CSC 510

Vocation and Ethical Computing

Thesis Document

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**Abstract**

**Category:** The opportunities and pitfalls (Ethical Issues) of cloud computing

**Topic Title:**

Unethical Promises of Security Policies, Data Availability, and Data sharing issues in Cloud computing.

**Working Title:**

Non-transparency in the location and security policies on client’s confidential data leads to unethical usage of it. Violation of Ethical values in terms of services and security which are given to the clients by Cloud companies in terms of End-user license Agreement (EULA).

Thesis is going to concentrate on possible ethical issues arising in the practice of Cloud Computing techniques in current world Information technology solutions. Main criteria of the thesis will be on the unethical practices of the User Data in Cloud Service providers. What are possible ethical issues that arise while auto updating of the system services for the machines holding client’s data and the enhancements in the storage of data by statistical analysis technique? Unethical practices of Services updating techniques are going to be listed with examples of real world incidents occurred.

**Road Map:**

Possible **unethical concerns arising** in cloud computing services include:

* Data Availability and Non-transparency in Data Sharing,
* **Unethical security policies**,
* Services down and uptime which greatly affects End Users.

**Cloud Computing**

Cloud computing is the internet oriented services provided to the end users. This means delivering Information Technology services to the end user as software services even though, the locations of the providers and clients differ. All the services from the cloud providers are delivered through a set of protocols typically over the Internet. So many years of computing evolution, cloud computing took a drastic way of reducing IT costs, availability, email sharing, and automatic updates of the tools or software used according to signed services. Due to the wide range of uses in cloud services, clients tend to opt for the Cloud Services with the phenomenon of deliverables over web. Most of the giant IT firms such as Gmail, Hotmail and Drop box have adapted and are already providing cloud services to their users.

**Services of Cloud Computing**

The main services offered by cloud computing include software as a service, platform as a service, and infrastructure as a service. Most of the marketing firms use software as a service due to their extensive use of on-time updates of data irrespective to devices they use and the analysis of statistical data for sales forecasting. Transparency of the location of data is highly impossible. Because of this, many Medical field firms, Law firms and Financial Firms go for Cloud services. Not only does cloud computing offer a wide range of services in terms of Infrastructure, and Software updates but it also provides information security services.

**Opportunities of Cloud Computing**

From the point of employment aspects in cloud services, there exists a wide range of opportunities for jobs that have a great amount of mobility in job locations. Employee can access work from their home, or any other location, over the internet instead of going to the office. This mobility made a convenient state of satisfaction growth in companies where tasks are crucial and time bound. Phenomenon of anywhere accessibility, mobile computing services such as over smartphones, tablets, new surface computers made Clients apt for their Services available in Internet.

**Ethical Issues in IT (According to cloud Services)**

The most critical ethical values of the IT services are privacy of users, security of user data, and honesty in security policies.

Privacy, termed as user data protection, is concerned with protecting emails, files and attachments of the end users. Even though all the credentials are accessible to administrators, software engineers must and should be tending to provide confidentiality to end users. The main purpose towards availability of the data to the admin is to provide better services. IT firms have the responsibility to act properly for providing security to them. Some cases of Data theft or breach IT firm has to deal the customer as whole rather than the possible lawsuits. In terms of honesty from the IT firms, there always exists a possible case of system failure caused by breaches or poor network management or infrastructure failures. IT firms have a responsibility to clearly convey the situation to the end users and act accordingly.

Even though several IT values or ethical standards of IT collaborates with cloud standards because is also an IT service, there are wide ranges of existing bad and unethical practices. These practices are due to high business needs, time constraints, resource allocation, and infrastructural misuse. For some cases solution providers solely concentrate on the biggest accounts and neglect small customers. This is due to a pay level disclosure on level of attention and response to their issues. To conduct business ethically, there needs to be typical standard of response level to all the customers in their issues.

As the IT ethical values are governed to provide better services in an ethical way to their customers, cloud providers should have the ethical values towards their customers. Cloud providers should focus on their responsibility over IT operations, and services and security over web responses because cloud services are more at risk to being hacked. From an ethical standpoint, cloud providers have to give same level of responsibility to all types of clients no matter the size of the client in terms of data usage.

**Possible Unethical practices of Cloud computing**

As we know, most of the advantages with the Cloud computing also come with threat prone areas as most of the Cloud Services are deliverables over Web. Security concerns on the Internet services can also affect services of Cloud Providers. Several manipulations on the Data Servers of Cloud providers are opaque to clients. Following are the important Unethical issues arising due to lack of Ethical Standards from both Providers and improper understanding of EULA.

**Data misuse and Unethical Operations on Data**

In the IT industry, there exist several cases where IT Operations team has to deal with business needs or server updating routines. In these routines IT Operations may do some type of scripting which may act on Client’s Data will result to unethical usage of Client’s Data. Ethical value of Privacy will not be followed in the case of Statistical analysis of Cloud computing routines. Privacy can lead to a valuable ethical issue in the misuse of Client Data.

In some cases of information lost due to poor understanding of the terms and conditions will result total loss for customers. Most of the migration patterns of the data to improve portability can be achieved through CSA approvals except for the private clouds.

**Statistical Analysis on client’s data**

Due to wide range inventions on marketing strategies, Sales forecasting techniques on the volumes of Cloud servers will be using at least portion of the statistical numbers of the client’s data which is an unethical case. **Utilitarianism** contradicts in these approaches, As the Utility of Query for resulting Sales forecasting on the Client data leads Ethical Issue which disobeys Rule of Confidentiality of the client’s data.

There are several incidents, When the insider takes an unethical step to breach data out internet can be omitted by providing secure access key authentication by CSA and accessibility to few persons. Advanced techniques of AI bots in the internet can be harmful by doing unethical queries on the client’s data even though EULA of client doesn’t explain about it. Big MNC companies follow several IT ideas and enhancements in the Artificial Intelligence inclusions will always create an ethical dilemma of state being corrupted or served purposefully towards business.

**Non transparency of Storage**

There are several misuse cases of Cloud Server Data due to individual greedy nature of false nature of employee or admin who works on the exact servers can be unethical usage on client’s data structures. Before Cloud Computing, as all the IT resources were hosted in the individual firms, quotient of trust on the own employees is more than hosting private data into Cloud providers. Technologies have been developing drastically on the Data Availability and auto updating software tools may get breached by malicious software application Bugs. These are certain ethical issues rising due to non-transparency of Storage.

**Security Policies**

Even though EULA (End user license agreement) states several categories on the security policies to Cloud client, In the recent IT industry, there were several incidents located where business has been given most priority than Customers in case of security breaches. For Example, AWS amazon web services hosted several cloud storage locations, If one of the online server got breached which resulted to downtime of certain region of the confidential data access to Financial firm which results great loss in the Market. Cloud Providers should have ethical standard of sharing current issue on the Downtime of Data servers.

Internet Services are always prone to certain level of information leakage. There are several incidents occurred while hosting data into the internet environment than our own company administration services. Internet protocols are strictly providing access to the authenticated patterns of scripts yet they will be decrypted with a great level of skill set.

**Example:** In the Year 2016 august an Article listed under hacked cloud services which lead to leakage of 60 million username and passwords of Dropbox accounts. Due to software auto updating on the Cloud services may leave a loop hole opened for the hackers who are always ready to attack on the potential data of the people/organization. (GRIFFIN, 2016)

**Possible solutions or Practices**

The typical concern of services to end users is security and data privacy will not affected due to internal operations of IT with whatever the technological advancements maintained in the companies. Service providers strictly follow ethical standards on their IT operations such as maintaining privacy of client’s data, and not distributing any information on the client’s confidential reports. In some cases of IT Operations, there is a possibility of statistical data leakage which may greatly affect the customer. This kind of statistical analysis on the servers from the IT operations must conveyed to clients before the task executed on the data servers.

Maintaining clarity of the technology utilized in the cloud firms for the individual responses may give a chance of understanding and clear understanding on the EULA (End User License Agreement) from the cloud providers. For example, an email services over broadcast networks is a bad choice of internet protocol usage even though broadcast approach is fast. It is ethically wrong as it has its own security issues. Communication is most important in time bounded services subscriptions. These subscriptions maintained periodically with the providers on their security updates, policies and IT operations.

**Data Security:**

End to end data encryption should be maintained in each request to response states between client and cloud provider. Providing issue tracking resources, back up plans on data breach or threats happened to data can be a viable approach to end users in terms of providing privacy.

**Conclusion:**

Several ethical standards can be accomplished with proper rules of conduct from the individual employee to the organization overall. Cloud computing ethical issues are avoided by maintaining certain standards on privacy checking routines, transparency and testing assurances on security policies to clients. From the perspective of clients, it is be better to organize regular routines of analysis and to know the status with consequences of auto updating software tools on the services cloud providers. Following a certain level of exposure in each item listed in EULA (End user license agreement) with the cloud providers makes a clear understanding between the service provider and client, which eliminates potential problems.

**Annotated Bibliography**

1. This article explained about implications on unethical promises of the security policies under unwanted situations like data breaches and implications on the subscription cancellation of the cloud services.

**“Cloud computing also makes it possible for individuals   or companies to access other people’s files and personal details without that person knowing that they are being accessed and leaking important data into the wrong hands could lead to dangerous situations in several areas like military. If a data breach occurs the provider has to inform the customer of it which does not happen in reality due to the third parties involved in the services not wanting their reputation to get spoiled. Also if some company stops using the cloud services, then the problem of who has the rights over the left out files could be a major issue. Another ethical issue is the easy distribution of other people’s intellectual properties.” -** (surya, 2015)

1. From the perspective of Attorney’s sharing or storing client’s valuable information, there exists few ethical dilemma situations such as American Bar Association Model Rules of Professional Conduct Rule 1.6 (Duty of Confidentiality) and Rule 1.15 (Duty to Safeguard Client Property). These Rules explains the risk and security on the use of cloud services on Attorney’s case details and security of the data.

**“Two primary ethical rules that come into play for attorneys are American Bar Association Model Rules of Professional Conduct Rule 1.6 (Duty of Confidentiality) and Rule 1.15 (Duty to Safeguard Client Property). “There is a proposed amendment to Rule 1.6. The amendment is that ‘A lawyer shall make reasonable efforts to prevent the inadvertent disclosure of or unauthorized access to information relating to the representation of a client,’” said Eckerly. “As we can see” . . . “this a direct result of cloud computing and data hosting.””-** (LexisNexis, 2012)

1. Below article clearly explains the consequences of ethical issues in considering linking or sequencing huge data sets and the ethical dilemma of creating or wide spreading computer infrastructure to support Big Data issue.

“**As genomic researchers rely on data contributed by patients and participants and are bound to abide by laws and ethical guidelines, it is critical to respect the privacy and autonomy of patients and participants by proactively assessing the full range of legal and ethical issues surrounding genomic cloud computing. This risk assessment is all the more important given that the Terms of Service of CSPs are generic documents that have not been developed with sensitive health or genomic data specifically in mind**” - (Genetics, 2014)

1. This article explained about ethical dilemma occurrences while sharing healthcare data with the companies holding prescription statistical reports even though it may be beneficial to process but non-ethical in terms of data privacy of individuals.

**“The institution is obligated to protect data that it generates or receives from partners. To do so, review boards must ask whether the planned usage for the data is appropriate (e.g., ethical and covered by patient consent), and whether the external recipient seems trustworthy.**”- (Arnon Rosenthal, 2008)

1. This article explaining about the trust related issues while moving to cloud services by keeping terms and conditions in the competitive world of storage issues and cost cutting methodologies.

**“the dimension of ethics to the dilemma of mistrust in cloud computing, exploring whether this is a key influence on consumer trust, since there was a research gap discovered in researching a trustful provide-user relationship as well as an ethical perspective in cloud computing”** (beschoff, 2017)

1. Below article explained about ethical issues arises based on the location of hosting cloud services and the promises of customer’s data between law enforcements of certain regions with security of data.

**“As cloud computing takes hold and changes the profile of business, so too will it change notions of business ethics and corporate responsibility. There was once a time when business would argue that suppliers should take sole responsibility for following labor and environmental laws, yet today we see armies of auditors and labor relations specialists going above and beyond what is legally required.”-** (Schuchard, 2012)

**Book1: Ethics Discovering Right and Wrong:**

1. In Chapter6 Egoism, Self Interest and Altruism, section Ethical Egoism stated that Unethical state of providing security policies by losing data loss or misuse of data in cloud providers and the security breaches were explained within the section of the Ethical Egoism. In this section author contributed about unethical consequences of self-interest.

**“Ethical egoism is the moral view that everyone ought always to do those acts that will best serve his or her own best self-interest. That is, morally right actions are those that maximize the best interest of oneself, even when it conflicts with the interests of others.”-** (FIESER, 2016)

1. In Chapter2 Ethical Relativism, section Introduction Quote stated that Maintenance of security policies for providing valuable services which cannot be affected by personal ethical state of mind which lead to the unethical states. I meant to say our personal state of mind should not be applied to the work environment if it causes unethical issues.

**“Ethical relativism is the doctrine that the moral rightness and wrongness of actions vary from society to society and that there are no absolute universal moral standards binding on all men at all times. Accordingly, it holds that whether or not it is right for an individual to act in a certain way depends on or is relative to the society to which he belongs. JOHN LADD, ETHICAL RELATIVISM”-** (FIESER, 2016)

1. In Chapter7 Utilitarianism, section Act- and Rule- Utilitarianism stated that Providing of right solutions based under the definition of Act-Utilitarianism says doing an act results to good compared to alternative approaches.

**“Act-utilitarianism: An act is right if and only if it results in as much good as any available alternative”-** (FIESER, 2016)

**Book2: Computer Ethics**

1. In Computer Ethics part 3, under chapter 12 Data Protection In A Changing World: of Computing And Intellectual Property stated that the intellectual property of any company in terms of business analytics, reports on annul sales are cannot be marketed/distributed and destroyed by personal or any incident which lead to unethical promises to the clod customers. - (**Rogerson**, **2003**)
2. In Computer Ethics part 2, under Informatics and Professional Responsibility: stated that data analytics on the data of the cloud customers without prior intimation which is an unethical cause of misusing the size of data units even though the statistical report analysis discussed in the terms and conditions. The unethical case lead by quantifying the certain parameter of the volumes in the data servers may have the possible analytical data to reveal the secrecy of the data in it. (**Rogerson**, **2003**)
3. Below Annotated statement taken in Computer Ethics part 2, under ETHICAL DECISION MAKING FOR COMPUTING PROFESSIONALS stated that secrecy of the data or the client information even though all the rights on it available and the business need shows up. The level of Secrecy in the data availability have some ethical issues in the cloud computing.

**“Applying a code of ethics might not yield a clear solution of an ethical problem because different principles in a code might conflict. For instance, the principles of honesty and confidentiality conflict when a professional who is questioned about the technical details of the employer’s forthcoming product must choose between answering the question completely and keeping the information secret.”-** (**Rogerson**, **2003)**

**Book3: God at Work**

1. In the Chapter2: How God Works through Human Beings, As God creates and leverages certain level of strengths to our providers, As a needy greedy persons we may tend to forgot The Almighty and prone to make a sin for the profits on the Clients data Statistical analysis for some Marketing research techniques would lead to unethical standards.

**“Many Christians miss the point of these texts when they reduce them to “who has to obey whom.” Though the passages deal with issues of authority and power, their subject is vocation, in the context of God’s providence, which in turn means not so much control as care, how He provides for our needs. God uses civil magistrates to protect us. He uses fathers to take care of us, and spouses to bless us. As we shall see, each vocation, even the authoritative ones, also entails responsibilities for the well-being and care of those under its charge.”**

1. In the Chapter1, The Christians calling in the World, It states about the responsibility of a Christian and their jobs corresponding to the way they have been raised. In this case, I have an ethical dilemma of choosing a command for a higher order employee to do an unethical analysis scripting on Clients data who were subscribed to Cloud Services may be trivial and cannot be justified.

**“Someone who has learned how to read the Bible can then take that skill and read just about anything. Interestingly, though, the schools started by the Reformation churches went beyond basic literacy and Bible reading. They implemented the classical “liberal” education, pioneered by the Greeks and Romans to equip a free citizen to develop all of his gifts (the term coming from libera, the Latin word for “freedom”). Though the Greeks and Romans had a separate, occupational education for slaves, the Reformation offered even the lower classes a classical Christian education that would prove “liberating” throughout the social order.”**

1. In the Chapter1, The Christians calling in the World, it clearly stated, even though our current states of business requests may seem profitable to the company or a firm, we do have a single set of Vocation which is serving your neighbor and Martin Luther said righteousness through faith in God only saves us.

**““Having a vocation” meant, among other things, the willingness and the ability to live a celibate life”**

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