TECHNOLOGY IMPACT ON HEALTH CARE DELIVERY.

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ABSTRACT:

Health sector is a critical sector among all which are supporting for life existence and sustenance, but it's not independent due to its growth in terms of complications and magnitude growth. It's been observed that there is a vital dependence of health care sector on the information technology sector, as the later is acting as a back bone in terms of data support. Various tools of IT are widely adapted and used in health care delivery among these cloud computing is tool which has become a very integral part. This research paper attempts to explain the concept and its impact on the health care industry.

Key words- cloud computing, methods, health care.

1. INTRODUCTION:

Cloud computing is one of the most recent revolutionary technologies in world. The applications of Cloud computing is rapidly increasing in day to day life. Today the application of cloud computing is so widespread that it is being used even in the health care industry. As the evolution of cloud computing in health care is occurring at a rapid rate in recent times, we can expect a major part of the healthcare services to move onto the cloud and thereby more focus is laid on providing a cost effective and efficient healthcare service to the people all around the globe. Despite of a common belief that certain boundaries and security issues of the cloud would hinder the shift, the healthcare industry is taking an initiative to move to these cloud based platforms. Today many doctors and hospitals are moving to-wards these clouds in order to provide better healthcare services to their patients.

1.1.   WHAT IS CLOUD COMPUTING?

Cloud computing is internet-based computing, where shared servers provide computing power, storage, development platforms or software to computers and other devices on demand. This frequently takes the form of cloud services, such as 'Infrastructure as a Service' (IaaS), 'Platform as a Service (PaaS)' or 'Software as a Service' (SaaS). Users can access web-based tools or applications through a web browser or

via a cloud-based resource like storage or computer power as if they were installed locally, eliminating the need to install and run the application on the customer's own computers and simplifying maintenance and support. There are several possible deployment models for clouds, the most important being public, private and hybrid.

1.2.   SERVICE MODELS:

Following are the service models of cloud computing:

 A) Software-as-service (SaaS):

SaaS provides various software applications which clients can use without having to install them on their machines. These services like e-mail face book and Google docs are accessible from any device having a web browser.

 B) Platform-as-a-service (PaaS):

It comprises a set of software development and deployment technologies e.g. operating systems, application development environment, databases, and web servers. People can use these services either to host or to develop and test their applications. Microsoft Azure, Google App Engine and Amazon Simple DB/S3 are some examples of PaaS.

C) Infrastructure as a service (IaaS):

This model offers an organization with services like processing, storage and network bandwidth. Businesses and institutions can purchase these compute and I/O services to meet their application demands. Examples include Go Grid, Flexi Scale, and Amazon EC2 etc.

1.3.   DEVELOPMENT MODELS:

Four deployment models of cloud computing is as follows:

 1) **Public cloud:**
Public cloud as its name suggests 'Public' is available to general public. It is economical cloud that is stand-alone, proprietary based and off-premises. In house and small businesses use public cloud mostly to meet their requirements.   Private cloud: Big organizations use private cloud to serve their business needs internally. Private cloud is more secure, well configured and expensive as it is not shared. Private cloud is usually on-premises.

2) **Community cloud:**

Organizations that have similar requirements and business targets they use community cloud. It is just like public cloud but only for the participating groups with enhanced security and privacy control. It can be located on-premises or off-premises.

3) **Hybrid cloud:**

Hybrid Cloud is a combination of two or more clouds (private, community or public). Hybrid cloud is a single cloud that provides blend of shared services. The major issue of hybrid cloud is its security and control. Hybrid cloud can be on user or on provider's premises.

2. <u>WHY DO WE NEED THE CLOUD IN HEALTHCARE?</u>

Cloud solutions can help us address certain societal challenges more efficiently and address the current lack of sustainability in healthcare systems.

1. Rising Healthcare Expenditure And Unsustainable Healthcare Systems
2. Rise Of Chronic Diseases
3. Medication Errors
4. Medical Errors Due To Poor Communication

3. <u>CLOUD COMPUTING BASED HEALTHCARE SERVICES</u>

3.1. **Data Management:**

Data management is a prime issue in healthcare industry. Point of care centres, particularly, have to store and maintain pica bytes of data about human resource, account files and patient medical records including patient history, diagnosis, treatment, dietary information etc.

3.2. **Telemedicine:**

Recently information and communication technologies have been surged to support and provide patient care services beyond the medical centres.

3.3. **Drug Discovery** :

Drug discovery is a process of discovering new medicines while ensuring its efficacy and any side effects.

3.4. **Digital Libraries:**

Libraries are the prime source for knowledge improvement among medical students, researchers and practitioners.

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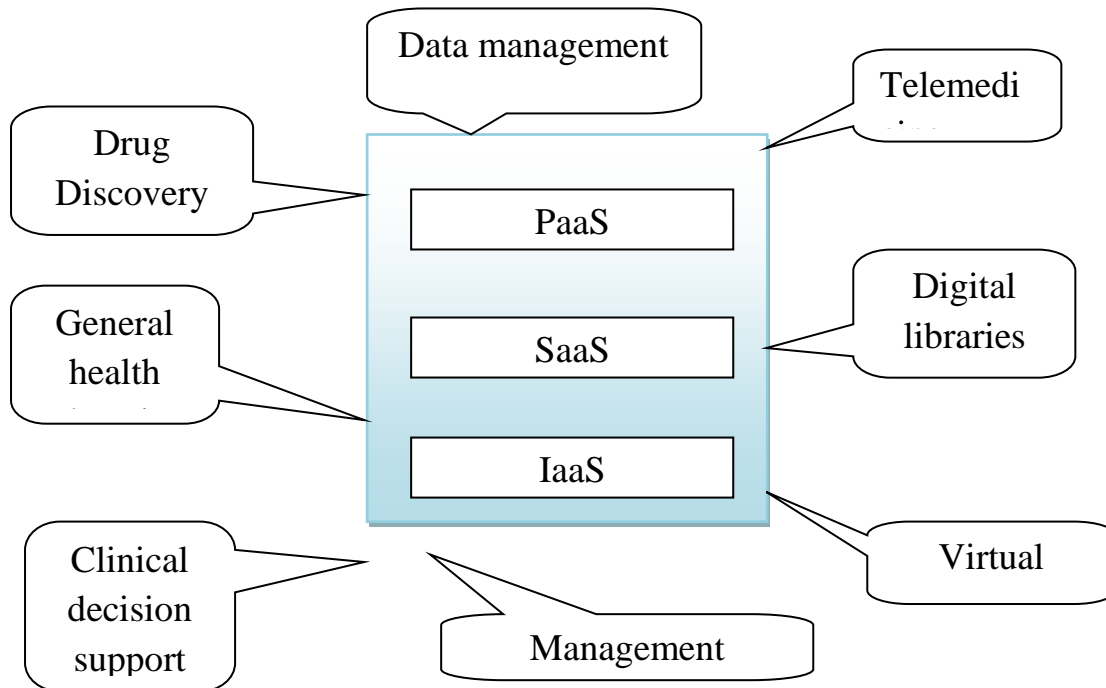
Fig-1:- Cloud Driven Health care services

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3.8. Management Information System:
Healthcare industry has started using management information systems to
Streamline the information flow within and outside the organization.

4. CLOUD CHALLENGES IN HEALTHCARE

4.1. Privacy Challenges:
Privacy and security rank at the top of the list of reasons for slow adoption rates. Putting personal health information into a 3rd-party, remote data centre raises red flags where patient privacy laws are concerned. The possibility that patient data could be lost, misused or fall into the wrong hands affects adoption.

4.2. Security Challenges:
This may be a moot point where healthcare providers are concerned. One of the benefits of cloud technology is the ability to access resources that would otherwise be unattainable.

4.3. Workflow Challenges:
As it can be difficult to enact change throughout healthcare provider organizations, we may assume that adoption of a cloud model would present significant change management issue for providers.

5. ADVANTAGES OF ADOPTING CLOUD FOR HEALTHCARE ORGANIZATION

Cloud computing brings a new business model which enables several advantages that would benefit the general healthcare community. By adopting the cloud in medical services both patients and healthcare organizations would obtain a huge benefit in patient's quality. This collaborative approach enables healthcare services to interoperate between them in order to offer a faster and efficient response helping to improve the patient quality of service through sharing information across healthcare organizations. Therefore, hospitals, clinics, imaging centres, pharmacies and insurance companies can efficiently share patient's medical records, prescription information, X rays, test results, physician's references, physicians availability, etc. that can be accessed anywhere and everywhere by authorized entities. All this information would be used for making decisions, obtaining better diagnosis and treatments to Yield better results, scheduling physician's appointments, speeding insurance approval, etc. which highly improves patient's quality of service.

6. BENEFITS OF CLOUD COMPUTING IN HEALTHCARE

1. Cut Costs and Increase Efficiency
2. Health Records as a Service: Improve Relationship and Case Management
3. Accelerate Business Intelligence and Data Visualisation
4. Cloud Allows Enhanced Security Safeguards
5. Access to It Expertise on the Cloud

7. EXAMPLES OF CLOUD APPLICATIONS:

Although considered a recent technology, cloud computing has been with us since the mid-90s.Cloud computing offers similar benefits for the health industry, driving down costs, making administrative processes leaner and more efficient, reducing the time needed for patients to interact with health workers and providing increased access for patients to their health records. The cloud model also offers benefits specific to the health industry. It will allow healthcare companies, researchers and healthcare workers to share expertise, advance research through online collaboration and visualise, through geographic mapping, where problems are located, evaluate trends and health risks, and identify regions or municipalities not receiving satisfactory care.

8. CONCLUSION:

The current trend of adopting cloud computing in the medical field can improve and solve several collaborative information issues in healthcare organizations as well as cost optimizations. Standardized cloud-based applications will bring obvious advantages to patients, physicians, insurance companies, pharmacies, imagining centres, etc. when sharing information across medical organizations yielding better results. Challenges such as security concerns and interoperability will rise due to the cloud-computing model. Therefore, the adoption of the cloud is progressing slowly. Through the implementation of best practices in the design, deployment and use of it will hopefully generate a future growth of the cloud-based systems adoption, despite all of the obstacles.

9. REFERENCES:

1. http://www.expresshealthcare.in/201109/itathealthcare04.shtml
2. http://www.ecommercetimes.com/story/Googles-No-Bellwether-for-Healthcare-Cloud-Servic-   es-72829.html
3. http://www.information-management.com/news/health-care-cloud-computing-10020883-1.html
4. http://info.exist.com/blogs/bid/61400/Cloud-Computing-for-Healthcare
5. http://thehealthcareblog.com/blog/2011/05/02/health-care-in-the-cloud/
6. http://www.oxford-consulting.com/industry-news/2011/08/integration-challenges-slowing-adop-   tion-of-cloud-for-healthcare/
7. http://www.oecd.org/document/38/0,3746,en_21571361_44315115_48289894_1_1_1_1,00.html
8. http://www.healthcareeuropa.com/articles/janvanemelen