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# Emerald Emerging Markets Case Studies

Knowledge management practices of an IT company Sanjay Mohapatra, Rahul Thakurta,

# Article information:

To cite this document:

Sanjay Mohapatra, Rahul Thakurta, (2014) "Knowledge management practices of an IT company", Emerald Emerging Markets Case Studies, Vol. 4 Issue: 2, pp.1-14, <u>https://doi.org/10.1108/EEMCS-07-2013-0130</u> Permanent link to this document: <u>https://doi.org/10.1108/EEMCS-07-2013-0130</u>

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# Knowledge management practices of an IT company

Sanjay Mohapatra and Rahul Thakurta

Sanjay Mohapatra and Rahul Thakurta are both Associate Professors in the Department of Information System at Xavier Institute of Management, India. I don't need a hard disk in my computer if I can get to the server faster[...] we do Steve Jobs in Bhubaneswar

Ashwini Rath

#### Case overview

This case presents developments at BATOI as it prepares to proliferate its services and offerings. BATOI offers an enterprise-class cloud computing platform along with a set of software applications, a business social network and different online information and service portals that cater to a large audience at the global level. The organization focuses on customer satisfaction as an integral part of the value chain. The case presents the knowledge management (KM) initiatives that were introduced at BATOI as a part of the organization's strategies for growth and acquiring new customers. Based on the business goals of BATOI, the KM-related goals were identified as part of designing the KM strategy. Designing of the KM strategy further assisted BATOI to retain competent employees and, along the way, it addressed the major concern of attrition that plagues many established organizations. To conclude, some of the future concerns of BATOI are indicated at the end of the case. The analysis of the case takes into account the KM challenges faced by BATOI and the necessary steps taken in an organization to implement a KM strategy successfully.

#### Introduction to BATOI SYSTEMS (P) LIMITED

BATOI SYSTEMS (P) LIMITED is a privately held company in India committed to provisioning cost-effective information technology (IT) infrastructure and software applications across the globe. It started its operation in 2010. The company is based in Bhubaneswar, which is a city located in eastern India.

The company is certified with ISO 9001:2008 for quality and ISO 27001 for information security. batoi.com is always on secure socket layer (SSL) with the highest level of authentication, and is hosted on a redundant infrastructure spread across different locations worldwide. The company is managed professionally by people with extensive experience of IT and business management. The founder and current Chief Executive Officer (CEO) of the company is Mr. Ashwini Rath (Rath, 2012).

BATOI's workforce has the required technical expertise and skill sets to deliver managed service provision, end-to-end service assurance, client engagement, prompt service-level agreements, etc. BATOI also offers consulting services to its customers. The Research and Development (R&D) wing at BATOI strives to understand customer requirements, and realize product innovation and differentiation.

Current opportunities in the cloud computing sector and the relevant expertise of BATOI's employees are the prime reasons for offering the services.

Disclaimer. This case is written solely for educational purposes and is not intended to represent successful or unsuccessful managerial decision making. The author/s may have disguised names; financial and other recognizable information to protect confidentiality.

#### Products offered

BATOI offers an enterprise-class cloud computing platform along with a set of software applications, a business social network and different online information and service portals that cater to a large audience at the global level. For BATOI, customer satisfaction is the only reason for business growth. Customers are not just the consumers of products/ services, but are an integral part of a value chain.

Different types of products and services offered by BATOI are as follows:

- Cloud and apps (apps.batoi.com): The BATOI Cloud is capable of serving customizable software applications called BATOI Apps on a large scale across the globe. Customers can subscribe to pre-built apps, and can create their own applications in minutes. They can also integrate their legacy applications through an Application Programme Interface (API).
- Store (store.batoi.com): An online store for publishers and service providers, it offers software applications, creative designs, Web site templates, stock photos, e-books, e-magazines and other digital goods.
- Hosting (hosting.batoi.com): BATOI's premium-quality cloud-based hosting services provide domain names, Web site and email hosting, public Internet Protocols (IPs) and SSL certificates.
- *360 (360.batoi.com):* A popular online publication which covers the latest news, opinions and analyses from across the globe.
- Link (link.batoi.com): A service for shortening universal resource locators (URLs) and facilitating traffic analysis of the shortened URL (site and API).
- Press (press.batoi.com): A modern publishing division providing services to authors and researchers. It promotes knowledge sharing among students, professionals and ordinary people through e-books, audiovisual books and research reports.
- Consulting (consulting.batoi.com): BATOI provides stand-alone consulting services to enterprises for knowledge and workflow management quite apart from its training and support services for BATOI products. The company provides end-to-end solutions that address issues from strategic IT to system integration and migration.
- Live (live.batoi.com): On-demand live video-streaming to web, mobile and connected devices. Best suited for media companies, event broadcasting and television networks.
- Labs (labs.batoi.com): BATOI's research and product development division, this is the place where prospects and existing customers can preview new products and technologies that are being offered by the company.
- Social network (social.batoi.com): A robust online social business system providing business pages, market place and e-commerce storefronts to promote customers' businesses online. Here, organizations can showcase their products and services, and publish their white papers, articles, blog posts and press releases quickly.

#### Vision, mission, business strategy and business goals

The vision is indicated by the company Web site and internal communications. BATOI's mission is detailed below. The business strategy and goals were outlined by Mr Ashwini Rath during discussions.

- Vision: Our vision is to make information accessible, actionable and protected.
- *Mission:* Our mission is to bring the value of IT within the reach of everybody. We are committed to the achievement of excellence in IT and research for the benefit of humanity.
- Stakeholders: The stakeholders consist of a core team and partners[1] (for example, Times Group, BQ analytics – a USA-based establishment). The end-users are important

stakeholders too. IIM Kozhikode is helping BATOI to improve its social media marketing techniques.

#### Business goals

- achieve a target of 100 satisfied premium customers within two years; and
- vertical growth of the organization taking quality people together.

#### Business strategy through marketing

- online promotions through various activities like events, games, etc;
- marketing to major corporate entities;
- setting up cloud camps; and
- organizing workshops for partners.

#### Interpretation of vision, mission and goals

The basic thing that emerges for vision is that the company wants to make software a commodity that is "accessible". By commoditizing it, the company wants the code to be sold on a basis of "100 lines of code for a specified price", etc. By using cloud computing techniques, the company makes the software usable from various platforms like mobiles, laptops, personal computers (PCs) or any other hardware that supports Internet facilities.

By actionable, it means to provide intelligence to the information displayed, delivering business intelligence to customers via personalized and customized dashboards.

Protection is also stressed. Going forward, the company plans to open separate offices equipped with PCs that are installed with firewalls that enable them to be password-protected. Even paper or any other mode of data carriage that could lead to an unwelcome infiltration by outside information would be barred from these offices.

Organizational strategy focuses primarily on people and customers. The company wishes to be highly customer-centric and technologically oriented. It wants to provide meaningful solutions to its customers, and customer satisfaction is held to be of utmost importance.

The 100 premium customers that BATOI is interested in targeting include big corporate houses from different sectors such as infrastructure, real estate, IT, manufacturing and even the public sector.

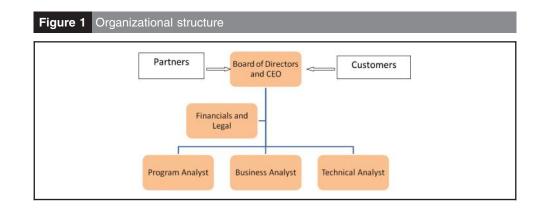
By vertical growth, the CEO focuses on keeping only multitalented people of quality onboard and does not intend to increase the workforce to > 50 in the coming three years. After reaching 50 staff, the company aims at a mid-sized rate of organizational growth as per the benchmarked data of some of the companies in a similar work domain.

The major competitors identified include YOGO, a USA-based company that employs Indian developers via setups in India. Many companies are competing to develop Google Apps; they are also identified as indirect competitors.

#### Organizational structure

The organizational structure as shown in Figure 1 is as follows:

- Customers: All the customers using the BATOI platform.
- Program analyst: This role will manage system implementation and research to find innovations.
- Business analyst: This role will have responsibility for interactions with clients, analyses
  of their problems and the presentation of solutions.
- Technical analyst: This role will be responsible for event organization and supporting marketing.



Initially BATOI had about 16 developers. Since the major setup has been completed, the company has downsized the team to four core developers. The other employees were tasked to manage customer relations as part of a business development strategy. The environment is very open, and the organization boasts a completely flat organizational structure. Research scholars who have been taken on to work on particular modules as part of their research projects tend to enjoy working at BATOI because its environment offers opportunities for real-time learning. The hands-on experience of making something is an unmatched pleasure. There are no set office hours, and employees can leave at any time during office hours. There is no compulsion to work under strict time pressures if the resulting work is not meaningful or productive. It is compulsory to attend meetings, which are conducted every Monday morning. Then road maps are set for the entire week and queries are discussed. Employees are required to attend meetings every morning where work is allocated to everyone, questions are raised and doubts are cleared.

#### Challenges faced by the company

The company wants to generate revenue via customer subscriptions. (Customers are categorized as premium customers based on the revenue generated from them; the amount of revenue that determines the premium branding will vary from time to time.) As the company is new and has just started providing its solutions, it has faced problems with respect to employee attrition. It recruited employees and trained them in technology, application development processes and customer relationship management. However, after training, when the employees were quite knowledgeable, they were lured by big companies located in Bhubaneswar and Kolkata (two cities that are located in eastern India). This resulted in some shortfalls in staff's knowledge of BATOI's technology and processes, and also in the company's ability to providing continuity in its relationships with customers. As the company was new, many of its processes were not standardized, which had an impact on process documentation, as, usually, documentation begins after the processes are stabilized. The negative impact of attrition was felt while attending to longstanding customers; their preferences and requirements were recorded in several places (mails, documents, minutes of meetings, etc.), but the "personal" touch was interrupted when employees left the company. Mr. Rath (Rath, 2012) had to take on the extra burden of managing each and every customer. Additionally, the company had to be innovative in developing new solutions (bundles of products, services and pricing) to retain customers as well as attract new ones. The company relied mostly on references that its customers provided to market its new services, so it relied mostly on a customer-centric approach and provided customized solutions. The company also encouraged its customers and partners to participate in improving business processes and increasing its productivity.

#### KM strategy

In 2012, based on the recommendation of one of its well-wishers, BATOI designed KM as its strategy for growth and acquiring new customers. Based on its business goals and business strategies, a number of requirements that needed to be satisfied to achieve success in KM were identified as follows:

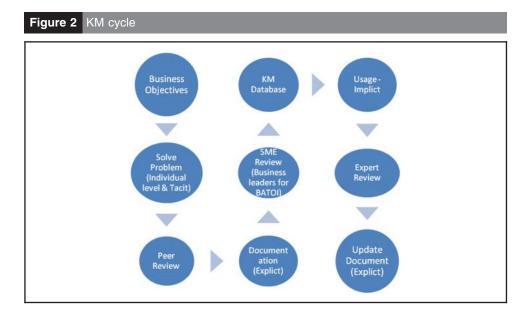
- Innovation: To remain in the competition, there is a need for promoting innovation of products and services.
- Employee retention: To increase the workers' motivation level and satisfaction through empowerment.
- Customer centricity: New customers and retaining old customers: to improve the profitability of the organization by engaging large corporates as their premium clients.
- Participation of customers and partners in the improvement of business processes and increasing the processes' efficiency.

#### KM cycle

The first step in the KM cycle was to identify the business objectives which could be taken care of by the KM strategy (Figure 2). Then, KM goals and objectives were defined and aligned to the business objectives. These KM objectives were defined clearly and stated exhaustively.

Individuals, when faced with day-to-day problems, could come up with solutions (tacit knowledge) that would solve problems. However, a peer review was conducted to convert tacit knowledge into explicit knowledge and to ensure that there was a consensus and the problem was being addressed in the right way and direction. Knowledge was not completely useful in the tacit form; there was a need for the documentation of the above procedures to transform it into explicit knowledge. Subject matter experts (SMEs) such as business leaders or senior employees were required to review the solution that had been documented. In cases of discrepancies, documentation was redrafted and reviewed.

All the artifacts produced by this process were stored in the KM database, a separate database, which stored the documents containing the solutions provided by individuals. So if a similar problem were to arise, employees could refer to a solution that was already stored in the database. If required, these solutions could be modified and adapted according to the changed situation, thereby leading to an increase in knowledge usage



and more diverse knowledge storage. When a problem arises, a team member searches the KM database using key words. This results in the production of a list of existing documents. These are retrieved and reused by the team member. If there is a need, the team member updates the document with relevant new knowledge. These updates are reviewed by experts and, once approved, the document with updated knowledge is stored in the KM database. This has been represented pictorially in the KM cycle.

#### KM strategy

To design the KM strategy, the company first determined the business goals that would be addressed by the strategy. This was done so that the company could have a realistic way of aligning its KM strategy toward it business goals. For each KM goal, a community of practice (COP) was formed. The COP membership was made up of staff that were part of a corresponding business team. Metrics for each KM strategy were designed to monitor the performance of the strategy. The following paragraphs illustrate the way BATOI went about designing its KM strategy.

# KM goals: To remain competitive, there is a need to promote innovation of products and services

*COP:* The community of practice consisted of members who were relevant to the practice. In this case, they were program analysts and business development leaders:

- Program analyst: System implementation and research provided information regarding the products and services; and
- Business development leader: Provided information regarding the existing market and also the unattended, latent needs of market.

*Phases in innovation:* Innovation at BATOI had four cycles: developing the idea, testing it, reworking an idea (called realization) and using the idea to benefit the business (Figure 3).

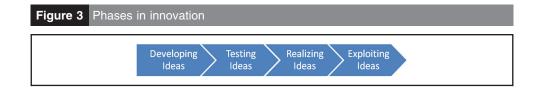
- 1. *Developing ideas:* Focus on applying creative methods (like brainstorming) to identify creative potential.
- 2. *Testing ideas:* Most promising ideas are filtered out and examined to ensure that they do not exist as intellectual property already.
- 3. *Realizing ideas:* Promising ideas are developed completely to realize their potential. This phase also uses feedback from end-users to fine-tune ideas.
- 4. *Exploiting ideas:* Rolling out ideas to the potential market and making maximum profits from their realization in the marketplace.

To measure the performance of the strategy, the metrics that were used were:

- new products per year;
- number of ideas patented per year; and
- percentage of revenue generated from innovative ideas per year.

#### KM goal: Customer-centric - new customers and retaining old customers

This was aligned with the company's present strategy to retain customers, as it takes a substantial amount of time and money to acquire a new customer. To achieve this



objective, the CEO (Mr Rath, Rath, 2012) decided to form a COP that would help by using present knowledge that had been learnt from executing different projects. The knowledge so learnt was used to define processes for the company. The COP consisted of a business analyst and a business developer:

- business analyst was responsible for providing knowledge related to the customers' behavior and the additional expectations of customers; and
- business developer provided knowledge obtained from market research, market needs and market potential in the markets being addressed.

The effectiveness of the KM strategy was measured by a metrics plan, which consisted of measuring different indices. These indices were defined well in advance so that there was a common understanding of the measurement plan:

- customer satisfaction;
- number of new customers;
- percentage of repeat business;
- number of references made by customers; and
- number of customer testimonials.

#### KM goal: Involvement of partners in the improvement of business processes

#### and profitability

The company, in its nascent stage, can grow faster if partners become involved in defining its business processes. There were situations when different partners had different expectations of the company. The COP was formed to bring them together to work on a common platform which would benefit all the players. From the customers' point of view, the customer who was defined as the most valuable in terms of revenue was part of the team. In addition, business analysts and technical analysts shared their experiences, which formed part of the customer relationship management (CRM) process. The effectiveness of this KM strategy was measured by the increase in revenue generated, thanks to this approach. The detailed metrics used for monitoring the performance of this strategy are given below. Different events organized as part of this strategy were cloud camps, webinars, a Facebook committee and blogs.

Community of practice.

- Partner;
- Business analyst: Provides information from the customer perspective; and

Technical evangelist: Market research, market needs and white spaces in the markets.
 Metrics.

nounce.

- number of applications made to BATOI;
- number of clients through IT solution provider;
- number of published articles about BATOI;
- revenue generated from partners as percentages of total revenue;
- customer satisfaction index;
- number of complaints; and
- number of latent needs identified.

#### Employee retention

Employee retention was considered a very important step for the sustainable growth of the organization. At BATOI, every employee handles multiple tasks and gets the desired training while dealing with problems on the job. There were no fixed training centers where they could be trained in particular fields. Hence, BATOI could not afford to lose competent employees.

Different employee retention strategies included the issuing of employee stock options which made them shareholders in the firm. Empowerment in decision-making and implementation was very important to make employees feel that they were accountable for what they were doing and to encourage them to act responsibly by considering project successes as their own successes. The metrics that were used to measure the effectiveness of this strategy were:

- employee attrition rate;
- employee satisfaction index;
- employee productivity levels;
- numbers of people leaving for better opportunities; and
- numbers of people leaving for better compensation.

The KM strategy helped the company to achieve many objectives. The company was new and in its nascent stage. By adopting a KM strategy, they could strengthen their processes while constantly improving them. Pictorially, it has been represented in Figure E1. The approach also helped increase employee satisfaction while it encouraged employee retention. The number of employees remained the same for a period of one and a half years, which indicated the sustainability of the strategy. Different templates used by the company have been shown in Exhibit I below.

#### BATOI: The way forward

Cloud computing represents a new model in IT sourcing and service delivery. Essentially, it is a pay-per-use computing model in which scalable, virtualized information services are delivered on demand, over a network. The model offers many benefits, including access to "always on, always available" services that can be scaled up or down based on individual requirements, which drives up efficiency. It also provides rapid, on-demand self-service provisioning and releases resources with minimal management effort or service provider interaction. It is also cost-effective and can cater to a wide gamut of clients.

BATOI SYSTEMS (P) LIMITED has immense potential, and the road ahead is paved with opportunities. BATOI Systems can look forward to enhancing its growth and profitability in a number of ways:

- being cost-effective provides an opportunity for the organization to provide efficient and affordable services to small-and medium-scale enterprises (SMEs);
- BATOI has an edge over other similar counterparts, as it offers greater flexibility and quick customization to end-users, and it can be accessed from anywhere and from any device, be it a desktop, mobile or touch pad;
- BATOI also provides a 24-7 service to end-users; a facilitator is always available to the client to make the time spent with BATOI Cloud more productive; and
- BATOI is also more reliable compared with many of its competitors. Its enhanced role based access control scheme has been used for implementing user access control on Cloud and control of storage by end-users gives it a distinct edge in this aspect.

#### Conclusion

After designing the KRAs and the matrices, we made an attempt to track the business goals of BATOI into departmental goals. The goals are quite broad, as the company still does not have any fixed customer base. Hence, a rough idea is provided about the way the company officials will move ahead in the following three years.

After studying BATOI, a genesis organization, and after using the Cloud platform, we found out how sophisticated information and communications technology systems contribute to the efficient running of organizations. An integrated system such as the one used by BATOI enables all of the separate parts of the organization to pull in the same direction. The company is now helping educational organizations to operate in a business-like way through the development of strategically focused information management systems.

Information Systems are indispensable to businesses, industries, academia and to any organization that needs to meet future challenges. Moreover, Cloud reduces the cost of operation to a great extent.

#### Notes

- Partner in the case implies all those entities that are associated with the firm. These partners include entities like supply chain collaborators, technology collaborators marketing collaborators, publishing houses, third-party application developers, IT solution providers, etc.
- 2. Small and Medium Enterprises (SME) Act can be found at http://msme.gov.in/
- 3. www.zoho.com/

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Keywords: Small and medium enterprises, Knowledge management strategy, Social benefit, Stakeholders' benefits

#### Exhibit 1

# Figure El

KM) B. Templ	ate i			
		INNOVATION TEMPLATE		
Date		10.12.2012		
Participating Members Name		Sk Gupta, S Mohanty, R N Samantaray		
Designation		Sk Gupta, S Monanty, K N Samantaray		
_				
	1	How many new products are developed ?	3	
	2	How many products are in the completion stage?	1	
	3	Are there any new ideas that the group wants to put	V	
	3 4	forward? Are these ideas feasible?	Yes Yes	
		By what likely date we hope to come up with a		
	5	solution? How many man hours are required for this idea?	24.01.2013 1050	
	7	Are there any new white space created in the market?	Yes	
			They would like to add	
			these	
			features as	
			conceived by the team.	
			But they	
			would like to keep the	
	8	What is the customer feedback?	cost low.	
	9	Is the customer willing to pay extra for a particular change in the product?	Marginal	
	7	enange in the product.	How to use	
			tool to automate	
			automate development	
	#	Any other thing that the group wants to discuss?	process.	
				Signature
C. Template fo	r Cu	stomer COP:		
		CUSTOMER TEMPLATE		
		13.12.2012		
Participating Membe	ers			
Participating Membe Name	ers	13.12.2012 A Rath, N Safal, Mahammed Aseem Team Leaders and members from Development tear	n	
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Participating Member Name		A Rath, N Safal, Mahammed Aseem     Team Leaders and members from Development teat     How many customers actively participate in the va     and communities?     Approximately what % of the customers are satis     services?     What the customer complaints?     What updates are required in our community website     What here subsequences are required in our community website     What updates are required in our community website     what and the customer complaints?	erious forums fied with our s? ee from other articipation?	40% 85% The application are slow their response Peer reviewed document Agile Developm process needs to updated w new checklist. CRM 3 (Three) 09 (Nine) How reduce
Participating Membe Name		A Rath, N Safal, Mahammed Aseem         Team Leaders and members from Development tear         How many customers actively participate in the valad communities?         Approximately what % of the customers are satis         services?         What the customer complaints?         What the customer complaints?         What updates are required in our community website         What updates are required in our community website         Which app is being followed the most?         Which apps must be removed?         Which app subst be removed?         Which app subst be removed?         How many existing customers have joined by reference         customers?         How many existing customers have increased their participation?	erious forums fied with our s? ee from other articipation?	40% 85% The application arc slow their response Peer reviewed document peecloymum process needs to updated w new checklist. CRM Nil CRM 3 (Three) 09 (Nine) How reduced
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# Figure El

		EMPLOYEE RETENTION TEMPLATE		
Date		14.03.12		
Participating		14.03.12		
Members Name		A Rath, S K Gupta, Safal		
Designation				
0				
	1	How many employees have resigned?		13
	2	How many employees have resigned and joined competitors?		13
				Brand Equity
				of the
	3	What are the factors due to which employees have resigned?		company
	4	Is compensation a major factor?		No
				Involving
				employees in policy level
				decisions;
				involving
				their families
				<ul> <li>arranging</li> </ul>
				visit by family
				members to
	5	How can these issues be addressed to?		BATOI office
				Team
				meeting at
		What are the necessary changes that must be implemented		offsite
	6	immediately?	$\vdash$	locations
	7	From which team is the maximum attrition?		Development team
	/	From which team is the maximum attrition?	$\vdash$	It takes quite
				some time for
				new recruits
				to understand
				their jobs.
				The learning
				curve delays the
	8	How is the productivity suffering due to attrition?		productivity
				which
				delayed the
				last
				scheduled delivery by
				delivery by fifteen days.
				Asking
				employees to
				select the best
				employee for
	9	What other employee engagement activities can we do?	$\vdash$	each month.
				Nothing – retention
				policy should
				start after
				recruitment.
				Asking
				employees to
				sign bonds
	#	What should be the new hiring policies that enable us to get loyal staff?		will NOT help.
	#		$\vdash$	Nil
	#	is more aryuning erse may me group wants to discuss upon?	$\vdash$	1111
	+		++	
	+			Signatura
	1		1	Signature

### Figure El

		al nature. The templates are given for demonstrative put	· · · · ·	
		TARTNER SATISFACTION TEMI LATE		
Date				
Participating Members Name				
Designation				
		How many new apps have been uploaded on BATOI		
	1	platform?		
	2	Which app is being followed the most?		
	3	How many solutions are used from the BATOI platform?		
	4	How are the reviews about the apps?		
	5	Are there any partners engagement activities that we plan to have?		
	6	How many reports are being published?		
	7	What is the quality of reports being published?		
	8	How many subscriptions are there for these		
	9			
	#	Is there anything else that the group wants to discuss?		
	-		1	1

F. Template for Customer Centric COP: No data could be made available for the next two templates as these are confidential nature. The templates are given for demonstrative

		CUSTOMER SATISFACTION TEMPLATE	
Date			
Participating			
Members Name			
Designation			
	1	What is the customer feedback?	
		Approximately what % of the customers are satisfied	
	2	with our services?	
	3	What the customer complaints?	
		Which is the most frequent complaint that our	
	4	customers have?	
	5	How can we address these complaints?	
	6	What profits can we generate by addressing to these problems?	
	7	How many customers have engaged in repeat business?	
		How many new customers have joined by reference	
	8	from other customers?	
		How many existing customers have increased their	
	9	purchases and participation?	
	#	Is there anything else that the group wants to discuss?	
			Signature

#### Exhibit 2

#### Cloud computing

National Institute of Standards and Technology (NIST) defines 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.

Hence, users can connect to the "cloud" through a thin client (which may not have any computing capability), i.e. desktops, laptops, tablets, mobiles, etc., and access its resources such as computing infrastructure, software applications and platforms, networks, storage and business processes as a service.

#### Service delivery models

- SaaS (Software as a Service): Service providers offer their software applications as services in the model of IT delivery. Service providers manage all aspects of the cloud including data back-up and restoration, except its maintenance and upgrades.
- PaaS (Platform as a Service): The service provided is a platform with tools for developers and solution providers. It provides development environments and avails users of programming libraries, expediting the process of application development and maintenance.
- laaS (Infrastructure as a Service): It avails servers, storage devices and network resources for use as services.

Every computing resource in cloud computing can be subscribed to as a service without any need to own the resource. This enables cloud computing to become a powerful and effective computing platform having the following characteristics:

- Elasticity: Ability to scale up and down quickly. It also implies the availability of almost unlimited resources for allocation on demand.
- *Pay per use:* Users pay for the services that have been used.
- Security and back-up: Data security and integrity are ensured by the service providers.
- Self-service: Customers can avail themselves of cloud services whenever they want through simple interfaces without any involvement of system administrators.
- Resource-pooling: By sharing the resources between the tenants on demand, it ensures efficient resource utilization providing service providers with economic advantages.

Users and the service providers are both placed at an advantage, making it an attractive technology for every stakeholder.

#### Cloud computing trends

Currently, the cloud computing market is estimated to be a USD26.6 billion industry growing at a healthy rate of compound annual growth rate (CAGR) 24 per cent. SaaS, PaaS and IaaS have gained different adoption and maturity levels in the market. SaaS constitutes the largest share of the cloud computing market with an estimated USD18 billion due to extremely high growth in past years. Due to their late entry into the market, PaaS and IaaS have not yet enjoyed as big a market share, but they are making strong inroads and have a higher growth potential of around 50 per cent. Many organizations cutting across the corporate spectrum are also hugely benefited by using cloud services, and many more are assessing their potential fit with the technology.

With increased return on investment (ROI), lower upfront costs, high elasticity and quicker payback as the key drivers of the technology, cloud computing has emerged as a formidable force. However, it also faces challenges of data security, configurability, vendor lock-in, cloud outages, support issues, etc., which have to be addressed and contained effectively.

Cloud computing is an emerging field and has not been exploited by businesses to its fullest potential. With research firms such as Forrester and Gartner projecting high potential

future demand for cloud computing, this technology is bound to attract more firms into offering cloud computing services.

As a service provider, it is a lucrative market. SaaS offers low entry barriers because of lower investment, lower time to market and lower barriers for exit. Because of the presence of bigger firms like Google and Amazon, PaaS and IaaS have higher entry barriers, but these can be reduced by product innovation and product differentiation through R&D.

#### Enterprise cloud computing

Various enterprise-level services like content management, customer relationship management (CRM) and supply chain management (SCM) are the major segments in SaaS and hold a significant market share. The expected CAGR for all three mentioned enterprise services is > 17 per cent. This makes it more attractive for new entrants to adopt cloud computing.

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#### This article has been cited by:

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