

1. Introduction

Parallel and distributed computing have been evolving over the years so as to provide better quality of service to users while insuring efficiency in terms of performance, cost, and failure tolerance. A newly emerged computing paradigm is Cloud Computing. In this paradigm, software and/or hardware are delivered as a service over a computer network, typically internet. Cloud services differ in their abstraction level. They can be categorized into three levels: Infrastructure, Platform, and Software [1].

An increasing number of products and services are moving into the cloud. As computing power increases and the cost of storage capacity continues to plummet, the ability to store more data electronically in the cloud has become feasible and cost-effective, enabling real-time access to important data from any internet-connected device. Cloud Computing is the on-demand delivery of IT resources via the Internet with Pay-As-You-Go pricing models [1].

Cloud computing needs a strong rules to protect data, provide the quality of services, intellectual property rights, and enhance good pricing models are important to give users confidence as well as strict security measures. So we need regulations to govern these issues.

Effective regulation has resulted in many benefits, such as greater economic and technological growth, increased investment in the sector, better quality of service, lower prices and higher penetration rates [2].

1.1 Background and Motivation

Cloud computing offers a chance for delivering hosted services over the internet to remotely store, process and share digital data [3]. Satisfying these new demands will require data protection, pricing models, and quality of services.

The focus of our research dissertation is to achieve these issues, we must have a set of regulations for cloud computing.

Cloud computing is still a rather new field, and regulating the cloud is not simply a matter of creating a set of rules, handing them down to everyone who uses the cloud, and moving on to the next issue.

The objective of the regulators is to improve trust and understanding in the cloud services market. In the meantime, information is needed to help users make more informed choices among service offerings, terms and practices [4].

The reason that no specific new regulatory approaches are needed is that cloud computing represents a continuing evolution of technology [4].

Regulation can facilitate the adoption of cloud computing by establishing an environment in which both providers and users have certainty and trust [5].

1.2 Research Objectives

These regulations aim to maintain privacy, to help the safety and security of the cloud computing services from cloud vulnerabilities, loss or theft, and lead services providers to minimize risks associated with uptime requirements, disaster recovery and protection of sensitive data. And to create strong rules to protect data, provide the quality of services, intellectual property rights, and enhance good pricing models to give users confidence. So these issues need a regulation to govern.

1.3 Research methodology

This research adopts a “DESCRIPTIVE TYPE” of research. The research methodology used will be kept very simple.

- i. Primary data will be collected from experiences of other countries and from the literature concepts that will be collected from the internet, news papers, magazines and journals.
- ii. Sudanese experts who are knowledgeable in the subject will be interviewed.
- iii. The outcome of (i) and (ii) will be used to suggest guidelines in suitable Sudanese context.

1.4 Previous Studies

A number of books and articles have been published on the cloud computing issues. Most of them discuss cloud computing from technological or legal points of view. There is a lack of literature that specifically identifies reviews and also drafts regulations of cloud computing based on the existing legal frameworks. Those previous studies will be used in this thesis insofar they can provide general foundations for this research.

1.5 Thesis Organization

We organize the remainder of this dissertation as follows. We begin by providing background information, research methodology, and objectives in chapter 1, the state of art discussing terminologies about cloud computing and cloud service model in Chapter 2. Chapter 3 the regulation of cloud computing, while chapter 4 focus on Best practices of regulation, in chapter 5 discuss security, data protection and privacy on cloud, while quality of service and pricing model are discusses in chapter 6, Chapter 7 the results and recommendations.