WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Cloud Computing Impact on Pharmaceutical Companies

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ABSTRACT

The goal of this study is to find out what the qualitative benefits and drawbacks of cloud computing are for developing biotech and pharmaceutical enterprises. The study looked at the benefits and drawbacks of cloud computing from the standpoint of four small biotech and pharmaceutical companies, as well as how it affected how they conduct business in an increasingly complicated global society. Action research, observations, interviews, surveys, and case studies were among the mixed qualitative methodologies used in the study, which allowed for cross-examination. Triangulation was used in the analysis, which led to the finding of patterns and themes, as well as separate interpretations and statements of perceived benefits and barriers. According to the findings, small biotech and pharmaceutical companies find cloud computing to be very appealing, with only a few minor downsides that can be avoided with careful strategy and implementation.

Keywords: Cloud computing, biotech, pharmaceutical.

INTRODUCTION

In today's global economic climate, start-up and emerging biotech and pharmaceutical organizations are seeking greater cost-saving measures, increased agility, and the type of scalability that responds to the rapid changes in both technology and business. Cloud computing, with its low cost pay-as-you-grow business model, could potentially help these companies manage similar changes while transforming Information Technology (IT) into an engine that drives business (2010). On-demand clouds appear to provide users with enhanced portability and the ability to have secure access to information from virtually anywhere, with almost any mobile device, regardless of location or time of day, whether from a lab, a client location, while traveling, or while in an office meeting. Furthermore, small and medium-sized life science businesses (SMBs) offer a distinct market that could benefit from this new computing paradigm. These enterprises could then extend their operations as needed while quickly completing complex research-to-market processes that they couldn't do on their own.

Cloud Computing Model

End-users connect to applications or services operating on sets of shared servers, frequently hosted and virtualized, rather than traditional dedicated servers, in the cloud computing model. Client-server computing has supplied programs that were assigned to specific hardware and often resided in on-premise data for over 30 years. End-users benefit from on-demand cloud computing because they may use it from any Internet-connected device, at any time.

REVIEW OF LITERATURE

This review of the literature aids in the development of a theoretical framework for the research topic. To arrive at their conclusions, independent authors used a range of qualitative and quantitative methodologies, but none of them included the specific qualitative mixed methods used by this researcher.

Improved Connectivity

In life science research and development, effective connectivity is critical. (2011) proposed that cloud computing, which relies on a single Internet connection, might save the time and effort required to individually integrate each study system at separate sites while yet providing access to everyone. CSPs, according to Bowers (2011), might give SMB life science businesses with best practices that they otherwise couldn't afford.

Cloud Databases

SMB life science firms can use this type of cloud software framework to spread massive data sets over clusters of machines utilizing a simple programming methodology (Taylor, 2010). Do and Bier (2010) investigated a cloud-based relational database that runs on many load-balanced servers and can be accessed using a web browser's graphical user interface. Do et al. (2010) has developed a complete platform for the generation, storage, and integration of biological information that can aid researchers in making innovative laboratory findings. (2010) developed a hybrid cloud that uses the Message-Passing Interface (MPI) standard, which is used to program parallel computers, to provide a compelling production environment for life sciences applications.

METHODOLOGY

The methodology used in this study was qualitative action research in a mixed mode, which provided research techniques that were used to collect and analysed primary data. Both interpretive and aggregative data were collected using action research, first hand observations, surveys, interviews, case studies, and peer reviewed literary sources. This approach used multiple data sources and methods, to maintain the credibility of the research, and provide more comprehensive and reliable analysis based on triangulation, or cross-examination.

Population

The population in this research included four emerging biotech and pharmaceutical companies, each with less than 100 employees. Three organizations are private companies and one is public, with current market value of less than 2500 per share.

Data analysis

The various data types collected (text, audio, images, etc.) were then input into TAMS and computer assisted qualitative data analysis software (CAQDAS) system, which aided in coding and the identification of themes.

RESULTS

This study used an inquiry process of research, analysis, and synthesis. A meta-analysis was conducted from reading and reviewing research data, the literature review, observations, notes, interviews, surveys, transcripts, case studies, and research documentation provided by the participant companies. Obvious patterns that reflect the advantages and disadvantages of cloud computing were gathered. Interpretive and aggregative data from micro-research, personal experiences, interview responses, case studies, and the literature review were sorted and catalogued. The concept map was regularly updated, which helped visually classify, code, and sort clusters of meaning. The researcher was then able to recognize and interpret various patterns and the major issues and sub-issues.

Researcher Observations

in this study acknowledged they depend on automatic change management with no additional expenditures for future updates, in terms of software and hardware. Participants expressed concerns about reliability in terms of changes made by CSPs and how these changes will affect their business needs and/or might negatively impact their discovery and production environments.

Case Studies

As small life science organizations search for novel methods to meet their business needs, CSPs are responding and helping them with innovative ways to meet those challenges. Ten oncologists at South Florida Radiation Oncology (SFRO) used to scale quickly their business processes while providing better integration (McGee, 2011).

CONCLUSIONS

According to the findings, small biotech and pharmaceutical companies considered cloud computing to be very appealing, with only a few minor downsides that may be avoided with careful strategy and implementation. The major and minor themes were produced through the researcher's use of action research, first-hand observations, interviews, surveys, and case studies in coming to conclusions. Reduced costs and faster R&D were identified as advantages of cloud computing in the emerging biotech and pharmaceutical organizations studied, as well as improved efficiency, enhanced agility, superior storage and data analysis, improved change management, superior collaboration and connectivity, enhanced security, faster drug discovery, better performance, and appreciable regulatory proficiency.

FUTURE WORK

This research could be expanded into a larger study involving significantly more participants and organizations, helping to determine additional opportunities or threats cloud computing would pose to those organizations and their business processes.

ACKNOWLEGMENT

It gives me great pleasure to present my Research paper on “cloud computing impact on pharmaceutical companies”. I would like to express my sincere thanks to all the teachers who helped us throughout. I would like to acknowledge the help and guidance provided by our professors in all place during the presentation of this research paper. We are also grateful to, Head of Department. This acknowledgement will remain incomplete if we do not mention sense of gratitude towards our esteemed Principal who provided us with the necessary guidance, encouragement and all the facility available to work on this project.

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