

IT Governance Contingency Factors in Cloud Computing Services

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Abstract- The goal of this paper is to highpoint the flow remaining of IT Governance in cloud computing administration model's reception ground and talk a few issues in writing audits, the writers lead an exhaustive writing overview of broad writing surveys of distributed computing plans of action settings and guide all the current research issues that have been said. A gathering of watchwords is set to seek papers through scholarly databases and scholastic web indexes. Add up to 17 writing audits have been gathered as chosen to ponder. It involves of production sort, audit sort, geological range, and factors of IT administration possibility factor of cloud computing service models. Assist diligent work ought to be made to rise efficiently solid and hypothetically grounded investigation. In IT Governance inspect field, the topics in cloud-based reception are warming up as of late yet at the same time in its initial stage. This is not the primary far reaching research that intends to break down all the writing audit in cloud computing field, however this examination gets the most recent advancement different place about IT Governance Contingency Factor of Cloud Computing selection. The dispute of this paper can be astoundingly noteworthy and pleasing for supporting analysts to find their headings, and adding to the augmentation of composing of writing audits in IT Governance and distributed computing explore field.

Keywords—IT Governance; Cloud; Service model; Contingency Factor;

I. INTRODUCTION

Since the development of cloud computing in 2008, this wonder remains an intriguing dialog among Information Technology (IT) professionals and scientists. The real term of cloud computing is as yet being characterized and open to

elucidation, since no single comprehension of the term has increased adequate footing to be known as a standard [1]. One of the definitions broadly utilized reference in the Cloud Computing people group is the one proposed by NIST (U.S. National Institute of Standards and Technology). They characterize distributed computing as a model that empowers the utilizing of quick and advantageous access to the on-request arrange and configurable figuring assets (i.e., systems, servers, stockpiling, applications, and administrations), with a base administration exertion and collaboration with specialist co-ops. Essentially, there are three administration models of distributed computing: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) [2]. In the current advanced age, Information Technologies (IT) have turned into an essential piece of the authoritative framework of most learning serious associations in any divisions (e.g. producing firms, banks, colleges, doctor's facilities, and even governments) and nations. Customarily, IT assets (counting information, programming, CPUs, memory cards, and servers) are inside facilitated and kept up by client associations. Notwithstanding, went with persistent business and innovation development, current associations are upheld by an expanding number of IT applications and an ever-complex IT framework. This expanding measure of inner IT offices and assets has now turned out to be expensive and tedious for organizations to keep up. Therefore, and furthermore attributable to the worldwide monetary emergency begun in 2008, associations these days are

regularly confronting the situation to stay high utilization of cutting edge IT applications to support intensity from one perspective, and to considerably diminish their IT operation and upkeep costs then again. With the advancement of new IT and web innovations, distributed computing develops in re-penny years as an answer for this IT quandary.

The utility-based idea is a moderate approach to get present day IT assets and administrations. Utility-based registering assets identify with getting processing assets on a continuous premise at a charge. Associations have officially taken, or are thinking about a way to procuring distributed computing administrations in this way. Nonetheless, while the appropriation of the cloud administrations would additionally externalize the IT benefit conveyance scene, its administration capacities will stay fundamental to associations that get the distributed computing administrations [3], [4]. The adjustment in the IT provisioning model means associations should refresh or advance their IT administration capacities to understand the business esteem related with distributed computing administrations [5]. Truth be told, associations would need to consider their administration issues identifying

II. METHODOLOGY

The research question is what are the contingency factors of the IT Governance in cloud computing service model?

A. Survey process

We use the following principles and procedures to select and accumulate the literature reviews in cloud computing research field. First, we use the Google Scholar as the major search engine and online databases to form the primary research article pool with the open access articles. In order to cover as many research articles as possible, we will not consider the credibility of journals and conferences or the number of citations in our research scope. Then, we eliminate research article that does not fulfill all the flowing requests: journal articles or proceedings, literature review, and within the request time frame. All the details are listed in the following:

- Using the combination of academic search engine and academic databases. The Google Scholar is the picked web index. The layout of catchphrase that is connected to discover the examinations paper which identified with answer the exploration question is shaped utilizing Boolean administrator to screen the information, so we can diagram the need to seek the information in view of the images which are utilized. The symbols and Boolean operators that we utilized as a part of this paper, for instance "AND" and "OR". The combinations of the keywords are like this:
- (IT Governance) AND ((cloud) AND (computing)) AND (Service model) AND (Adoption) Then, the same process will be repeated in other major databases, namely Science Direct, ACM, IEEE

with their way to the distributed computing administrations before settling on any choices to draw in with the cloud specialist organizations, and revamp their IT framework and procedures. For instance, Marston [6] recommend that "CIOs and CTOs ought to proactively build up a by and large "cloud system" keeping in mind the end goal to decide a period based arrangement about which of their applications they can move to the cloud, and the time allotments related with each of them". Also, Fratto [7] states "distributed computing is going to your association, similar to it or not. An administration design gives IT the proactive control expected to continue securely". These contemplations on representing the distributed computing administrations should supplement associations existing structures for administering the IT assets. The subsequent IT administration condition would help associations in accomplishing their goals for getting their IT assets from the distributed computing condition. Along these lines, in this examination we address a key inquiry: What are the IT administration factors expecting to oversee in the distributed computing administrations to accomplish distributed computing administrations related business goals?

Xplore, and JSTOR, to enhance our research coverage.

- Research objects consist of journal articles and conference proceedings. Other papers such as master's theses, doctoral dissertations, books, reports, unpublished working papers, etc., are excluded in this study. By checking the abstract of the research that has been gathered above, we can eliminate the ones which have a loose relation with cloud computing and IT Governance do not fulfill our requirements. We focus on literature reviews of cloud computing in organizational contexts. The literature reviews of cloud computing related to organizations and IT Governance are our major objects, which means the literature reviews of cloud application development, technology, etc., will not be included.
- Research objects must use a literature review method or quantitative/qualitative research method as the major research method.
- According to the definitions of each category of literature reviews in cloud computing and IT Governance research field, we check the abstract and the full text to accumulate research to the coherent collecting pool.
- Checking the references of each publication to find more related studies.
- The time frame of this research is from January 2008 to May 2017.

B. Conceptual model

IT Governance is indicating the choice rights and responsibility standard to energize attractive conduct in utilizing IT[8]. In IT, administration is related with "duty of the Board of Directors and Executive Management. It is a vital

piece of big business administration and comprises of the initiative and authoritative structures and procedures that guarantee that the association's IT maintains and expands the association's technique and destinations". Weill et al characterized IT administration is tied in with determining the choice rights and responsibility standard to energize alluring conduct in utilizing IT[8]. It is broadly acknowledged that IT administration is in charge of two fundamental capacities; it conveys an incentive to the business and alleviation of IT dangers [9, 10].

The distributed computing condition offers a few chances to associations. Basically, these open doors identify with the distinctive conveyance models of distributed computing administrations, all of which allude to the diverse layers of the distributed computing engineering. Fig. 1 shows the layers of the distributed computing condition as proposed by Youseff et al. [11]

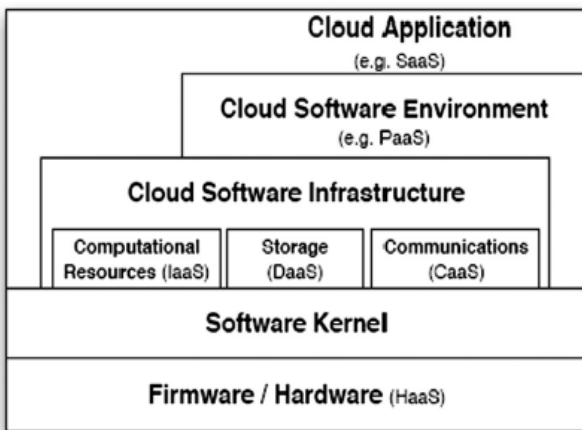


Fig. 1. the layers describing the cloud computing environment as proposed by Youseff(adopted from [11])

C. Data extraction

The literature review was scrutinized 445 papers from all criteria and sources, and from the abstract, we found 46 papers to be examined, which being to be candidate studies based on related abstract, title and research questions. After deliberating further, there are only 17 papers which related and can be utilized as part of this examination.

III. RESULT AND DISCUSSIONS

This research has projected to explore the factors IT Governance in cloud computing services. The usage cloud computing has developing a new opportunity and concerns both for basic practical usage or academic specific usage. Based on that, this study identified the general factors of opportunity and risk in cloud computing service model's adoption like explained in Fig 2. From the frequencies of the factors come out from the literature, the ranking of the factors from the most frequent factor are:

1. Security
2. Quality of service

3. Legal/Service level agreement(SLA)
4. Control
5. Financial/cost control
6. Privacy
7. Competencies
8. Governance
9. Performance
10. Vendor lock-in
11. Confidentiality
12. Scalability

Security in cloud computing condition is an essential worry in nowadays. The security in inserted frameworks has a few difficulties that caused by the one of a kind element of these frameworks. The progression of inserted framework is a direct result of enhanced instruments working with them. The basic approach to troubleshoot an implanted gadget is to interface it to a neighbourhood organize. An installed framework identified with the universal processing. The primary security issues for distributed computing in installed frameworks are caused by virtualizations [30].

Factor/Year	2010	2010	2011	2011	2011	2011	2011	2011	2012	2012	2012	2012	2014	2014	2014	2014	2015	2016
1 Security	14	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
2 Vendor lock-in	3	v											v					v
3 Control	9	v	v		v			v		v	v	v	v					v
4 Legal/SLA	13	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
5 Service	14	v		v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
6 Performance	4	v					v						v		v			
7 Cost	8	v				v	v			v	v	v					v	v
8 Governance	4	v						v		v							v	
9 Competencies	6	v				v				v	v			v				v
confidentiality	3						v		v									v
11 privacy	7		v	v					v			v			v	v	v	v
12 scalability	3						v					v						v

Fig. 2. Contingency factors of Cloud Computing Services

It is obvious that the nature of IT administrations [12][13][15][16][17][18][19] given by various merchants in the market can differ altogether. This might be especially valid for distributed computing, since the cloud showcase is still moderately new and juvenile.

Subsequently, client organizations may now and then feel unsatisfied about the administrations given by their cloud merchants, and consequently might need to change to an alternate specialist co-op. In any case, changing cloud sellers won't regularly be conceivable amid the term of administration contracts [[12][14][15][16][18][19][20][21][24][28]].

Besides, the possible of financial aspect/cost control, time and assets required for moving programming applications and information crosswise over various cloud servers regularly keep client organizations from changing their cloud merchants. Along these lines, client organizations were required to confront the danger of not having the capacity to switch their cloud sellers even because administration disappointment. This hazard occasion is otherwise called the seller secure situation in the cloud condition [12] [21] and [28]. As the idea of cloud computing condition, when touchy business and client information is prepared by outsider

specialist co-ops outside the association, business supervisors of client organizations are less instantly mindful of the event of any dangers in the cloud, and furthermore have no immediate capacity to control and deal with these dangers [12] [16][20][22][24] [25][26][27] and [28].

The other risk is other country law may permit government access to the outsourced information [32] or limits or restricted the fare of information to another nation (enactment) [31]. Besides client must mindful of area of the server farm which may cause the material locale [33].

Changing the source of Cloud Services requiring IT Governance Competences benchmarks for measuring the budgetary and working execution of the cloud provider, observing the general cost of the cloud contract [12][18][19][21][23][26][27] and [28], planning money related examination for contract transactions with the cloud provider, and organizing with the agreement organization for instalment strategies and spending methodology identified with the conveyed cloud administrations.

The other benefits of adopting cloud computing Service were increase the scalability, reduce the complexity of IT infrastructure, increase the agility and reduce the expenses, while in the other hand it can be the danger because we cannot control the vendor [18][23] and [28].

Enterprise must develop an unambiguous organization procedure and organization mean to obtain the most favorable position from their cloud exercises. The plans should set the bearing and focuses for conveyed processing and enterprise the opportunity to totally change IT to the targets of the wander and increment the estimation of the affiliation. Dispersed figuring organization is essential to manage possibility, modify feasibly, ensure intelligence, and grant targets. Gages and awesome practices can help fulfill cloud business destinations while tending to risk examinations and obligations. Governing

for threat is perhaps the critical idea of moving to appropriated cloud environment. We have to develop a couple of generous organizations threats, cloud sending, and IT organization frameworks to make a broad threat assessment IT organization/organization and organization structure for specific cloud activities. The traditional IT Governance frameworks (COSO, CobiT, ENISA, ITIL, and ISO) establish a governance foundation which is not materially altered by cloud implementations. Extra contemplations proffered by Weill and Ross, ITGI, and others have refined the approach. Similarly, as with the distributed computing condition, cloud administration is in its earliest stages. The advancement of the cloud administration model will proceed as the ground turns out to be more stable.

As the process are done, we can conclude that there are 3 top factors that are still considered as the contingency IT governance aspect in the cloud computing service model with the Security is still the top issue until the last three years.

IV. LIMITATION AND FURTHER RESEARCH

Built on the factor of threat that need to represent is perceived, yet there are IT Governance possibility factors [29] should be considered for future research. The statistic perspective, social angle, ethic, the sort of industry division, the development, territorial contrasts, estimate, technique, structure and trust and the philosophy to remove the hazard and opportunity factor in cloud benefit model's selection. It has been a test to build up the perspective, while there are various hypotheses to reinforce it however the amount of database is obliged, so the measure of the papers lacking to completely portray the truth. In this way, it needs boundless observational testing using formal estimation to confirm those parts.

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