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Resistance Factors Influencing the Adoption of Cloud Computing in Middle East Government Sectors

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Abstract

The ubiquity of Cloud computing continues growing and everyday more businesses are beginning to utilize Cloud services for their applications, software or infrastructure. Nevertheless, Cloud computing technology is not currently used widely in the government sectors, specifically in the in the Middle East for different factors. A successful adoption requires a decent comprehension of the advantages and difficulties exhibited by the Cloud. This study intends to investigate the resistance factors that influence the adoption of Cloud computing in Middle East government sectors. We believe that achieving this goal will lead to enrich the governments in Middle East with new knowledge that leads to enhance the adoption of Cloud computing in government sectors.

Keywords: Cloud Computing, Middle East Government Sectors, Resistance Factors

Introduction

Numerous governments in the Middle East have realized the significance of IT in enhancing and supporting their economies. Thus, many of the information and communication technology initiative have been started, particularly within governments [1]. Investments in IT, particularly in golf countries, including the likes of UAE, and Qatar have been massive. These governments are willing to take their departments and services online as they try to enhance their infrastructure and services to the citizens [2].

In view of this, Cloud computing is one of the dominating research topics in universities and research centers in relation to information technology. Cloud computing allows the supplying of IT services such as computing power or data storage just on demand. Precisely, only those resources which have been effectively consumed are charged by a Cloud service provider [3]. National Institute of Standards and Technology (NIST) [4] defines Cloud computing as follows: "Cloud computing is a model for enabling ubiquitous, convenient, on demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction." Based on NIST definition, Cloud computing has the next features: Users can achieve self-service according to their needs, access to any network device, share resources and redeployment tasks. Under the conditions of Cloud computing, services and resources usage is constantly monitored, controlled and reported for fair pay-as-you-go model implementation.

Regardless how good Cloud computing can be useful for government projects, it still has certain factors effecting the success in in adopting Cloud computing in many regions. The aim of this study is to identify and

understand the factors that may affect the adoption of Cloud computing in the Middle East government sectors. We believe that achieving this goal will lead to enrich the governments in Middle East with new knowledge that leads to enhance the adoption of Cloud computing in government sector.

Middle East Background

The Middle East is a geographical region that has been of great importance in history since earliest times. Strategically located, it is a natural land bridge connecting the continents of Asia, Africa, and Europe. It was the site of some of the world's earliest civilizations and the birthplace of three great religions--Judaism, Christianity, and Islam. In recent times its enormous deposits of oil have made the Middle East more important than ever [5].

The Middle East has a population of about 500 million. The distribution of the population varies widely [5]. The most of Middle East countries are considered to be an absolute monarchy. The authority represented by kings and presidents combines all authorities: legislative, executive, and judiciary and also the prime minister, and they have the power over the council of ministers. The majority of Middle East governments are oppressive and not democratic and often focused on a divine king [6].

The societies in Middle East are by nature religious, and Islam plays a main role in defining its culture, which acts as a main effect in determining the traditions, obligations, and social forms [7]. Many governments wish to modernise all sides of life in Middle East society and for this reason have established a long-term plan to achieve their missions. These governments know give priority to the information and communication technology (ICT) due to its fundamental role in the economies of a lots nations [8]. ICT adoption is also increasing rapidly in the public sector. In Middle East the ICT spending has grown since 2001, to reach as a total expenditure of US$ 173 billion on ICT projects [9].

However, adopting information technology especially the new one in a place like Middle East is a very serious process and includes many challenges. Actually, it is not frequently a simple step. These challenges not only related to technical issues, but also go further to other fields such as political, social, and cultural factor.

Resistance Factors Influencing the Adoption of Cloud computing in Middle East Government Sectors

As a methodology, this study aims to collect knowledge about Cloud computing for governments in the Middle East typically from earlier studies, journal papers, book chapters and reports on the same topic. This study is exploratory in nature. The rationale is to understand the resistance factors which influence on Cloud computing adoption in Middle East government sectors. From the literature, we identified 5 resistance factors, these factors are:

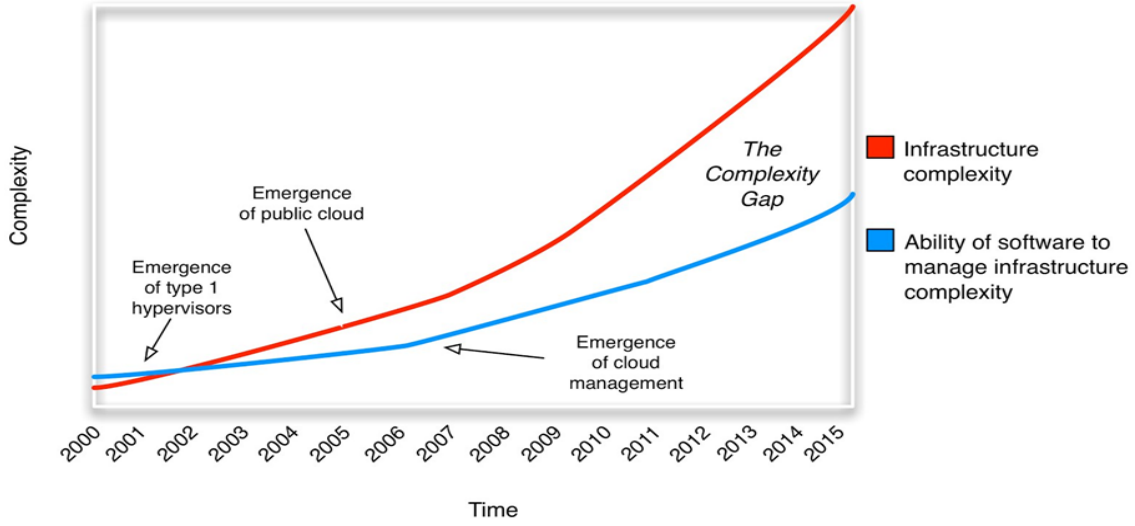
1. Security

Literatures show that security concerns are critical issue which prevents government from adopting Cloud computing technology [1, 4, 10]. With applications and data being hosted by a service provider, data is no longer under the control of management and therefore prone to vulnerabilities. Hosting applications and data in shared infrastructures increases the potential of unauthorized access and raises concerns such as identity management, authentication, compliance, confidentiality, integrity, availability of data, network security and physical security [11]. Security concerns are being seen in west countries differently from the Middle East countries because of reasons related to cultural and political issues. In west, the dealing with the Cloud security concerns could be managed and dealt by applying the state-of-art techniques and tools to meet the security standards, while the political factors have not any effect on the adoption of cloud computing. In contrast, the culture in Middle East region effects on many aspects of dealing with technology, while the political factors have a direct impact of handling and dealing with the security concerns [12].

Security concerns are seen differently by each country in Middle East region, and also differ between military and civilian governments [6]. The Middle East governments are mainly controlled by the ruling authority that has very strict and over-concerning tends which may effect on the decision of technical opinions and advises. The political context in Middle East influences the technical solutions that could be provided. Many technical initiatives have been delayed or cancelled because of the same reason [6]. So, any proposed solution in this matter should be presented to the Middle East authority in order to convince them to accept the solution.

2. Complexity

The literatures revealed that most government employees in Middle East governments are not familiar with new technologies which may prevent them from adopting any technology in general and Cloud computing in particular [8]. In addition, the majority of Middle East governments perceived that it is hard to manage the complexity of the newfound infrastructure [12]. The below chart is an attempt to show the complexity challenge in its historical context [13]. The red line plots the growth of infrastructure since 2000; The blue line plots the ability of software to manage this complexity. The gap between the red and blue lines is known as the Complexity Gap, where chaos can reign and Cloud initiatives fail.



The Complexity of Managing Infrastructure

So, the Middle East governments see the complexity of Cloud computing services might discourage Middle East governments from moving forward to Cloud computing, especially if their staff are not familiar with the new technology.

3. Privacy and Trust

The findings in literatures show the privacy of government is counted as one of the most important factors in Cloud computing, and this problem may lead to prevent to adopting it [11]. There are no laws which block a user from exposing data to the cloud providers [14]. This exposure of data sometimes leads to critical consequences. In Middle East each government may have different characteristics in terms of trust and privacy, and these characteristics are influenced by the regulations and policies of that government. The military governments paid more attention to trust and privacy factors because they are afraid of being exposed or watched by the public, while civilian governments have less interest [6].

4. Motivations

The findings in literatures show that there is no important motivation for governments in Middle East pushing them towards adopting Cloud computing, since these are non-profit sector [15]. Such governments are not interested to be modern or innovative. The findings show that the ruling authority have a direct influence to moving toward adopting the new technologies, but they are not willing to go further in this direction in the near past [6].

Nowadays, some governments in Middle East try to make the life of their citizens easier by offering some electronic services such as e-health, e-payment e-tax, and this is creativity from the government. Some ruling authority promotes government to apply information technology and to deliver their services online for the community [8]. Neither of the ruling authority forcing the governments to move to Cloud computing. So, the high authorities represented by kings and presidents must encourage governments to adopt Cloud computing in order to develop government performance.

5. Culture

The findings show that the culture in Middle East has a direct influence on all sides of the life including the information technology [5]. It effects governments as well as citizens. Culture plays an important role in the acceptance of new technologies and particularly the Cloud computing [8]. The findings also show that the national culture of some countries in Middle East has negatively affect the adoption of Cloud computing. For example, the citizens are used to going personally to the offices of government to complete their work, and they also enjoy having face-to face meetings with the employees and managers in order to accomplish their mission [14]. In addition, the majority of the Middle East citizens are afraid to deal with any electronic services especially the services that related to the money [8].

Conclusion

The Internet and its applications as greatly influenced us and, in fact, has become a major part of our daily lives. The number of users of the Internet is increasing every day, so the demand and use of Cloud computing has become very significant. Cloud computing has become a highly demanded service or utility due to the advantages of high computing power, cheap cost of services, high performance, scalability, accessibility as well as availability. Cloud computing can really help the Middle East countries not only in government sector but in development as a region. However, adopting Cloud computing in Middle East is a very serious process and includes many resistance factors. These resistance factors not only related to technical issues, but also go further to other fields such as political, social, and cultural factor. Based on the studied literature, the study identified the most important five factors which prevent the governments in Middle East countries to adopt Cloud computing in their work. These factors consist the main reasons why many governments in Middle East decelerated to make decisions about adopting the Cloud computing. However, the government in Middle East have been waiting for the ruling authority to give the needed orders to the government leaders to start moving to cloud computing, as this how things work in Middle East countries in such cases. Individual initiatives are very limited with such cases. So, it was clear that the process will not start unless the ruling authority makes the decision.

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