Ingenious e-Brain

Nurturing Innovations - Fostering Business

Cloud Computing Top Markets
Key Challenges and Opportunities

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources the cloud allows users to easily tap into applications, virtual environments, or more basic computing tools that may be supplied from technical and software infrastructures other than their own.

The common deployment models are private, public, and hybrid cloud. In a private cloud environment, a client or its vendor manages a cloud infrastructure and makes a shared pool of technical resources available exclusively to the client's users. A public cloud provider allows the general public to access and use services it offers from its own facilities. A hybrid cloud environment is one which combines these elements. The cloud computing is also defined by the type of service as Software-as-a-service (SaaS) enables a user to remotely access software applications from a cloud provider, platform-as-a-service (PaaS) solutions enable user gain virtual access to programming resources and tools, provided and controlled by the cloud vendor and infrastructure-as-a-service (IaaS) enables users to virtually access more foundational computing resources to support their operations.

Software-as-a-service

buy **SaaS**

- Operating environment largely irrelevant, fully functional applications provided
- Quicker Adoption
- Faster deployment of end user application

Platform-as-a-service

deploy **PaaS**

- Operating environment included, e.g. Windows/.NET, Linux/J2EE, rapid applications of choice deployed
- Middleware in the cloud
- Need to buy into PaaS provider's vision and constraints

Infrastructure-as-a-service

build **IaaS**

- Virtual platform on which required operating environment and application are deployed
- Lower cost of operations and faster provisioning
- Higher utilization of infrastructure assets

The emerging export markets for cloud computing is with key challenges and great growth opportunities. The cloud computing companies from US, Germany and Japan have to deal with issues specific to export market regulations and competition in each country. The analysis of cloud computing market in Europe, Asia, US and Canada shows that it continues to see expansion with increase in sales, adoption and business acceptance. The possible explanation for this business growth is mainly because the cloud vendors offer state of-the-art security with innovative and value-added security-related features. The growth of this market is defined by information and communications technology (ICT) development of the market opportunity and business need of the nation. The US companies being global market leaders with competitors from Germany, Japan and China provide a competitive advantage in terms of their global reach, innovation and technical expertise.

The key challenge to any cloud export market leader from many foreign buyers is their concerns about who might have access to their data, trust-related issues considered while purchasing of cloud services especially from US vendors. The companies operating in foreign markets are now storing data in-country of operation. Data localization is the mandatory requirement of many foreign countries for shifting their data to cloud computing with any cloud service provider. It increases the cost of their operation for local data centre in addition to complexity in solving technical issues. In order to address these trade barriers to US companies, the US government is actively working with European countries for a framework to comply with EU data protection. It can help restoring trust in transatlantic data transfers and provide the needed certainty for US companies. The US is promoting system that facilitates cross-border data flows by allowing companies to satisfy the requirements of multiple regulatory regimes under a single certification system. The focus is to facilitate trade in the digital economy and promotes global innovation and entrepreneurship.

In the Asia Pacific and Japan (APJ) region Japan is the biggest market for cloud computing, which is the product of direct private and public investment in ICT infrastructure and a commitment to cloud services by the government. Japan has existing comprehensive intellectual property (IP) and cybercrime laws, which protect IP stored on clouds from theft and offers recourse in case of breaches. Japan's government has strengthened cloud infrastructure through fiber broadband connections, bringing the potential benefits of cloud services to every household in the country.

In Europe the cloud computing market is expanding in the United Kingdom and Germany with their advanced economy and mature IT market. In the UK most of the large companies are adopting cloud technology faster than smaller firms at a rate 95 percentage. The UK government's G-Cloud frameworks also allow the government to buy directly from suppliers after reaching an agreement on basic terms of use. This brings confidence in US vendors to build local data centers in the United Kingdom to agree with their legal compliance. Germany's constant demand for cloud services is tied to advancing digitalization in all areas of personal life and business. Germany's existing infrastructure and consumer base are driving demand for cloud services. SMES in Germany prefers only German or EU local data centers and this challenge is a barrier to any US cloud vendor

The biggest cloud export market of the US companies is Canada with its highest internet penetration rates in the world with 93 percent of its population having access to the internet. The market is quickly shifting from isolated infrastructure-based solutions for developing applications and content delivery, to platforms that integrate onsite, public and private IaaS. There is an increasing market for managed hybrid cloud services. Many US companies have already established their data centres in Canada due to data security concerns and the preference from the health, finance and government sectors.

In the Asian market of cloud computing China and India are with good market potential. The challenge for any US company in China is their regulatory environment. All foreign cloud providers are required to partner with local companies to serve customers and the law also prohibits the overseas transfer of data to an entity without express user consent or government permission. It is in addition to their Internet-filtering systems contributing to the slowness of data transmission. India remains a top market for U.S. cloud services exporters due to its large number of consumers with Internet access .The widespread interest among business customers across several industries and smart phone users expand the use of all types of cloud-related services.

The largest computing service market in Latin America is Brazil. Many cloud providers see unlimited opportunities to conduct business with over one million existing Brazilian SMEs as they desire to achieve cost savings, enable innovation and raise productivity in their business. IT decision-makers in Brazil use a SaaS application for enterprise resource planning or customer relationship management.

Other potential market for cloud providers are Australia and South Korea. Australia's trade friendly policy environment, developed infrastructure and affluent consumer base makes the country an attractive market for U.S. cloud exporters. In South Korea the existing telecommunications infrastructure that has supported substantial growth in the ICT sector for years. The cloud computing market is growing at annual growth rate of 22 percent over the years due to it's the highest in broadband expansion.