.

[112] Price estimated on a selection of Red Hat Cloud Infrastructure without unlimited Red Hat Enterprise Linux guests, 2 sockets and standard support.

computing offers to deal away with IT departments and the need for a business owner to require any, or much, IT knowledge, yet the multitude of options provided when selecting a IaaS or PaaS solution creates the contradiction, where it is necessary for the business owner to have a technical understanding and proficiency to figure out what his business requires.

Taiwan has the second highest broadband costs in the world, with prices ranging from a monthly TWD1,428 fee for 2Mbps ADSL (not including TWD1,500 hook-up fee per computer, TWD500 hook-up transfer fee with appended local phone, and a TWD200 setup fee) to a TWD11,640 6Mbps fiber connection (not including a TWD1,500 system setup fee). While the price of an ADSL or fiber connection remain well within the affordable range for an SME, a IaaS solution may cost over 30 times that of a broadband connection. SMEs are more likely to adopt less expensive SaaS solutions rather than IaaS or PaaS solution till prices fall significantly.

Existing Government Programmes

Ministry Responsible for SMEs

The **Small and Medium Enterprise Administration** (SMEA) of the Ministry of Economic Affairs is the government department in charge of formulating plans, strategies and providing guidance and assistance to SMEs. The MOEA is focused on helping SMEs, upgrade, transform and enhance their capabilities, including technology capability, as seen through various government measures such as e-services guidance, upgrading of technologies and improving R&D capacity. The SMEA in a bid to encourage ICT adoption has introduced various ICT guidance services, ranging from ICT applications and e-commerce, through to training and business facilitation.

Some specific projects related to IT and cloud include the SME International Web Marketing Project to help e-commerce and international online sales, SME e-business Innovation Services, and the SME e-learning project and SME e-care programme to help develop infrastructure to build communications and cultivate talent. The SMEA and MOEA also launched the Cloud Computing Promotion Programme and established the SME Cloud Computing Promotion Service Center to help SMEs make more effective use of cloud computing services, drive development of cloud computing technology R&D. The government has specifically identified a number of application fields (including business software, e-commerce, personal mobile commerce and others) where it will provide subsidies to encourage the adoption and integration of related cloud services. The government will provide more information on these growth areas, and subsidy eligibilities on their website: cloud.moeasmea.gov.tw.

Case Study 20: Rich Hotel's Cloud POS Solution

The Rich Hotel is an example of an SME benefiting from the SMEA's Cloud Computing Promotion Programme. The Hotel updated its services to use a cloud POS solution enabling sales associates to complete transactions on their smartphones. The hotel lobby was transformed into a boutique selling clothing and other accessories and had movable kiosks to act as a traditional night market during the evenings. The Cloud POS solutions helped improve mobility for the sales team, allowing them to complete more sales transactions, and improving the hotel's image as a modern, and tech-savvy attraction.

Government Promotion Policies and Programmes

In 1991 the Taiwan government publically announced the Act for Development of SMEs, which was most recently revised in 2009. The Act was enacted to further the development of SMEs by helping them improve operation environments, promote mutual cooperation, and assist them in striving for growth with their own efforts.[113] In 2010, the Taiwan government announced and launched its **Cloud Computing Industry Development Programme**, initially investing USD744 million into developing cloud computing technology and services. These included the development of a full-fledged ecosystem for cloud solutions and services, improving Internet infrastructure, encouraging adoption in private and public sectors and creating a Steering Committee for the Development of the Cloud Computing Industry and **Cloud Computing Industry Promotion Office**.

In May 2012, the National Development Fund approved the Plan for Promoting Investment in Strategic Service Industries. The Fund was allocated TWD10 billion for investment in strategic service industries, such as information services, Chinese e-commerce, digital content, cloud computing, the MICE industry, gourmet Taiwan, international logistics, healthcare, and design services. This plan is expected to be implemented over a period of 13 years, with the actual investment taking place during the first ten years, and the remaining three years being devoted to the disposal of remaining investments.

2013 saw the launch of the "Digital Inclusion for Small and Medium Enterprises Project" aimed at encouraging SMEs to integrate their business into the digital economy, and help traditional and remote businesses use IT to improve business. The main project emphasis areas include (i) Digital Application – training to help SMEs go online, and use social media to network, market and use e-commerce, (ii) E-enablement and Marketing – help SMEs that have e-enablement potential further advance management and marketing, (iii) Advanced Counselling – to help SMEs further upgrade their business models, and (iv) SME E-cluster – to promote SME clusters through integrated sharing of resources, and marketing to achieve synergy in exploring digital business opportunities.

[113] SMEA, MOEA, "Act for Development of Small and Medium Enterprises"

The government supported Industrial Technology Research Institute subsequently opened a Cloud Computing Research Centre, collaborating with ICT manufacturers. The New Taipei City government established New Taipei City as a hub to drive cloud computing adoption throughout Taiwan, through increasing education and promoting secure cloud computing. And, **Taiwan's Cloud Valley** launched by the Cloud Computing Association of Taiwan was initiated to encourage the creation of more SMEs in the supply chain sector.

ACCA's 2015 Asia Pacific SME Cloud Market Study

THAILAND

THAILAND
Executive Summary

Cloud computing adoption by the private sector in Thailand is still at an early phase due mainly to limited knowledge about cloud computing and a perceived lack of appropriate solutions or applications. Moreover there are, as yet, few dominant domestic cloud providers. The telcos, True and CAT, have been early movers in providing such services, but on a fairly limited scale to date. According to one government report on Thai SMEs, there are three major problems facing SMEs in accessing and adopting technology services:

- Inadequate technology supply;
- Inappropriate technology service provision;
- Lack of technology knowledge resulting in incompatible solutions.

Thailand has in excess of 2.9 million SMEs, accounting for 99.8% of all enterprises, 83.9% of overall employment, and contributing 36.6% of GDP (THB3,859,588 million). SMEs are concentrated in wholesale and retail trade along with vehicle repair; services such as hospitality and tourism, financial intermediation, and real estate; and manufacturing. The services sector contributes more than 41% of total GDP and is pivotal to the Thai economy; it is also potentially best positioned for cloud computing adoption. The key sectors for early adoption are:

1. **Telecommunications and Finance** – Technology developments in both industries are in a state of flux and significant change. Both policy and new regulations are driving these industries to adopt new technologies. Software companies are also being supported by various government initiatives and industrial park developments to host software and applications on the cloud.

2. **Trade (Wholesale and Retail)** – The industry continues to experience costly, complicated, and cumbersome processes related to IT operations, inventory management and expansion. In addition, point-of-sales generate huge amounts

of data every day, which the majority of SME retailers do not have the necessary resources to capture let alone utilise. Cloud providers in retail are able to collect such data from sophisticated server networks connecting the supply chain to independent cash registers at family-owned small stores and storing it for the retailer.

3. **Education** – Distance-learning programmes in collaboration with cloud service providers are already being utilised in many educational institutions, allowing students to conduct lessons on e-learning servers. In addition, there is potential attached to Thailand's 'Smart Thailand' plan to bring cloud-based educational material to schools, including rural areas.

There are three pillars to the Government's Smart Thailand 2020 Strategy: Smart Government, Smart Network and Smart Province. Currently, cloud adoption is primarily driven through Thailand's G-Cloud initiatives such as the 'Open Government IT project' which integrates data and services for citizens in industries such as public health, social welfare, and education, or the 'Smart Box' programme, an integrated device to provide connectivity and deliver government services through smart card authentication, and to be implemented to deliver government services to remote communities. These initiatives are expected to move into the private sector in the near term.

Overall the potential for bringing cloud services into Thai businesses appears huge, but first by raising awareness and educating SMEs on the benefits of cloud, and thereafter through trial and demonstration. Moreover, since the Thai government has been heavily involved in enhancing cloud use in government agencies, creating ties with the government is an important step since SMEs in the country are supported by and rely on these government institutions.

Market Size

Table 103: Thai SME figures

	Companies		Employees		Contribution	
	No.	%	No.	%	Amount (million)	%
2010 - 2011	2,894,780	99.60	10,507,507	77.90	THB3,746,967	37.10
2011 - 2012	2,913,167	99.80	10,995,997	83.90	THB3,859,587.6	36.60

Source:
APEC, "Thailand's SMEs Promotion on Credit Access", 2012
OSMEP, "Directions and Measures of SME Promotion", 2011
OSMEP, "Directions and Measures of SME Promotion", 2010

According to the Office of Small and Medium Enterprise Promotion Thailand (OSMEP), there were 2,894,780 small enterprises and 18,387 medium enterprises in 2011-12 for a total SME market of 2,913,167 businesses, accounting for 99.8% of all enterprises in Thailand (Table 103). According to OSMEP, 99.80% of all enterprises in Thailand are SMEs, and they account for 83.90% of overall employment. In 2011-12, total employment was estimated at 13,107,263, with SMEs accounting for 10,995,997 jobs.

Contribution to the Economy (GDP)

GDP contribution by SMEs in 2011-12 was THB3,859,587.6 million, or 36.6% of the total. In 2012, GDP contribution by SMEs grew by 0.6%, down significantly from 7.9% the previous year. When considering the GDP value according to the size of the enterprise, it was found that small enterprises contributed more to GDP than medium enterprises with the value of the former standing at THB2,583,873.4 million, equivalent to 24.5% of total GDP. Medium-sized SMEs contributed THB1,275,714.3 million, equivalent to 12.1% of total GDP.

SME Definition

SMEs in Thailand are defined according to the Small and Medium Enterprises Promotion Act B.E. 2543 produced by OSMEP. Under these regulations, SMEs are defined as either small or medium based on (a) number of employees or (b) the value of total fixed assets not including land. SMEs are further grouped into four categories based on business sector: (a) manufacturing, (b) wholesale, (c) retail and (d) services, and, different criteria are used in each sector to distinguish between small and medium enterprises (Tables 104 and 105).

Table 104: SMEs by the Number of Employees

Sector	Small	Medium
Manufacturing	<51	<200
Wholesale	<26	26-50
Retail	<16	16-30
Service	<16	51-200

Source:
Small and Medium Enterprises Promotion Act (B.E. 2543). Government Gazette, 2000-08, Vol. 54, No. 8 N.B 1USD = 31,000 THB

Table 105: SMEs by Total Fixed Assets (not Including Land Value)

Sector	Small (THB)	Medium (THB)
Manufacturing	<50 million	51-200 million
Wholesale	<50 million	51-200 million
Retail	<50 million	51-100 million
Service	<30 million	31-60 million

Source:
Small and Medium Enterprises Promotion Act (B.E. 2543). Government Gazette, 2000-08, Vol. 54, No. 8 N.B 1USD = 31,000 THB

ICT Market Access

Thailand's mobile penetration in Q1 2014 was 144.4% (Table 106). Mobile subscriber growth has settled at around 10% annually, with the strategic focus shifting to mobile Internet. As of Q1 2014, Thailand had 5,088,157 broadband subscribers, equivalent to 7.62% of the population. Continued mobile substitution and the replacement of fixed broadband accesses in favour of smartphone and tablet-powered mobile connections, in addition to Wi-Fi public wireless broadband hotspots installation nationwide have shown that the demand for wireless Internet is outpacing fixed broadband services. In addition, the rollout of 3G commercial wireless service in the country in 2012 has been an important factor contributing to the use of broadband in Thailand and smart devices in the country.

Table 106: Thai Infocomm Statistics

	Mobile	Broadband	Mobile Internet
	Q1 2014	Q1 2014	2010
Total number	96,368,368	5,088,157	12,000,000
% penetration	144.36%	7.62%	17.40%

Source:
NBTC Thailand iDashboard , "Mobile Market Report", 2013-2014
Asian Correspondent – Jon Russels, "12 million mobile Internet users in Thailand", 2010

While not everyone has a computer or computer access, many people have 2-3 SIM cards to use on 2-3 devices, explaining the high mobile penetration numbers. The adoption of smartphones in Thailand has seen an explosive growth since 3G was launched in 2013. On average, the time spent on the Internet via mobile devices accounts for 49% of all media use.[114] Internet usage on mobile devices is slowly becoming an alternative technology to bridge the digital divide for those with no fixed Internet connection at home.

[114] Nielsen Thailand Study, "Thailand mobile market information 2014"

During Thailand's floods in 2011, the number of Twitter users increased substantially with #Thaiflood becoming one the hot tags to encourage flood information across the nation. The ministries also set up @FloodThailand as an official Twitter account to inform the public. Thailand's ubiquitous usage of social network platforms (Facebook, Twitter), and instant messaging apps (LINE, WeChat) indicates there is huge potential in focusing on promoting apps usage in SMEs to communicate rather than consumer or government oriented. Localisation is important for this market and considered on the of the key success factor to establishing deep penetration into the Thai market.

Bring Your Own Device (BYOD) has rapidly become the new trend for businesses and organisations in Thailand, with employees recognising the efficiency of using non-corporate personal devices; for works becoming another reason that mobile cloud apps will be well-received.

Market Characteristics

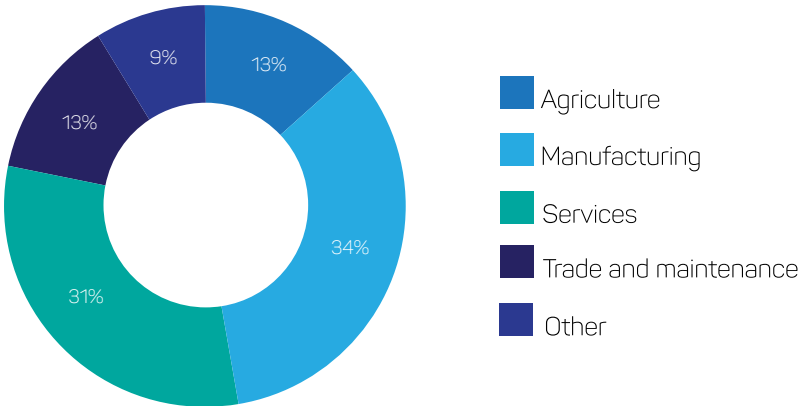
Thailand's economy is officially segmented into 17 areas (Table 107). The agricultural sector contributes 13.3% of GDP, while non-agricultural comprises 86.7%, of which manufacturing makes the most significant contribution to the economy at 34% of total GDP. After manufacturing comes services (30.9%), followed by trade and maintenance (12.9%). Combined, they made up 77.8% of total Thai GDP for 2011-12 9 (Figure 17)

Table 107: Economic Activity in Thailand

Ag, Hunting and Forestry
Community and Social Services
Construction
Education
Electricity, Gas and Water
Finance Intermediation
Fishing
Health and Social Work
Hotels and Restaurants
Intl and Foreign Orgs
Manufacturing
Mining and Quarrying
Private Household Employees
Public Admin and Defense
Real Estate
Trade, and Vehicle Repair
Transport and Storage

Source:
The Office of the National Economic and Social Development Board

Figure 17: Economic sector contribution to GDP (%)



Composition of SME Market

Table 108: Number of Enterprises Classified by Size and Business Activity

Business Activity	Small Enterprises	Medium Enterprises	SMEs Sub Total	Large Enterprises	Total Enterprises
Ag, hunting & forestry	4,395	118	4,513	48	4,561
Community & social services	227,273	323	90	90	227,686
Construction	106,427	460	106,887	163	107,050
Education	2,036	44	2,080	14	2,094
Electricity, gas & water	1,279	101	1,469	89	1469
Finance intermediation	7,993	334	8,327	361	8,688
Fishing	341	15	356	6	362
Health & social work	3,180	137	3,317	93	3,410
Hotels & restaurants	301,377	939	302,316	331	302,647
Intl and foreign orgs	161	-	161	-	161
Manufacturing	459,665	4,128	463,793	2,109	465,902
Mining & quarrying	2,061	92	2,153	22	2,175
Private household employees	-	-	-	-	-
Public admin & defense	202	-	202	-	202
Real estate	251,787	1,798	253,585	691	254,276
Trade & vehicle repair	1,173,611	2,719	1,176,330	2,043	1,178,373
Transport & storage	92,693	500	93,193	192	93,385
Not specified	359	1	360	1	413
Total	2,634,840	11,709	2,646,549	6,253	2,652,854

Source:
OSMEP, National Statistics Office, Social Security Office, and Department of Business Development

A significant number of SME businesses are concentrated in Bangkok. SMEs are concentrated in trade, e.g. wholesale, retail and repair of motor vehicles, with 1,176,330 businesses, equivalent to 99% of the country's enterprises in this sector); services constituting hotels and restaurants,financial intermediation, real estate activities, and other community, social and personal service activities (with 320,789 businesses or 99.81% of the country's enterprises in the service sector); and manufacturing (with 463,793 businesses or 99.52% of the country's enterprises in the this sector) (Table 108).

The majority of SME economic activity relates to services, manufacturing and the trade and maintenance sectors. The service sector was the most important economic activity with 33% of GDP, an expansion of 5.4%. Second is manufacturing with 31.2%, a 4.3% contraction in 2011. The third sector was trade and maintenance with 28%, an expansion rate of 1.8%.

Industries Most Likely to Adopt Cloud Computing Solutions

The services sector contributes more than 41.00% of total GDP and is pivotal to the Thai economy; it is also potentially best positioned for cloud computing adoption.

Telecommunications and Finance – Technology developments in both industries are in a state of flux and significant change. Both policy and new regulations are driving these industries to adopt new technologies. While there are some challenging policy statements around both industries making the environment less than certain, there are already numerous examples of businesses in these two industries making use of cloud computing services and looking to move aggressively onto various platforms.

Software companies, for example, are being supported by Software Park Thailand (www.swpark.or.th). Software Park Thailand with local cloud-service providers (True IDC, Datapro, Anise Asia, Cloud Creation, and TOT Go) has established the Cloud Thailand Alliance (CAT) to promote cloud awareness and encourage local software companies to innovate cloud applications. TOT and Anise Asia rolled out cloud-based software suites for Thai SMEs to meet rising demand. Japanese ICT firm Fujitsu opened its cloud data centre in Thailand in October 2013, targeting manufacturing, retail, and the financial service sectors.

Trade (both Wholesale and Retail – Change is also constant in the trade industry, especially in retail; however the industry continues to experience costly, complicated, and cumbersome processes related to IT operations, inventory management and expansion. In addition, point-of-sales generate huge amount of data every day, while SME retailers do not have the necessary resources to capture or utilize such enormous amounts of data.

Crowdsourcing apps such as WhatSale Thailand and Got It are indicative of the consumer lead development in the market. WhatSale allows users to stay current on news and nearby promotions; Got It app acts as a tool to enable increased marketing activities for creating brand loyalty. Got It's founder launched a nationwide promotion with Dunkin Donuts, whereby

consumers were given a digital version of their member card within Got It, and all customer data was synchronised through the customer's mobile device. These applications are beginning to change the landscape as they show retailers how to see which customers are most active, and to start customising coupons and other point-of-sale options, segmenting customers and sending different types of coupons to different types of customers.

Education – Cloud-based education programmes are expected to gain rapidly in popularity in Thailand. Distance learning programmes in collaboration with Microsoft's Office 365 suites, for example, were spearheaded across a number of educational institutions such as Chulalongkorn, Sripathum, the University of the Thai Chamber Commerce, and Naresuan University, allowing students to conduct lessons on e-learning servers. Initially, some 12 universities were using Microsoft Office 365 for distance learning.[115] In addition, in November 2012, the Ministry of Information and Communications Technology (MICT) launched a pilot cloud computing project called 'Braincloud Solution' at six local schools in Nakhon Pathom province, to connect them via tablets to the 100 Mbps Internet network provided by the government to enable students and teachers to access learning materials, courseware, and educational resources. The initiative promoted efficient use of tablets as learning tools under the government's One Tablet Per Child (OTPC) policy.[116] Braincloud Solution was provided by Openface Internet — a Canadian-based Internet infrastructure and software solutions provider to bring cloud based educational material to schools and rural areas.[117]

In 2014 the Office of Basic Education Commission (OBEC) signed a 5-year agreement with Microsoft to provide Office 365 free to students and teachers in the agency's jurisdiction.[118] About 8 million students and 400,000 teachers in Thailand are given access to Office 365. The agreement, represents the single biggest cloud service deployment for Microsoft in the education sector globally. The government already made Office 365 available to about 2 million university students in the country.

SME Demand Drivers

The demand for IT services in Thailand is driven mainly by investment in facilities for manufacturing exports and a fast-growing consumer sector. The major growth sectors for IT services in Thailand are implementation services, operations management and support services.

According to a survey of 401 SME entrepreneurs in Thailand on the usage of IT and Internet for business operation, 68.8% in the **trade sector** used IT for marketing and for e-commerce.[119]

[115] Winnie Nelson, "Thailand pushes forward with education on Cloud with Microsoft", 2013

[116] However, the programme stalled at the pilot since the OTPC policy hit political problems under the then government when the Chinese manufacturer of tablets cancelled the deal in February 2014.

[117] The Nation, "School trials cloud computing for use with tables", 2012

[118] CIO, "Thailand picks Office 365 for 8 million students", 2014

[119] OSMEP, "Directions and Measures of SME Promotion"

In the **services sector**, 95.5% used IT in business operations, with most agreeing that it was useful for enhancing work efficiency and improving image. The top three uses were for accounting, salary, and buying/selling. Solutions preferred were "ready-made" (e.g. Microsoft Office).

In contrast, only 15.5% in the **manufacturing and services sector** used IT. The major obstacle to purchasing IT solutions was "inadequate information" on how to obtain the appropriate technology services and an inability to locate services compatible to needs.

Key Characteristics to be Noted

Cloud computing adoption by the private sector in Thailand is still at an early phase due mainly to limited knowledge about cloud computing and a perceived lack of appropriate solutions or applications.[120] Moreover there are few domestic cloud providers. The telcos, True and CAT, have been early movers in providing such services. True IDC has partnered with LG Dacom, Power-All Network, Trend Micro, Microsoft and VM Ware to provide various cloud-based services. CAT Telecom has partnered with IBM to launch domestic cloud services, adopting the IBM SmartCloud infrastructure to offer cloud services to both private and government enterprises.

According to an OSMEP report on Thai SMEs,[121] there are three major problems facing SMEs in accessing and adopting technology services:

- Inadequate technology supply;
- Inappropriate technology service provision; and
- Lack of technology knowledge resulting in incompatible solutions.

The determining factors for the adoption of cloud computing include access (Internet and technology), costs, and sector specific application. In the education sector, for example, since the government has focused more on building the infrastructure – Internet in universities and schools, with smart devices readily available – users have been finding the transition to cloud smoother. Cloud-literate users will also be the drivers for cloud adoption; the level of human resource ICT skills is therefore crucial towards growth in cloud adoption.

Overall the potential appears huge for bringing cloud services into Thai businesses, first by raising awareness and educating SMEs on the benefits of cloud, thereafter through trial and demonstration. Moreover, since the Thai government has been heavily involved in enhancing cloud use in government agencies, creating ties with the government is an important step since SMEs in the country are supported by and rely on these government institutions.

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[120] See for example, Keesookpun, Chutipong; Mitomo, Hitoshi, "Cloud computing adoption and determining factors in different industries: A case study of Thailand", 19th ITS Biennial Conference 2012, Bangkok, Thailand, 18 - 21 Nov 2012: Moving Forward with Future Technologies: Opening a Platform for All.

[121] OSMEP, "The White Paper on SMEs of Thailand in 2011 and Trends 2012"

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Average GDP per capita = USD5,474 (World Bank)

Thailand's enterprise IT spending is estimated at USD11 billion for 2013;[122] since SMEs account for 99.8% of Thai enterprises, SMEs *on average* therefore spend approximately USD3,470 on IT. The proliferation of smart devices is currently seen to be the main driver in the growth of IT spending. Growth of cloud services is moderate in Thailand, with SaaS in the form of applications for collaboration and productivity likely to receive the most attention. Confidence in adopting cloud computing will be aided by the development of public cloud and government cloud.

Table 109: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business	Salesforce Sales Cloud
Cost	THB3,820 (USD120)	THB 2,547 (USD80)	THB47,747 (USD1,500)
Cost (as % of GDP/capita)	2.00%	1.00%	27.00%
SME IT Spending	USD3,470	USD3,470	USD3,470
Cost (as % of SME IT spend)	3.50%	2.30%	4.30%

Source:
TRPC (conversion rate USD1 = THB31.832)

Basic SaaS Google Apps and Microsoft Office 365 for Small Businesses are affordable at only 1 - 2% of GDP per capita and around 3% of SME IT spend; even Salesforce Sales Cloud, which is much higher in price (27% of GDP per capita), is only more than 4% of total SME IT spend (Table 109). This suggests that SMEs should be investing in email, backup, management applications as such to save costs overall.

PaaS and IaaS from international vendors are more than twice as expensive when compared to GDP per capita (Table 110). Local cloud providers in Thailand such as True IDC, Datapro, Anise Asia, Cloud Creation, and TOT Go,[123] are rapidly beginning to provide their own cloud apps and infrastructure specifically to SMEs now, suggesting the market is becoming more competitive as companies target smaller firms. Pricing for cloud services from local providers are however not readily available to public.

[122] From 2012-2016, IDC projects that IT spending in Thailand will grow at a compound annual rate (CAGR) of 10.8 percent. The country is also expected to spend US$11.0 billion on IT while Singapore is forecast to spend only US$10.6 billion.

[123] TOT Cloud App

Table 110: PaaS/IaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure[124]	IBM SmartCloud	HP Cloud Compute (extra small)
Cost	THB11,937 (USD375)	THB 34,000 (USD1,069)	THB16,744 (USD526)
Cost (as % of GDP/capita)	7.00%	20.00%	10.00%
SME IT Spending	USD3,470	USD3,470	USD3,470
Cost (as % of SME IT spend)	10.80%	31.00%	15.00%

Source:
TRPC (conversion rate USD1 = THB31.832)

In comparison, consider that the average cost of a small business usage of a maximum 12MBps of fibre broadband is THB18,900pa[125] (USD595) which is 10.9% of GDP per capita, that is more expensive than investing in basic SaaS and roughly similar to purchasing PaaS and IaaS services.

Existing Government Programmes

Ministry Responsible for SMEs

SMEs in Thailand sit under the Ministry of Industry organisationally, and primarily receive support via the ministry, or its related bodies. This includes the SME promotional bodies: the Industrial Estate Authority of Thailand (IEAT), and the Board of Investment (BOI), as well as Office of Small and Medium Enterprises Promotion (OSMEP).

- **The Office of Small and Medium Enterprises Promotion** (OSMEP): IS a government agency under the Ministry of Industry responsible for formulating master and action plans, creating mechanisms for implementation, and allocating financing to SMEs to help assist in development.
- **Industrial Estate Authority of Thailand** (IEAT): is responsible for industrial estates in both urban and rural settings, and provides tax and non-tax incentives.
- **Board of Investment** (BOI): advises investors on investing in Thailand and its businesses, and provides related business support services.

[124] USD$500, lowest committed spend; pre-paid yearly at 25% discount

[125] TOT, "Broadband Internet pricing"

The **Ministry of Industry** is not, however, the sole responsible body for SME promotion in Thailand as other ministries play key roles such as the **Ministry of the Interior** which, through the **Community Development Department**, has responsibility for promoting community enterprise projects such as the 'One-Tambon, One-Product' (OTOP), and the **Ministry of Tourism and Sport** which has responsibility for overseeing SMEs in travel and tourism.

Thailand also has service centres such as the **Thailand Science Park**, which was set up under the **National Science and Technology Development Agency** (NSTDA). The establishment of the Thailand Science Park was a particular step in promoting SME clustering and providing technical support in the fields of materials technology, electronics and computer technology, genetic engineering and biotechnology, and nanotechnology. The **Bureau of Supporting Industries Development** (BSID) is the main government organization for providing technology and innovation knowledge for developing supporting industries to be sustainable.

Government Promotion Policies and Programmes

Thailand's e-Government Cloud scheme is a part of the ICT Ministry's Smart Thailand 2020 Strategy, which is a part of "Smart Government". There are three main pillars to the strategy: Smart Government, Smart Network and Smart Province. Currently, cloud adoption is primarily driven through Thailand's G-Cloud initiatives such as the 'Open Government IT project' which integrates data and services for citizens in industries such as public health, social welfare, and education, or the 'Smart Box' programme, an integrated device to provide connectivity and deliver government services through smart card authentication, and to be implemented to deliver government services to remote communities. These initiatives are expected to move into the private sector in the near term.

Support Programmes

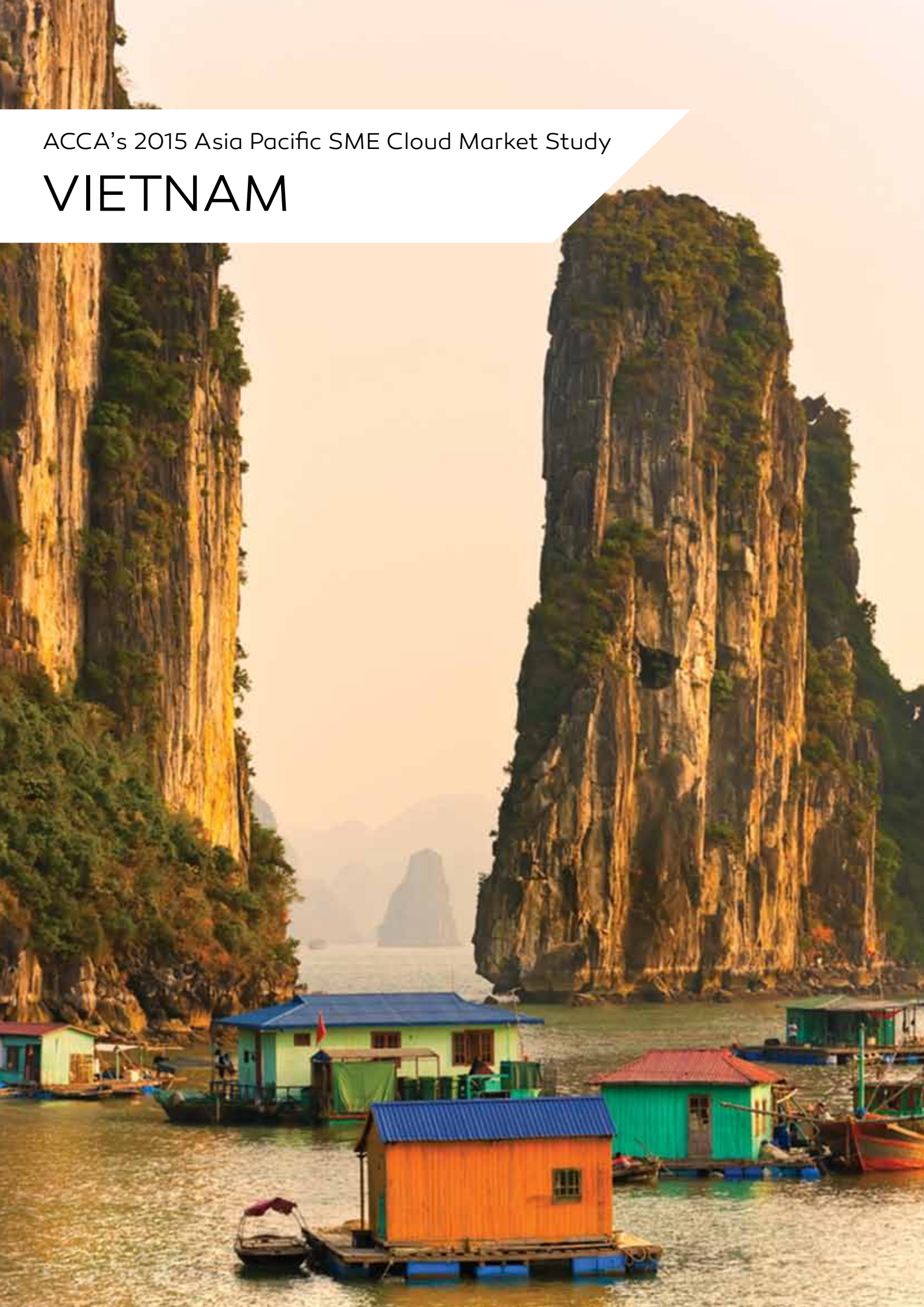
The Joint Foreign Chambers of Commerce in Thailand established the Entrepreneurship Working Group to help promote entrepreneurship policies and practices in the country. The two broad areas addressed by the working group are:

- To encourage and promote entrepreneurial activities and events, including supporting Global Entrepreneurship movements, and
- Advocating policies and practices (via our 'Learning and Policy' initiative) which encourage an ecosystem to support startups and entrepreneurship advancement in the nation.

Co-working space in Thailand for entrepreneurs is also gaining traction. For example, Hubba Thailand provides a co-working space, as well as organising Start-up Weekend in Bangkok with the Kauffman Foundation, for participants to gather and pitch ideas.

ACCA's 2015 Asia Pacific SME Cloud Market Study

VIETNAM



VIETNAM
Executive Summary

Cloud computing is emerging as a significant shift for industries in Vietnam, with many MNCs now beginning to adopt early service offerings across real estate, insurance and other finance areas, utilising cloud computing for customer service through web-based customer-oriented applications.

In 2010, SMEs numbered 242,453 enterprises, of which SMEs themselves accounted for 79,668 of the total (small enterprises numbering 162,785, along with 5,100 medium enterprises). The rest, some 162,785 enterprises, were micro-businesses. By 2011, these numbers had grown to: 215,065 micro enterprises, **82,981 small** enterprises and **5,683 medium enterprises**, for a total MSME population of **303,729 enterprises**. MSMEs employed an estimated 18.3 million employees, well over 75% of the country's working population.

SMEs in Vietnam principally operate in trade, the repair of motor vehicles and household goods, and agriculture, forestry and fishing. In addition to these areas which can benefit through process and import/export focused solutions, the industries most likely to adopt cloud computing are education, telecoms and services.

The current landscape of Vietnamese SMEs is an uneven playing field with the majority of SMEs operating on a small scale with minimal capital, unskilled labour, out-of-data technology and weak management capacity. An ASEAN survey of some 300 small enterprises showed these enterprises generally face limited resources from credit and infrastructure support through to technology and qualified labour. In addition, there is a lack of financial and marketing support, resulting in difficulty in finding capital mobilisation. Government support policies have traditionally left most SMEs out of the loop, dealing with low credit growth and high inflation. In this environment, most micro- and small-enterprises see little network connection to larger enterprises or to international market opportunities. This presents an obvious challenge to providers looking to enter the market, but it also shows quite clearly where the emerging mass opportunity lies.

Overall, an estimated 25% of enterprises can be seen to be the immediate potential market for cloud computing services and applications, 5% of which are possibly already using (or subscribing to) cloud services. This means that, at a very basic service level, Vietnam has the potential now for some 4,575,275 cloud accounts to be established.

Emerging IT trends such as e-commerce are now beginning to facilitate the expansion of SMEs into new markets, where companies can establish new supply chains and partnerships. E-commerce sales in Vietnam are expected to reach USD1.3 billion in 2015. Amidst this competitive economic market, SMEs choose not to buy services unless it is the only solution needed. When they engage in one, they go for simple products first. To this end, demand-driven human resources training have been by far more popular than quality management products. At present, the commonly available support services from domestic providers are skills training, partial consulting, marketing, and the like.

Market Size

The total number of Vietnamese enterprises in 2010 (the latest year for which there is official data) was 248,842, comprising 162,785 micro, 74,658 small, 5,010 medium and 6,389 large enterprises (Table 111). SMEs (including micro companies) account for more than 97% of all enterprises nationwide and play a crucial role in job creation, income generation and national investment. SMEs (excluding micro companies) only account for 32% of all enterprises in Vietnam (Table 112).

According to type of enterprise, SMEs are mainly private limited, and comprise around 98.5% of all private limited companies in Vietnam, with large enterprises contributing only 1.5% of employment. In state owned enterprises, SMEs account for much less at around 50%. Most notably, we can see a growth in the number of registered firms, most of which are SMEs, concentrated in the form of either limited liability or sole proprietary companies.

Table 111: Number of Enterprises by Category, 2010-11

	Micro	Small	Medium	Large	Total no. enterprises
State-owned enterprises	69	1,260	570	1,465	3,364
Non State-Owned Enterprises	161,661	69,918	3,857	3,496	238,932
Foreign invested	1.055	3,480	583	1,428	6,546
Total	162,785	74,658	5,010	6,389	248,842

Source:
General Statistics Office - GSO Publishing House, "VSIC 2007 edition 2", Hanoi, 2011

Contribution to the Economy (GDP)

Table 112: Vietnam SME Figures

	Companies (incl micro)		Companies (ex micro)		Employees		Industry Value Add
	No.	%	No	%	No	%	%
2008-2009	199,710	97%	72,530	35%	31,707,368	77%	31%
2009-2010	242,453	97%	79,668	32%	32,505,242	77%	40%

Source:
General Statistics Office - GSO Publishing House, "VSIC 2007 edition 2", Hanoi, 2011

Overall, SMEs contributed around almost 40% to GDP in 2012, up from 31% in 2008-09,[126] equivalent to more than VND111 billion. In addition, SMEs have been creating job opportunities across non-state sectors, employing more than 77% of the workforce in that sector and accounting for 80% of the retail market (Table 112).[127]

During the period 2000-09, the difference in job creation between state-owned enterprises and private limited enterprises differed significantly. In 2000, state-owned enterprises created 59% of total employment in businesses versus a moderate 29.4% employment creation from private companies. Fast forward nine years and state-owned enterprises accounted for only 19.5% of total employment in businesses versus 59% from private companies.[128] One of the driving reasons was the re-organization of state-owned enterprises through this period and the increased flow of foreign investment into the country as Vietnam moved from a centrally planned economy to a more market-oriented economy. And within this, SMEs played a pivotal role in maintaining the unemployment rate at a low 2.2% during the decade.

SME Definition

According to Decree 56/2009/ND-CP, Vietnamese enterprises are categorized by industry into four groups: micro, small, medium and large enterprises, according to total capital (equivalent to total assets identified in the enterprise balance sheet) or the average annual number of employees (Table 113). Total capital is the priority criteria.

[126] Le Thi Khanh Van, National Agency for Science and Technology (NASATI), "Activities of Supporting SMEs Development in Vietnam", 2012

[127] Christopher W. Runckel, Business in Asia, "SMEs in Vietnam"

[128] General Statistics Office-GSO Publishing House, "Vietnamese Business in the 21st Century", Hanoi, 2011

Table 113: Definition of Enterprises

	Micro	Small		Medium		Large	
	Employee (No.)	Capital (VND)	Employee (No.)	Capital (VND)	Employee (No.)	Capital (VND)	Employee (No.)
Ag, forestry & fishery	< 11	<20B	10 -200	20B – 100B	200 - 300	>100B	>300
Ind. & construction	<11	<20B	10 - 200	20B – 100B	200 - 300	>100B	>300
Trade & service	<11	<10B	10 - 50	20B - 50B	50 - 100	>50B	>100

Source:
Le Thi Khanh Van, National Agency for Science and Technology (NASATI), "Activities of Supporting SMEs Development in Vietnam", 2012

ICT Market Access

There were 120 million mobile subscribers in Vietnam as of 2013 according to the World Bank, a penetration rate of 135.2% (Table 114). The penetration of fixed broadband Internet subscribers (per 100 people) in Vietnam was 5.8% as of 2013, while wireless broadband totalled 16 million in 2012, a 18% penetration rate. SME broadband penetration in Vietnam is still significantly lower than neighbouring countries such as Singapore and Thailand as well as being far more limited technologically; this is largely due to the capital involved.

Table 114: Number and Percentage of SMEs Using Mobile Devices and Broadband Internet

	Mobile	Broadband	Wireless Broadband
	2013	2013	2013
Population	88,780,000	88,780,000	88,780,000
Total number of subscribers	120,000,000	5,151,400	16,000,000
% penetration	135.20%	5.80%	18.00%

Source:
World Bank, "Mobile subscribers 2013",
"Fixed broadband Internet subscribers 2013"
"Vietnam ICT White Book 2012"

The figures available do show a general upward trend in Vietnam's mobile market. However, recent delays to the launch of 4G mean that, in the short term, operators will concentrate on migrating subscribers to 3G services via competitive strategies. Nonetheless, Vietnam remains

one of the fastest growing smartphone markets in Southeast Asia. The broadband market also shows strong growth, especially use in wireless on more than one smart device daily. As a result of cross-platform apps, the coverage of mobile apps over the country keeps increasing. This will open more opportunities for mobile ads and in-app marketing, still more focused towards consumer ended rather than small medium enterprises. Mobile focused social messaging and gaming apps such as Zalo, Zing, Viber, WeChat, WhatsApp are growing at a tremendous rate, indicating interest in communications through mobile devices is generally high. Niche markets in social networking and gaming are rising through local apps such as onClan, UBox and Bubbly.

Companies in Vietnam are seeing a rise of the Bring Your Own Device (BYOD) office model, especially in smaller firms, which suggests the high likelihood that mobile cloud apps can be appealing towards Vietnam's SME market.

Market Characteristics

Vietnam's economy is structured into three major areas: agriculture, industry and services; contributing to 19.7%, 38.6% and 41.7% of GDP respectively;[129] more specifically broken down to 19 major segments (Table 115). The largest employers are in trade, manufacturing, construction and real estate. Given that SMEs account for 97% of the workforce, SMEs are mainly concentrated in trade (small retailers or wholesale vendors, repair of motor vehicles and household goods), accounting for only 39% of registered businesses.

SMEs are concentrated mainly in bigger cities such as Hanoi, Ho Chi Minh City, Da Nang, Can Tho and Hai Phong. The Red River Delta and Southeast region are where SMEs are most heavily populated, with 29.2% and 39.1% of SMEs respectively, according to the General Statistics Office (Table 116).

SMEs in the current market have faced various ongoing challenges in their operational characteristics, which are hindering their competitiveness against bigger companies. Some of these challenges include the lack of an operational process, a standardised ICT system, an effective marketing and sales tool, a long-term business strategy, and the lack of finance to invest in training workforce. Online presence (e.g. website) is also very limited, occasional cases have limited presence on Facebook or forums; therefore, experience with cloud-based productivity solutions is very also very limited suggesting a big opportunity for cloud providers.

[129] World Bank, InfoDev, "Vietnam at a glance", 2012

Table 115: Vietnam's Industrial Breakdown of Enterprises by Sector

Economic sector	2008-2009	2009-2010
Agriculture, forestry and fishing	8,517	8,749
Mining	2,257	2,521
Manufacturing	37,647	44,018
Manufacture of engines and other electrical equipment	3,467	2,143
Electricity, gas and water supply	715	882
Construction	28,246	35,554
Trade, repair of motor vehicles and household goods	80,446	97,051
Transport, and storage	7,740	10,074
Food and beverages	7,083	8,898
Information and communications	3,429	4,538
Finance and insurance	2,068	2,129
Science and technologies	3,338	4,223
Real estate	13,380	17,193
Administration and support	3,838	6,172
Education and training	1,370	1,788
Health and social services	473	664
Arts and entertainment	678	820
Other activities	1,028	1,417
Maid services	12	11
Total	205,732	248,842

Source:
General Statistics Office, "Country's statistics", GSO Publishing House, Hanoi, 2011

Table 116: Enterprise Distribution by Region

	2008-2009	2009-2010
Red River Delta	61,093	72,676
Northern Midlands and mountains	11,564	11,627
Northern Central, and Central coastal areas	31,033	36,608
Central Highlands	6,576	7,294
Southeast	73,877	97,253
Mekong Delta	21,425	23,220
Nationwide	205,732	248,842

Source:
General Statistics Office, "Country's statistics", GSO Publishing House, Hanoi, 2011

Industries Most Likely to Adopt Cloud Computing Solutions

Among industries, the government has been focusing on export products in agriculture, forestry, fishery and arts goods as these types of products are considered to be high quality and possess a competitive potential in the international market. In order to support these sectors, the Ministry of Trade and Industry collaborated with other ministries.

Cloud computing in Vietnam started as collaboration between IBM and the government by establishing the IBM Cloud Lab,[130] the result of a pilot cloud programme for universities and research institutions. Indeed, it is the education, telecoms sectors and government ministries that appear to be the early adopters of cloud computing solutions in Vietnam. For example, the Ministries of Education and Training, Science and Technology, and Information and Communications have jointly developed cloud-based academic programmes, which offer computing courses, free software tools, and business case studies.[131] The University of Information Technology (UIT) in Ho Chi Minh City has partnered with IBM to build a private cloud computing platform, of which training courses, online applications, and other services will be developed and tested. State-owned telco MobiFone is also deploying cloud services to migrate its computing platform to the cloud.

Looking forward, the three industries in Vietnam likely to lead as early adopters of services and solutions are:

Commerce (wholesale and retail): SMEs are concentrated in the trade sector, mainly in wholesale and retail trade, and with little or no IT skill generally. Cloud solutions enable access to enterprise-level IT at an affordable price and without having to worry about databases, upgrades, in-house tech support and other cost items. Cloud solutions stand to improve the efficiency level of operational processes in areas of warehouse and inventory management, and data storage, which may not have existed before.

New solutions integrating customer information on shopping behaviour and preferences are entering the market and can help stores attract recurring customers through targeted product promotion and payment offers. For instance, mobile shopping app Shoppie[132] lets shoppers take advantage of crowdsourcing options to shop via an "explore function" with various functionality to find promotions and make purchases. After a certain number of points collected, they can be redeemed for vouchers, tickets or gifts or from those participating stores. Cloud-based apps like this act as a marketing tool benefiting stores interested in increasing brand loyalty.

Various other local companies are rolling out diverse products based on the cloud such as Lac Viet computing with its range of cloud-based services including SureERP for resource planning, SureHCS for human resource management and SureRMS for retail chain management. Fast

[130] Dr. Tran Viet Huan, CTO of IBM Vietnam, "IBM Drives Cloud Computing Development in Vietnam"

[131] Nir Kshetri, "Cloud Computing in Developing Economies: Drivers, Effects and Policy Measures", 2010

[132] Shopping mobile app, "Shoppie.com.vn"

Software Company has also launched its cloud-based accounting software Fast Accounting Online.

Banking and Financial Institutions: Many local large enterprises in the banking sector are now starting to invest in sophisticated enterprise IT systems. They can get to the benefits of cloud from the start in adopting a cloud service model and leapfrogging the traditional investment in enterprise IT. More and more advanced banking technology solutions are launched especially for retail banking sector such as core banking, cloud computing, virtualization, ERP, BPM, credit risk management, operational risk management, and modern banking service channels.

This sector is a potential target sector for vendors to be providing advice on cloud computing as well as solutions to information security or secure transaction on the cloud since trust is the main challenge for them to adopt the public cloud services.

Case Study 21: TienPhong Bank and IBM Cloud

For instance, TienPhong Commercial Joint Stock Bank (TienPhong Bank), one of the leading banks in Vietnam, has been using IBM cloud solutions since 2011 to expand its business operations, drive growth, and deliver a variety of new customer services – in particular to improve its core banking unit, mobile apps, e-banking services and other testing operations. As a result the bank saw a 50% increase in the number of customers in less than one year.

Tourism and Hospitality Services: The tourism and hospitality industry accounts for 7.5% of Vietnam's GDP, a figure that is expected to increase in the coming years, making this sector a great potential for cloud computing adoption.

It is an industry that is hugely dependent on updated information of weather conditions, or online listings of available hotels, apartments, tours, promotion and packages and airline deals. In addition, the sector consists of many small family-run hotels and tour companies, whose information is rather fragmented across websites (for those that have one), printed travel guides and their outlets. They should take advantage of cloud computing to use as a consistent marketing and sales tools for customers management. Smaller local travel start-ups can utilise crowdsourcing option to create unique and dedicated tours that appeal to travellers with specific needs. For example, Triip have focused their efforts through the sharing economy to help travellers find tours that are not readily advertised elsewhere. There are also opportunities for these small companies to train their staff through management accounting apps, improving the level of service in smaller hotels to compete with international brands.

SME Demand Drivers

Various Vietnamese anecdotal evidence claims that the current landscape of Vietnamese SMEs is an uneven playing field with the majority of SMEs operating on a small scale, with unskilled labour, out of date technology and weak management capacity. An ASEAN survey of some 300 small enterprises showed these enterprises generally face limited resources from credit and infrastructure support through to technology and qualified labour.[133] In addition, there is a lack of financial and marketing support, resulting in difficulty in finding capital mobilisation. Government support policies have traditionally left most SMEs out of the loop, dealing with low credit growth and high inflation. In this environment, most micro- and small-SMEs see little network connection to larger enterprises or to international market opportunities. This presents an obvious challenge to providers looking to enter the market, but it also shows quite clearly where the emerging mass opportunity lies.

Emerging IT trends such as e-commerce are now beginning to facilitate the expansion of SMEs into new markets, where companies can establish new supply chains and partnerships. E-commerce sales in Vietnam are expected to reach USD1.3 billion in 2015.[134] Amidst this competitive economic market, SMEs choose not to buy services unless it is the only solution needed. When they engage in one, they go for simple products first. To this end, demand-driven human resources training have been by far more popular than quality management products.[135]

At present, the commonly available support services from domestic providers are skills training, partial consulting, marketing, and the like.

Cloud Computing Demand:

- Cloud computing is emerging as a significant shift for industries in Vietnam, many MNCs are already adopting early service offerings across real estate, insurance and other finance areas: Dell, Prudential, ANZ, FPT Software Group or Capital Land are examples of companies utilizing cloud computing for customer service through web-based customer-oriented applications.
- According to a recent survey,[136] cloud computing in Vietnam is becoming a top priority, with up to 83% of Vietnamese enterprises considering cloud computing a key focus and 67% indicating that cloud computing has a significant influence on their business. According to the survey, 41% of firms hope to develop cloud computing in the future

[133] Hang Nguyen, "Overview about SMEs in Vietnam", 2010

[134] Anh-Minh Do, TechinAsia, "E-commerce sales in Vietnam hit $700 million, Will Reach $1.3 Billion", 2013

[135] Tran, T. C., X. S. Le and K. A. Nguyen, ERIA, " Vietnam's Small and Medium Sized Enterprises Development, Characteristics, Constraints and Policy Recommendations", 2008

[136] Forrester Consulting, "VMware Cloud Index 2013." The survey included 265 enterprises from different areas: 50% local firms, 25% state agencies and public organizations, 25% multinationals.

.- VinaCIS Corp., a specialty local provider of services for corporations, data centers, and web hosting providers, has collaborated with CloudLinux to launch CloudLinux OS, a specialised operating system designed for cloud computing technology. The service aims to help SMEs save investment expenses for IT infrastructure.
- Joint ventures in Vietnam are also utilizing basic cloud services: OFFICIENCE, a French-Vietnamese BPO has been using Google SME cloud solution, initially, to keep email management simple, and then expanding into collaborative uses such as interacting real time collaboration and integration with the company's social network.[137]

Comparative Pricing Index of Select SaaS, PaaS, IaaS Solutions

Average GDP per capita = USD 1,911[138]
SME IT spending: USD5,679

Vietnam's SMEs spent USD 1.4 billion in 2011 on ICT.[139] At an annual growth rate of 11%, SME ICT spend was expected to have reached USD 1.73 billion in 2013. Based on such figures, the average SME spend on ICT can be put at USD5,679.

Table 117: SaaS (per User, pa)

	Google Apps for Business with Vault	Office 365 Small Business Premium	Salesforce Sales Cloud (Enterprise)
Cost	USD120	USD180	USD1,500
Cost (as % of GDP/capita)	6.28%	9.42%	78.50%

Table 118: PaaS (Lowest Tier Pricing, or One Instance of Everything)

	Windows Azure	IBM SmartCloud	Google App Engine
Cost	USD3,924	USD1,069	USD1,775
Cost (as % of GDP/capita)	205.00%	56.00%	92.90%

[137] Hoang Anh Phan, "Cloud for SMEs", 2012

[138] World Bank, "Vietnam's GDP per capita (USD) 2013"

[139] AMI Partners, "SMBs Vietnam Spend USD1.4 billion on ICT this year", 2008

Table 117 shows that the cost of basic SaaS business services such as email, backup and shared contact management services is still manageable at 6-10% of GDP per capita. PaaS and IaaS are much more expensive when compared to GDP per capita (Tables 118 and 119). The lower cost services are HP Cloud Compute for IaaS and IBM Smart Cloud for PaaS. These companies have operated in Vietnam longer than others have; therefore adjusting price to fit local standards is not out of the question.

Table 119: IaaS (Lowest Tier Pricing, or One Instance of Everything)

	IBM Smart Cloud Enterprise	HP Cloud Compute	Google App Engine
Cost	USD1,069	USD526	USD1,775
Cost (as % of GDP/capita)	56.00%	27.50%	92.90%

In comparison, consider that the average cost of a small business usage of 4Mbps fibre broadband is VND2,760,000 pa (USD130) equalling 6.8% of GDP/capita[140]– roughly similar to purchasing Google Apps or Office 365 for Small Business. A mobile phone subscription plan with unlimited data costs approximately VND200,000 per month (USD10), or approx. USD113 pa.[141] It is evident that Google Apps or Office 365 is very affordable for businesses in Vietnam at the moment.

Access to pricing for SaaS is far more straightforward than pricing for PaaS and IaaS, in which case SMEs may have to choose different levels of prices and packages that are not immediately clear or comprehendible for those with limited technical knowledge of cloud services. Moreover, PaaS and IaaS services are not easily purchased directly through the website but through authorised vendors or through sales representatives. On the contrary, SaaS service is easily purchased with card payments. In addition with its price reasonability, cloud SaaS will be more easily adopted in the Vietnam SME market.

[140] Viettel, Internet Broadband prices in Hanoi and Ho Chi Minh City

[141] Viettel, "3G pricing plan"

Existing Government Programmes

The Vietnamese government has invested extensive effort into the development of Vietnam's SMEs over the years via government promotional programmes. As stipulated by Decree 90/2001/ND-CP, the **Agency for SME Development** (ASMED) under the Ministry of Planning and Investment (MPI) is the authorized body responsible for development of SMEs, promotion of SMEs and policy-making for SMEs at central level. It oversees the implementation of all Government-funded SME support programmes and international cooperation for SME promotion by allocating and balancing resources and raising external funds for SME assistance. Simultaneously, the **SME Development Council** was established to advise the Prime Minister on mechanisms and policies to encourage development of SMEs. The Council's members operate on a part time basis only. ASMED is also the standing secretariat for the **SME Development Council**.[142]

At provincial levels, the **Department of Planning and Investment** under the Provincial/Municipal People's Committee is the SME policy coordination agency, while many other Departments also implement SME support measures.

Government SME support centres, otherwise called "**SME Technical Assistance Centres**"[143] have been set up in Hanoi, Ho Chi Minh City and Da Nang, serving as consultants on technical matters, renovation of equipment, guidance for technical management and maintenance of equipment, creating conditions for SMEs to approach new technologies and equipment. New technologies for SMEs should be made well known through these centres.

The primary institutional organisation for SMEs is the **Vietnam Association of Small and Medium Enterprises** (VINASME), which was established in 2005. The organisation is a strong advocate and supporter of SME business and production. VINASME represents more than 32,000 SMEs nationwide and continues to expand SMEs network and employment skills. SMEs from eight provinces in particular (Hue, Binh Dinh, Lam Dong, Quang Tri, Khanh Hoa, An Giang, Phu Yen and Da Nang) have received training officially from VINASME and its partners to raise workforce and risk management skills. Within these provinces, trade shows and product marketing workshops are also organized frequently to promote SME activities and provide exposure to bigger cities nationwide.

The most significant government policy for SME development was the **National SME Development Plan** 2006-2010. The Development Plan outlined 10 major tasks combined with seven groups of measures to be taken by line ministries. After the 2010 period, measures were updated in

[142] ASMED, "SME Support Institutions in Vietnam"

[143] ASMED, " Technical Assistance Centres"

the **National SME Development Plan for the period 2010-2015** to be more oriented towards *financing, technology, and awareness creation for SMEs.*

- Measure 1: Completing legal framework on integration and operation of SME environment
- Measure 2: Support SMEs to access to finance and credit
- Measure 3: Support technology renovation and new technology adaption in SMEs
- Measure 4: Develop human resources, focus on governing capacity for SMEs
- Measure 5: Enhance to establish joint clusters, industrial clusters for SMEs
- Measure 6: Provide supportive information for SMEs and open markets for SMEs
- Measure 7: Improve the organizational system to help SME development
- Measure 8: Manage to implement the plan of SME development

Some other programmes, projects and activities targeted at specific areas for SME development have met with limited success due to lack of synergies such as "Human Resources Training for SMEs", and the "National Industry Stimulation Programme up to 2012". Other projects are still awaiting approval from the Prime Minister's office include "Programme on Improving Productivity and Quality of Commodities and Products of Vietnam Enterprises up to 2020", "Pilot Programme of Supporting SMEs to Adapt Advanced Management System by International and National Standard in 2011-2015", and "Programme of Inter-sector Legal Support for SMEs in 2010-2014".

Other than National SME Development Plans and policies on financial support for SMEs, it is evidently clear that Vietnam is missing a coherent Decree to support SMEs, which can push development activities beyond pilot stages or lengthen the implementation periods.

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The ACCA is the apex industry association that represents stakeholders of the cloud computing ecosystem in Asia.

Our mission is to accelerate the adoption of cloud computing through Asia Pacific, by helping to create a trusted and compelling market environment, and a safe and consistent regulatory environment for cloud computing products and services. Through dialogue, training, and public education, the ACCA provides a vendor-neutral platform to discuss strategies, share ideas, and establish policies and best practices relating to cloud computing.

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