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Impact of Cloud Computing Technology on E-Government and Business Organizations

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ABSTRACT

E-Governance cloud service system; includes secure process and control of the system. This system provides the system enhancement as indicated by the strategy in cloud environment service. As large scale capacity, e-government needs large investment monetary from the government. The reduction of cost comprises with the field of some new inventions of computing technologies as could be allowed, while likewise developing the flexibility and effectiveness of government sectors. The cloud computing is such invention, which provides the services of computing and information as benefits. Cloud-based e-government provides the services of best possible to its businesses and citizens at reasonable expense. This is because governments don't need to purchase and introduce the ICT equipment on their premise. In this chapter, the application and the elements of cloud computing are analyzed in the e-government context. Cloud computing is a general term for whatever involves delivering hosted services through the network. It was stimulated by the cloud image that is often used to represent the Internet in flowcharts and charts. The service has three different features that recognize it from the facilitating of customary. It is traded on demand, regularly constantly or minute; it is elastic - a user can have to such an extent or as meager of a service as they need at some random time; and the service is completely managed by the provider. Noteworthy advancements in virtualization and distributed computing, notwithstanding the internet access speed is improved and have faster interest in cloud computing.

Introduction

Cloud computing is a disruptive technology model that is changing the manner in which open sector associations like Government offices, health care or education that are following information and communications technology (ICT), and it help in future to deploy and deliver services to stakeholders in a hassle free manner. A trusted network infrastructure is the establishment for any successful cloud implementation. It analyses the status of cloud computing in e-government, e-education, and healthcare associations. It likewise helps to analyze the business case for a cloud implementation by abridging the chief advantages and business drivers. Government Bodies and IT departments of any state in India can make considerable reserve funds changing from in-house e-Governance systems to cloud-based e-Governance arrangements utilizing software-as-a-service (SaaS) model of cloud computing, large government offices ought to consider utilizing the cloud model for e-Governance services delivery. Much the same as a conventional e-Governance software arrangement, Cloud based e-Governance must provide physical security, transmission security, storage security, access security, information security, and application security. In this chapter, the research is center around these wide characterizations for talking about the similarities and differences between Cloud e-Governance and conventional e-Governance software security.

CLOUD VALUES IN E-GOVERNMENT: The e-government service platform accessed the environment of cloud computing to its advantages in order to develop the corresponding values for environment, public and government.

Values for Government: The government changes the e-government system to the cloud computing environment to generate the following values:

❖ Benefitting the Public

E-government inclines to carry facility to the essential of its purpose to carry about a variation. Cloud computing can schematize the IT resource service, thus regulating resource arrangement. Thus, it creates conceivable computing and locating back of IT resources, which in chance offer services via a network to the public.

Moreover, this ability can be access as per public request and usage and can be remunerated for in accordance with the usage of application. Thus it offers the public with an advance service model of IT resources. In addition, the government can improve computing and storing system capacity, thereby provided that the public with additional expanded value-added services via cloud computing.

❖ Promoting Cooperation with Enterprises

On the off chance that the government uses cloud computing, it can deliver not just the conventional sustenance of strategy and environment to resident cutting edge development zones and software parks, yet additionally a diversity of IT support, in this way appealing extra business

and an advanced entry of assets. Cloud computing service stages would generate more chances for the government to collaborate with initiatives; in this manner the government can use initiative contextual strength to help nearby development and to fundamentally achieve the procurement and errands redistributing.

❖ **Promoting Public Construction:**

The current necessities for power system ability are growing regularly in the power building, especially in the structure of smart grids. The existing power system ability is incapable to stand the load. Toward this end, countries resorted to the power system idea based on cloud computing. Cloud computing has influential dispensation abilities and high-level system incorporation to support the smart grids construction. In addition, it can make complete usage of the existing resources hardware of the power system and decrease investment in new hardware.

❖ **Increasing the Utilization Rate of Resources**

It is problematic to do in advance the quantity of system resources essential. This consequence in irregular delivery of data centre properties. Though, the cloud computing virtualization technology can virtualize servers with the storage devices and other physical hardware, thus constructing the e-government system on the hardware logic. In this way, a single physical device can be distributed by dissimilar services across several government agencies. It also avoids poor reserve utilization by permitting isolated management of the physical device.

❖ **Improving Administrative Efficiency**

Cloud computing can excluding the deployment time essential to generate new applications, and is favorable to data sharing and cooperation, thereby improving managerial effectiveness.

❖ **Reducing the Budget**

The e-government system using a cloud computing atmosphere can decrease the charge related with human resource, hardware, software and electricity, thereby dropping the complete system economical.

❖ **Increasing Robustness**

The e-government system creating use of cloud computing has enhanced its accurateness, security, compatibility and disaster recovery ability.

Cloud in Government: Public request for guides services the growth of e-government. The focus of e-government has transformed from office mechanization and management regulation to public services. This transformation imitates the change in government functionality. Governments everywhere the world hope to get the trust and sustenance from their people. Therefore, globally e-government systems concerned with near public services are existence recognized, thus increasing the national competitive strength.Cloud computing is an advanced mode not only of estimating but also of utilization of resource. It can deliver consumers with IT resources in the procedure of service via network. Consequently, the government can offer its citizens with additional varied service substances via cloud computing. This develops reliable with the e-government's goal of carrying service into its domain core. Also, as a generous of green technology, cloud computing can substantially growth the rate utilization of resources at data centers and can decrease energy consumption. For these details, cloud computing is the greatest environment to begin e-government. On the other hand, it has not increased much approval yet. If governments everywhere the world encourage its expansion, the scale of cloud computing can be extended rapidly, thus promoting the concept. Therefore, usage of cloud services by governments will extremely stimulate the development of this concept. In short, cloud computing and e-government can supplement each other.

CLOUD MIGRATION STRATEGY: One observer has properly reproved IT administrators, observing that when it originates to shifting to cloud computing, "Standing pat means being left behind". Linda Cureton, NASA's CIO, specified the substance thus: "I'd similar to approximately it a petite more bluntly. If CIOs don't become prepared, accomplish fears and succeed their risk, they will become route over by this disorderly technology. The organization is responsibility it anyway – without you! So do something! You don't require transferring entire initiative into the cloud, just attractive the first step and observing at some suitable sets of data. This prepares not have to be an all or none choice. One would bear in attention that 'cloud computing is a tool, not a strategy'. IT leaders employed for the government would be healthy recommended to take a automatic valuation of how cloud computing can appropriate into their complete IT policy, in provision of the assignment and general approach of their action. This contains a six-step procedure, as follow.

❖ **Learning**

In order for the cloud immigration strategy to begin, basics learning of cloud computing is an actual significant – complete presence meeting, interacting, talking with wholesalers and interpretation. As cloud computing is a fresh model in computing technology, technology transmission necessity happen– the 'techies' in and outside of government will require to take that further step to teach and notify the 'non-techie' rule creators (Agency executives, staffers and lawmakers) about the qualities and worth of cloud computing. Enough funding will be compulsory for research to launch how cloud computing is employed – or not – in several grounds and at complete levels of government. This will assistance ground the strategy and performs of governmental usage of cloud computing.

❖ **Organizational Assessment**

In the second step, IT executives must evaluate their present IT requirements, construction and deployment ability. In a cloud computing environment, resources can be extra or detracted based on requirements and difficulties; thus it is serious for IT managers to reliably evaluate their IT baseline. In terms of data centre application, it will be significant to classes properties based on their requests, that is, whether they are essential all the period and are essential for day-to-day processes in command to begin a reference line for within hosted operations. Only then can choices be made as to

whether to remain to host 'excess' quality in the data centre or to convention for cloud services as wanted to measure up in order to meet season.

❖ **Cloud Pilot**

The third step is the collection of one area – or one detailed project – by the IT executives to 'cloud pilot' and measure their capability to achieve and carry such a scheme to fruition. As with any new technology, cloud computing is experiencing an inordinate transaction of experimentation. Internet users are investigating with cloud applications in their regular lives – from Twitter to Gmail to using photo-sharing sites. In the same way, organizations are also leading cloud computing trials – struggles that are dissociated from their essential IT operations and repeatedly at the margin of (or trying to connect to) the organization.

❖ **Cloud-Readiness Assessment**

After the internal valuation and external outreach restricting from the pilot effort, IT managers must behavior an complete IT cloud-readiness valuation to regulate if their organization has information and applications that might freely transfer to a cloud environment, and if a public/private/hybrid cloud would be appropriate or practical for these resolutions and they essential to rank probable projects. As these calculation advancements, IT decision makers must attention on starting instructions as to which data and presentations can –or cannot – be contained in any procedure of cloud environment. In doing so, they will determine a certain field of 'cloud eligible and ineligible' data and applications.

❖ **Cloud Rollout Strategy**

At this stage, it is significant to move out the cloud computing approach – acquisition buy-in from both leadership and IT staffers organizational and interactive with both internal and external investors about the goals, progress and costs/benefits of each cloud project. Now the cloud transitions from a test effort to a more mainstream system in the way the agency manages its data, operations and people. It converts part of 'normal' administrative operations, just as various old tech inventions (From telephony to fax to the Internet to email to social media) have converted IT tools, used in provision of the activity's IT approach, and more prominently, its complete strategy.

❖ **Continuous Cloud Improvement**

In the concluding stage, the procedure takes the final outline 'incessant cloud improvement', where the agency/organization/unit travels the suitable information to and back from the cloud to internally hosted processes, if essential, after methodically and uninterruptedly measuring the suitable use of cloud technologies for that specific activity. The shifts to more cloud-based applications will assistance government agencies obtain different abilities to interconnect and cooperate.Though, it will likewise require certain quick policy decision-making and the execution of operative rules. For occurrence, choices need to be complete as to who can entrance files and the access type one will have (e.g., read-only, editing access).

MULTI-KEYWORD RANKED SEARCH OVER ENCRYPTED CLOUD DATA: In this work, to make certain privacy, users typically data encrypted onto cloud before outsourcing it, which brings enormous issues to utilization effective of data. However, yet if the data utilization is probable for encrypting, users still require to converse and allow the operators on the data encrypted in cloud, which potentially define the information sensitive leakage. Furthermore, in cloud computing, data owners might distribute their outsourced data with a number of users, who strength wants to and they are interested in the data files retrieve. One of the mainly admired ways to do so throughout keyword-based retrieval it is a service of data typical and widely practical in plaintext scenarios, in which user's relevant files retrieve based on keywords in a file set. However, it turns out to be a complicated task in scenario encrypted text due to restricted operations on data encrypted. Besides, in order to improve probability and put away on the expenditure in the paradigm cloud, it is ideal to get the result retrieval with the mainly relevant files that competition users' interest as an alternative of all the files, which recognize the files to be ranked in the significance order as per the need of users' and only with the relevancies highest files are sent back to users. A searchable series of symmetric encryption schemes have been introduced to facilitate on cipher text search. Traditional SSE schemes facilitate users to recover the cipher text securely, but these support schemes only Boolean search keyword, i.e., whether exists keyword in a file or not, exclusive of allowing for the relevance dissimilarity with the queried keyword of these files in the result. To progress security without sacrificing efficiency, support top-k multiple keyword retrieval under various scenarios is proposed in this work.

BUSINESS STRATEGIES VS. BUSINESS MODEL: Business strategies represent an important aspect in the well-functioning of the company and it is a step closer for the company to achieve his goals. Depending on the business strategies that are adopted the companies could have some benefits as: saving money, increasing sales and for making better the business model of the company, that are very important because the usage of them can parry business failure and drive it to success for a long time. By using a business model we can see what the relationship between customer needs is and what the company is offering, between value and price, between revenue and costs and between effectiveness and efficiency.

The four elements of business model are:

- Service design- what services the company offers to specific customers;
- Organization design- the role that each player has in the network and describes the network that is providing the services and products to the users;
- Technology design-for the service to reach an end, technology design contains the description for the technical system and architecture that is required;
- Finance design- revenue is wished to be achieved through the services and costs.

Business strategy represents the methods through which companies are putting the foundation for their mission, goals, are creating projects and plans, after that they will invest time

and money to make these plans come true. The company' strategy when adopting business strategies is to touch long time objectives, by combining activities from different departments.When using business strategies, companies can meet resource issues like: the finance allocated for a factory will increase. Before companies will start sing strategies they will have to decide which products will receive the majority of resources. Business activities are the ones that influence the strategies adopted.

ORGANIZATION STRUCTURE: Organization structure represents the hierarchy that exists within the organization. Having an organization structure is useful, because it is much easier to recognize the responsibilities for each job and where they fit better in the organization. Organization structure it is also helping the company to reach the goals.

Each type of organization structure was developed with the scope to help the organization to reach his goals. The organization structure types are:

- Divisional structure can be seen in companies that are concentrated on business;
- Geographical structure means that the company can have headquarters in more than one locations;
- Functional structure it is in function of the responsibilities of each job;
- Matrix structure it is mandatory for the companies that have a geographical structure.

Even with all the types that exist for organization structure, which are helping the organization to reach her goals, all of them are reporting to the headquarter to which it belongs. If the organization decides to create other headquarters in other locations, then the organization structure will make this happen by providing space for this.

Below I will present the six models of organization structure:

- Line structure represents the relevancy that is between the team members and manager;
- Cross-functional and self-managed team presents people from different areas of work that have common goals;
- Network structure means that a network structure is used by a company to deliver tasks for providers that is not part of the same company, by keeping a relationship between them;
- Line and staff structure represents a multitude of layers for management;
- Cluster structure means that the company has a high number or divisions and subdivisions;
- Matrix structure means that efficiency is at high capacity when employees of the company are structured by their credentials.

The organization structure helps us to realize how the flow of information takes place in the company, because the information can delay the decision taken if it is modify or someone from outside the company gains access. This is called pyramid of hierarchical structure. Hierarchical communication presents how the information is shared and stored in the company; and how it is affecting the members of the company. Manager of the company has to give feedback about his employee's performance; he also has to deliver to the employees the details about the companies' goals and details about the job for each employee. In turn, employees also have to give information about themselves to the manager.

KNOWLEDGE AND INFORMATION MANAGEMENT:

Knowledge represents the skills and information that we have from our studies and experiences. Information represents specific data that is arranged in a specific way for fulfilling a specific goal; and it is submitted in a context that can help the reader to understand better the requirements of a task. Information has to be precise, because it can lead to a behavior change, outcome or decision. Knowledge management is used in different types of organizations. Organizations are curios how companies are handling the knowledge between their employees. Because computers are doing the people jobs, more and more often, knowledge became an interesting subject. Because companies' goals cannot be reached only through traditional ways, they need to gather all the knowledge that the employees have in a single place, so everyone can use them when needed. Knowledge management it is a tool through which the company can see the opportunities that were achieved with the help of knowledge. Knowledge management it is about sharing, creating and identifying knowledge. Knowledge management it is considered to be a solution for keeping the organization to go forward, because IT sector was affected in the last years by having holes in the way the information and knowledge were directed. Knowledge management is a tool that helps the organization to capture, structure, value and share his intellectual properties.

There are two types of knowledge:

- Tacit knowledge the business is growing and the employees are using the information that they know.
- Explicit knowledge the business is growing when employees are using information that is on paper

Within an organization there are several processes that occur: creation, dissemination, upgrade and application at the organization survival. The company wants to increase his value on the market by identifying, applying and integrating knowledge in different ways. The company can be affected in a positive way, when employees are exchanging knowledge between them by using technologies. There are four organizational processes for knowledge management:

- Knowledge creation it happens when new knowledge is created by the company's employees;
- Knowledge storing/ retrieval is about the way in which a relevant knowledge is identified and access;
- Knowledge transfer is about the way in which the knowledge is shared in the company;
- The last organizational process is referring to how the knowledge is transformed in an action.

RESEARCH METHODOLOGY

Type of Research

Type of this study is mixed method, depending on surveys and interviews for collecting data. Research on the descriptive and analytical approach (Quantitative Method) was adopted as a scientific approach commensurate with the nature of this research, and was back on the results of research, literature, books, Journal and other available

documentation related to the topic of the paper. In addition to qualitative method using interviews and investigation. In this research, an attempt made to broad base the research and uses a multi-pronged approach. The study derives its insights from a combination of secondary data and systems modeling.

Population and Sample

Populations of this research are the employees of the public sector in government in three departments as shown in the table1 below. Sample of this study was selected of entire population as following: Sample to be representative of the population is managers and employees of technology (IT & ICT) department in public sector. Sampling technique used in this research is random sampling of every department and strata sampling based on the selection of departments. Proportion of every department was based on the number of every department employee. One-way to determine the amount of sample that meets the matter, it was formulated by solving as follows.

n = N / (1 + Ne ^ 2) where: n = Number of Samples N = Total Population

e = Error Tolerance (tolerance error occurrence; level of significance; to social and educational typically 0.05) -> (^ 2 = squared). N = 207e = .05 n = 270 / (1 + 270* .052) = 136

Table 1: Sample Selection of Public Sector

NO	Public Sector Department Name	Sample	Sample
1.	Ministry of Communications and Information Technology (IT Department)	94	61
2.	IT Depart. At Post Office Sana'a	41	24
3.	Public Telecommunications Corporation	72	51
Total	Three Public Sector Departments	207	136

DISCUSSION

Background of E-Government and Cloud Computing

Information and telecommunication technology sectors grew from 2000 to 2005 and the investment in infrastructure development of technology and communication systems. There was high demand for faster internet connection, which prompted two ISPs to introduce ADSL and ISDNN digital subscriber line links. Telecommunication still suffers of many problems related to the economic and political instability for many years. Internet penetration is among the lowest in the Arab region. The e-government project was launched in 2000 to give citizens the ability to access Web services, finalize G2C transactions and the number of Internet users increased significantly but the quality of speed is still not up to the required level.

Description of Sample

Sample of this research was 136 employees of three different department of public sector. Demographic data of sample included gender, age, experience and qualifications of employees in the departments of public sector. Table2 shows these demographics.

Table 2: Demographic of Sample

Demographic	Number	Percent
Gender	N = 136	100 %
Female	F = 27	20 %
Male	M = 109	80 %
Age	N = 136	100 %
18 – 25	42 employees	31 %
26 – 35	57 employees	42 %
36 – 45	32 employees	23 %
46 or above	5 employees	4 %
Experience	N = 136	100 %
Less 5 years	37 employees	27 %
5 – 10	76 employees	56 %
up 10 years	23 employees	17 %
Qualifications	N = 136	100 %
Diploma	12 employees	9 %
BS	54 employees	40 %
MS	9 employees	6 %
Other degree	61 employees	45 %

Descriptive Statistics

Descriptive statistical analysis was aimed to describe the data briefly used for each variable. Description of the data is important because it can be used as a basic analysis is important because it can be used as a basic analysis before continued into inferential analysis. Descriptive statistical analysis in this research described the data for each variable and indicators of these variables that used to measure latent variables. Descriptive statistics describes the reality of e-government, administrative development and obstacles that facing implementation of such technology.

Reality of e-government

This result showed that reality of e-government still has some problems and faces some difficulties as well.Table 3 below shows the frequencies and percentage of 10 items that were used to examine the reality of e-government. Mean of all indicators (items) above 2 out of 5 with Total Mean 2.74 that means there is moderate perception of employees in e-government and reflecting the employee's perspectives. Contributing of participant's opinions was shown as: 9.4% not available, and 33.9% were few degrees available, 33.5% normal, 18.7% available and only 4.5% significant available, table 3 shows numbers of participants of sample and percentage of all categories as well.

Table 3: Reality of e-government

NA		FA		AM		A		SA		Total Sample	Mean
F	%	F	%	F	%	F	%	F	%		
34	25	53	39	7	5.1	42	30.9	-	-	136	2.41
27	19.9	43	31.6	28	20.6	38	27.9	-	-	136	2.56
16	11.8	36	26.5	33	24.3	40	29.4	11	8.1	136	2.95
7	5.1	33	24.3	69	50.7	20	14.7	7	5.1	136	2.90
-	-	54	39.7	61	44.9	13	9.6	8	5.9	136	2.81
-	-	59	43.4	77	56.6	-	-	-	-	136	2.56
33	24.3	64	47.1	32	23.5	7	5.1	-	-	136	2.09
-	-	59	43.4	65	47.8	12	8.8	-	-	136	2.65
-	-	15	11	24	17.6	66	48.5	31	22	136	3.83
11	8.1	45	33.1	60	44.1	16	11.8	4	2.9	136	2.68
128	9.4	461	33.9	456	33.5	254	18.7	61	4.5		**2.74**

There are ten items used to measure the reality of e-government, these items were explained in the table 3 as following: These results show that 76% of respondents' answers were few of the available grades, which are low degrees of providing the necessary capabilities for the application of electronic work. For the capacity to implement e-work results showed that there is a lack of human resources for e-work.

Table 4: Contributions of e-government applications in achieving administrative development

SDA		DA		N		A		SA		Total Sample	Mean
F	%	F	%	F	%	F	%	F	%		
-	-	-	-	18	13.2	66	48.5	52	38.2	136	4.25
-	-	-	-	19	14	69	50.7	48	35.3	136	4.21
-	-	-	-	19	14	82	60.3	35	25.7	136	4.11
-	-	10	7.4	26	19.1	65	47.8	35	25.7	136	3.91
-	-	-	-	20	14.7	54	39.7	62	45.6	136	4.30
-	-	10	7.4	44	32.4	49	36.0	33	24.3	136	3.77
-	-	26	19.1	10	7.4	39	28.7	61	44.9	136	3.99
-	-	26	19.1	21	15.4	48	35.3	41	30.1	136	3.76
-	-	26	19.1	62	45.6	48	35.3	-	-	136	3.16
-	-	7	5.1	26	19.1	72	52.9	31	22.8	136	3.93
-	-	105	7.7	265	19.5	592	43.5	398	29.3		**3.93**

Even service and maintenance still lack qualified human resources and electronic devices. It also indicates that there are few electronic applications and technical capabilities for electronic work but most of the answers were between a low degree and regular availability. Through the results of the direct observations, the link between the directorates and their branches is still very weak. Results also showed that staff uses traditional methods of communication between different departments. Other results also reflect the availability of communications between different departments, which also lack the use of electronic work There is also a lack of security system to protect the data and information of the beneficiary in all electronic transactions. Technical support for electronic work is very poor, with 90% of employees' answers unsatisfactory. Even e-mail staff is unavailable to all employees or is unimportant to work. The responses of all participants were low degree of availability and naturalness about the possibility of filing complaints, complaints and progress in electronic vacancies.

CONCLUSION:

This organization is reliably gotten to by customers by methods for Internet program. By and by day, it is standard transport model for couple of business applications, for instance, Electronic advising programming, Database organization system programming, Management programming group, CAD programming pack and Development programming group. Provider's applications running on cloud base license customer to use limits of cloud's establishment. These applications are open through various devices. Customers use them with interface to those contraptions. Interface is with web program or web email. Other than customer application limits, customer does not can control cloud's base like frameworks, servers, working structures, storing or even individual application capacities. It is uncovered that there is huge hole in understanding the cloud computing innovation among purchasers. Particularly most of the instruction businesses and non-IT ventures are misty and obscure about the cloud computing innovation. Larger part of customers see that cloud computing isn't verify and security is the fundamental blocking element to restrict the appropriation of cloud administrations. The system security danger is of monstrous concern pursued by information security concerns. Lower cost is just positive thought for execution of cloud benefits in associations. Cloud computing is a standout amongst the most dominant advancements that has gotten

extravagant of technologists around the world. Cloud computing can have a mess of profits for minor businesses – in any case, a hefty portion of the aforementioned organizations don't distinguish in what way the cloud can help them, as per a later overview. Greater part of businesses are embracing cloud computing services and making the Cloud a fundamental part of their information technology methodology. Cloud computing will be essential to business' victory through the following not many years. The profits distinguished by account executives incorporate cost investment funds; profit helps and builds to adaptability. Be that as it may, it appears that not all associations are that excited about the Cloud. Modest businesses have embraced cloud computing services. One explanation behind those low numbers may be an absence of comprehension about what cloud computing is and in what way it profits organizations.

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