

# **IT AS CATALYST FOR GROWTH FOR SMES IN INDIA: WITH SPECIAL REFERENCE TO CLOUD COMPUTING AND SAAS MODEL**

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1. Introduction: Today, India has adapted to the growing knowledge orientation in each industry and would certainly be a leader in the R&D for many industry verticals. And at the same time, a knowledgeable worker is also an inevitable necessity in every sphere of industry, and this is where the India scores. The social disparities in India are a key driver for intense competition among individuals - contributing to higher productivity professionally. India's vast talent pool with a unique combination of multi skilling and English language ability has made a great value proposition to any investor.

However, during the last decade, India has been growing at break neck pace, and needs to adapt to a more stable growth and outlook. IT Services space has a good potential though it has lost its sheen as a high growth industry during the last two years. But, on the other hand, we should agree that we are a young nation having already made a mark in the world of entrepreneurship with several Indian companies or persons of Indian origin leading quite a few companies in the world across a varies spectrum. It is remarkably noted that India has been successful in creating employable manpower. However, the Indian entrepreneurs have been largely benefited with a slew of opportunities, which came their way as part of economic surge. But, we need to create a breed of entrepreneurs who look forward to a strenuous path of research and development in new areas.

With a rosy expedition ahead for India, we believe IT services industry should focus on creation of products from out of the services they have been rendering subject to IP rights in such projects. This would not just facilitate better productivity, but go a long way in contributing to low cost products/services, which are the target of SMB. While India has seen good revenues from overseas operations/customers, we should also start addressing the needs or demands of Indian market, which could largely be driven by SAAS models or a hybrid of SAAS and traditional models of service. About Cloud Computing and SaaS. One of the most confusing issues surrounding the cloud and its related services is the lack of agreed-upon definitions. As with all emerging technologies, the lack of clarity and agreement often hinders the overall evaluation and adoption of that technology.

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Two groups that have offered a baseline of definitions are the National Institute of Standards and Technology (NIST) and the Cloud Security Alliance. They both define cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Another way to describe services offered in the cloud is to liken them to that of a utility. Just as enterprises pay for the electricity, gas and water they use, they now have the option of paying for IT services on a consumption basis.

The cloud model can be thought of as being composed of three service models (figure 1), four deployment models (figure 2) and five essential characteristics (figure 3). Overall risks and benefits will differ per model and it is important to note that when considering different types of service and deployment models, enterprises should consider the risks that accompany them.

Figure 1—Cloud Computing Service Models		
Service Model	Definition	To Be Considered
Infrastructure as a Service (IaaS)	Capability to provision processing, storage, networks and other fundamental computing resources, offering the customer the ability to deploy and run arbitrary software, which can include operating systems and applications. IaaS puts these IT operations into the hands of a third party.	Options to minimize the impact if the cloud provider has a service interruption
Platform as a Service (PaaS)	Capability to deploy onto the cloud infrastructure customer-created or acquired applications created using programming languages and tools supported by the provider	<ul style="list-style-type: none"> <li>• Availability</li> <li>• Confidentiality</li> <li>• Privacy and legal liability in the event of a security breach (as databases housing sensitive information will now be hosted offsite)</li> <li>• Data ownership</li> <li>• Concerns around e-discovery</li> </ul>
Software as a Service (SaaS)	Capability to use the provider's applications running on cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based e-mail).	<ul style="list-style-type: none"> <li>• Who owns the applications?</li> <li>• Where do the applications reside?</li> </ul>

Figure 2—Cloud Computing Deployment Models		
Deployment Model	Description of Cloud Infrastructure	To Be Considered
Private cloud	<ul style="list-style-type: none"> <li>• Operated solely for an organization</li> <li>• May be managed by the organization or a third party</li> <li>• May exist on-premise or off-premise</li> </ul>	<ul style="list-style-type: none"> <li>• Cloud services with minimum risk</li> <li>• May not provide the scalability and agility of public cloud services</li> </ul>
Community cloud	<ul style="list-style-type: none"> <li>• Shared by several organizations</li> <li>• Supports a specific community that has shared mission or interest.</li> <li>• May be managed by the organizations or a third party</li> <li>• May reside on-premise or off-premise</li> </ul>	<ul style="list-style-type: none"> <li>• Same as private cloud, plus:</li> <li>• Data may be stored with the data of competitors.</li> </ul>
Public cloud	<ul style="list-style-type: none"> <li>• Made available to the general public or a large industry group</li> <li>• Owned by an organization selling cloud services</li> </ul>	<ul style="list-style-type: none"> <li>• Same as community cloud, plus:</li> <li>• Data may be stored in unknown locations and may not be easily retrievable.</li> </ul>
Hybrid cloud	A composition of two or more clouds (private, community or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load balancing between clouds)	<ul style="list-style-type: none"> <li>• Aggregate risk of merging different deployment models</li> <li>• Classification and labeling of data will be beneficial to the security manager to ensure that data are assigned to the correct cloud type.</li> </ul>

Figure 3—Cloud Computing Essential Characteristics	
Characteristic	Definition
On-demand self-service	The cloud provider should have the ability to automatically provision computing capabilities, such as server and network storage, as needed without requiring human interaction with each service's provider.
Broad network access	According to NIST, the cloud network should be accessible anywhere, by almost any device (e.g., smart phone, laptop, mobile devices, PDA).
Resource pooling	The provider's computing resources are pooled to serve multiple customers using a multitenant model, with different physical and virtual resources dynamically assigned and reassigned according to demand. There is a sense of location independence. The customer generally has no control or knowledge over the exact location of the provided resources. However, he/she may be able to specify location at a higher level of abstraction (e.g., country, region or data center). Examples of resources include storage, processing, memory, network bandwidth and virtual machines.
Rapid elasticity	Capabilities can be rapidly and elastically provisioned, in many cases automatically, to scale out quickly and rapidly released to scale in quickly. To the customer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.
Measured service	Cloud systems automatically control and optimize resource use by leveraging a metering capability (e.g., storage, processing, bandwidth and active user accounts). Resource usage can be monitored, controlled and reported, providing transparency for both the provider and customer of the utilized service.

As can be observed in the characteristics listed in figure 3, there are many approaches and nuisances to cloud computing. Benefits to the enterprise, as well as risks, will vary depending on the types of service and deployment models selected. Cloud Computing & Benefits to SMEs:

Cloud computing can be defined as computing using an Internet hosting service as the primary resource. Instead of developing a complex and expensive infrastructure, systems, programs and data are stored on a hosting facility on the Web. There are two major benefits of cloud computing. The first is the elimination of major IT infrastructure investment. The second is that the users of the system can access their data from anywhere in the world. Both of these benefits can result in a major shift in the way that businesses of all sizes use computers. Initially it will be the small and medium enterprises that benefit most. For an SME, cloud computing can provide an ideal platform to host the business system requirements. The system is maintained in a secure environment where the data is backed up daily. The business does not have to invest in an expensive IT infrastructure. Neither is it necessary to employ staff or a company to run the computer system. All that is required is a simple rental agreement and fast Internet access. Cloud computing can eliminate the need for documents and spreadsheets to be saved on a local machine. Instead, these can be saved on the cloud.

Some of the key business benefits offered by the cloud include:

**Cost containment:** The cloud offers enterprises the option of scalability without the serious financial commitments required for infrastructure purchase and maintenance. There is little to no upfront capital expenditure with cloud services. Services and storage are available on demand and are priced as a pay-as-you-go service.

**1. Immediacy:** Many early adopters of cloud computing have cited the ability to provision and utilize a service in a single day. This compares to traditional IT projects that may require weeks or months to order, configure and operationalize the necessary resources. This has a fundamental impact on the agility of a business and the reduction of costs associated with time delays.

**2. Availability:** Cloud providers have the infrastructure and bandwidth to accommodate business requirements for high speed access, storage and applications. As these providers often have redundant paths, the opportunity for load balancing exists to ensure that systems are not overloaded and services delayed. While availability can be promised, customers should take care to ensure that they have provisions in place for service interruptions.

**Scalability:** With unconstrained capacity, cloud services offer increased flexibility and scalability for evolving IT needs. Provisioning and implementation are done on demand, allowing for traffic spikes and reducing the time to implement new services.

**3. Efficiency:** Reallocating information management operational activities to the cloud offers businesses a unique opportunity to focus efforts on innovation and research and development. This allows for business and product growth and may be even more beneficial than the financial advantages offered by the cloud.

**4. Resiliency:** Cloud providers have mirrored solutions that can be utilized in a disaster scenario as well as for load-balancing traffic. Whether there is a natural disaster requiring a site in a different geographic area or just heavy traffic, cloud providers say they will have the resiliency and capacity to ensure sustainability through an unexpected event.

**Impact of Cloud Computing and SaaS on SMEs:**

The promise of cloud computing is arguably revolutionizing the IT services world by transforming computing into a ubiquitous utility, leveraging on attributes such as increased agility, elasticity, storage capacity and redundancy to manage information assets. The continued influence and innovative use of the Internet has enabled cloud computing to utilize existing infrastructure and transform it into services that could provide enterprises both significant cost savings and increased efficiency. Enterprises are realizing there is a potential to leverage this innovation to better serve customers and gain business advantage. By offering enterprises the opportunity to decouple their IT needs and their infrastructure, cloud computing has the likely ability to offer enterprises long-term IT savings, including reducing infrastructure costs and offering pay-for-service models. By moving IT services to the cloud, enterprises can take advantage of using services in an on-demand model. Less up-front capital expenditure is required, which allows businesses increased flexibility with new IT services.

For all these reasons, it is easy to see why cloud computing is an attractive potential service offering for any business looking to enhance IT resources while controlling costs. However, it should be noted that along with the benefits come risks and security concerns that must be considered. As IT services are contracted outside of the enterprise, there is added risk with increased dependency on a third-party provider to supply flexible, available, resilient and efficient IT services. While many enterprises are accustomed to managing this type of risk in-house, changes are required to expand

governance approaches and structures to appropriately handle the new IT solutions and enhance business processes. Cases in India using Clouds and SaaS as strategic Tool. Structural Waterproofing Company (SWC), Kolkata-headquartered Company manufactures a range of components for the construction industry for example, is using Microsoft Dynamics ERP application, supported by IT services provider Tech Mahindra. According to Tushar Bhattacharya, SWC's deputy general manager of finance, "We saw several benefits of SaaS, Thanks to the SaaS solution, we are able to focus on our core business and run it in a profitable way." According to Springboard, companies have indicated they are satisfied with the SaaS tools, given their lower costs and ease of use.

Lakshmanan Narayan, president of Vembu Technologies, a Chennai-based data backup software development firm, is kicked that he does not need to buy the 100 servers he needs frequently - but only for a week at a time - for testing software. Instead, he has rented servers residing in data centres on the internet, paying an unbelievable 10 cents-\$1.2 per hour of CPU usage, depending on the application and the operating system being used. He also stores company data on the internet's servers. In the process, he has saved loads of money in capital expenditure - for the servers, software, and people to manage them.

What Narayan has done is basically hook on to networking technology's latest buzzword - cloud computing. Introduced in 2007, cloud computing allows you to use the data centres of companies such as Amazon, Google and Salesforce, among others, by paying a fee - either on a pay-per-use or subscription basis. All you need is an internet connection and a contract with a cloud service provider and you can save a whopping 30-40 per cent of operational costs and, at times, with zero capital expenditure. India is not an early adopter of new enterprise technology, but cloud computing is making its presence felt. Not surprisingly, small and medium enterprises (SMEs) are flying into the cloud in swarms. "With cloud-based infrastructure, we can scale up to the levels of large enterprises cost-effectively," says Venkat Viswanathan, founder-CEO of Latent View, which analyses customer and financial services data for companies such as ICICI Prudential.

Large companies are also getting in, but instead of using internet data centres of others, large companies use their own data centres to provide hosted services to employees, in what is called a 'private cloud'. For them, private clouds work better because they are more reliable, with network uptime under the company's control, and are more secure, because the security systems are managed by the company. Large companies are putting only non-critical applications such as CRM (customer relationship management), lead management and human resource into 'public clouds. This is not an India-specific phenomenon; globally too, SMEs have adopted cloud computing in a bigger way. According to Andrew Knott, VP-Marketing, APAC, Salesforce.com, which has 59,300 'cloud' customers "In the next three years,

we expect cloud computing to grow by 75 per cent.”In India, already, instances of SMEs using cloud computing have begun to emerge. Elbee Express, a courier company is making tactical use of Cloud. According to Shirish Gariba, chief information officer of Elbee Express, “An average Elbee employee does not use the sales CRM for more than 45 minutes in a day. To have it running 24x7 on an on-premise server is wastefully expensive. Therefore Company has decided to put static data on cloud so employees can access the CRM on the cloud whenever needed. By doing this they have saved on energy bill, hardware cost and personal cost on a large basis. ACE Data, which manages the information lifecycle for large enterprises such as Bharti, Philips and Hero Honda, has its CRM, HR, ERP (enterprise resource planning), project and cash management on the public cloud. To put ACE’s entire suite of computing needs on a license model would have cost Rs 40 lakh, but it now pays only Rs 5,610 (annually) for each of its 25 users totalling to Rs 1,40, 250.

Others are planning their moves, too. “The first thing we have to do is to move our email and application to a SaaS (software as a service) model,” says Meheriar Patel, head of IT, HR and administration at Globus Stores. The Flip Side of Cloud Computing. Many of the risks frequently associated with cloud computing are not new, and can be found in enterprises today. Well planned risk management activities will be crucial in ensuring that information is simultaneously available and protected. Business processes and procedures need to account for security, and information security managers may need to adjust their enterprise’s policies and procedures to meet the business’s needs. Given the dynamic business environment and focus on globalization, there are very few enterprises that do not outsource some part of their business. Engaging in a relationship with a third party will mean that the business is not only using the services and technology of the cloud provider, but also must deal with the way the provider runs its organization, the architecture the provider has in place, and the provider’s organizational culture and policies. Some examples of cloud computing risks for the enterprise that need to be managed include:

Enterprises need to be particular in choosing a provider. Reputation, history and sustainability should all be factors to consider. Sustainability is of particular importance to ensure that services will be available and data can be tracked. The cloud provider often takes responsibility for information handling, which is a critical part of the business. Failure to perform to agreed-upon service levels can impact not only confidentiality but also availability, severely affecting business operations. The dynamic nature of cloud computing may result in confusion as to where information actually resides. When information retrieval is required, this may create delays. Third-party access to sensitive information creates a risk of compromise to confidential information. In cloud computing, this can pose a significant threat to ensuring the protection of intellectual property (IP) and trade secrets.

Public clouds allow high-availability systems to be developed at service levels often impossible to create in private networks, except at extraordinary costs. The downside to this availability is the potential for commingling of information assets with other cloud customers, including competitors. Compliance to regulations and laws in different geographic regions can be a challenge for enterprises. At this time there is little legal precedent regarding liability in the cloud. It is critical to obtain proper legal advice to ensure that the contract specifies the areas where the cloud provider is responsible and liable for ramifications arising from potential issues. However, not everyone is thrilled with cloud computing. According to Arvid Thakur, CEO, NIIT technologies, "Applications on clouds have to be more user-oriented and unified to work seamlessly." Security is another major concern. According to Subhakanta Satpathy, Axis Bank's senior vice-president for IT, "...that a lot of the bank's critical data is sent over emails, which cannot be done if the email is over a cloud. Also, it has put non-critical lead management data into the cloud, but not core banking."

**5. Conclusion:** Every new technology has its share of backers and baiters, and cloud computing is no different. Whether it manages to evolve and become stronger or fizzles out remains to be seen, but for now, cloud computing is making steady inroads into India's SME world. Enterprises that have been considering the use of the cloud in their environment should calculate what cost savings the cloud can offer them and what additional risks are incurred. Once potential cost savings and risks are identified, enterprises will have a better understanding of how they can leverage cloud services. Business must work with legal, security and assurance professionals to ensure that the appropriate levels of security and privacy are achieved. The cloud is a major change in how computing resources will be utilized, and as such will be a major governance initiative within adopting organizations, requiring involvement of a broad set of stakeholders.

While cloud computing is certainly poised to deliver many benefits, information security and assurance professionals should conduct business impact analyses and risk assessments to inform business leaders of potential risks to their enterprise. Risk management activities must be managed throughout the information life cycle and risks should be reassessed regularly or in the event of a change.

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