Review of: "Cloud Computing Paradigm in Academics"

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Potential competing interests: No potential competing interests to declare.

In this paper, the authors present the work '**Cloud Computing Paradigm in Academics**'. The paper is worthy of investigation; however, the manuscript needs the following points to be addressed before it can be considered for publication:

Abstract

Strengths:

1. Highlights the surge in popularity and demand for cloud computing, especially in the education sector.
2. Emphasizes the potential benefits of integrating cloud computing in academia.
3. Acknowledges the existing research and literature supporting the adoption of cloud-based concepts in education.
4. Addresses the crucial question of choosing a cloud computing platform, considering its significant impact on institutions.

Weaknesses and Shortcomings:

1. The abstract does not explicitly mention specific intricacies or challenges associated with adopting a cloud computing paradigm in academia.
2. The abstract does not provide details on the methodology or approach used in comparing the cloud computing platforms.
3. It does not discuss potential limitations or drawbacks of implementing a cloud computing model in education.
4. The abstract lacks specific solutions or recommendations for overcoming the complexities of adopting a cloud computing paradigm.

Solutions:

1. To address the shortcomings, the paper should provide more specific details on the intricacies and challenges of implementing cloud computing in academia.
2. The methodology and approach used in comparing the cloud computing platforms should be clearly explained to enhance the credibility of the study.
3. The paper should discuss potential limitations or drawbacks of the proposed cloud computing model and provide strategies to mitigate them.
4. It would be beneficial to include specific recommendations or guidelines for educational institutions on how to

successfully embrace the cloud computing paradigm.

Introduction

Strengths:

1. Provides a historical perspective on the development of computers and their importance in society.
2. Clearly introduces the concept of cloud computing and its analogy to paying utility bills, making it relatable to readers.
3. Highlights the role of cloud service providers in managing infrastructure, scalability, and security.
4. Indicates the need for trust and awareness of terms and conditions, fair use policies, and privacy policies when selecting a cloud service.

Weaknesses and Shortcomings:

1. The introduction could provide more specific examples or statistics to support the claim that computer processing power is becoming insufficient.
2. It does not explicitly mention the specific challenges faced by educational institutions in adopting cloud computing.
3. The introduction lacks a clear statement of the objectives or research questions that the paper aims to address.

Solutions:

1. To address the weaknesses, the introduction can include specific examples or studies highlighting the limitations of existing computer processing power.
2. It should clearly outline the challenges faced by educational institutions, such as data management, infrastructure maintenance, or scalability issues.
3. The introduction can be improved by stating the specific objectives or research questions that the paper intends to answer, providing a clear roadmap for the reader.

Overall, the introduction effectively introduces the topic of cloud computing in academia and its potential benefits. However, by providing more specific examples, addressing challenges, and stating clear research objectives, it can be strengthened to provide a more comprehensive overview of the subject matter.

Literature Review

Strengths:

1. Provides a historical context by mentioning the misconception that cloud computing is a novel idea and highlighting the evolution of data formats used by application service providers.
2. Explains the role of virtualization in cloud computing and its significance in meeting the demands of educational institutions.
3. Cites examples, such as the University Sains Malaysia, to illustrate the need for a robust computer network in supporting various economic operations within educational institutions.

4. Addresses performance issues related to running multiple virtual machines on the same host, acknowledging the findings of previous studies.

5. Highlights privacy concerns and the importance of developing more cloud-based applications.

6. Mentions the capabilities and advantages of Google Cloud services, specifically the G Suite, in facilitating collaboration, scalability, and simplifying the management of roles and responsibilities.

Weaknesses and Shortcomings:

1. The literature review could benefit from providing more specific references to the studies cited (e.g., providing author names and publication details).

2. The section lacks a cohesive structure, making it difficult for readers to follow the flow of information.

3. Some statements lack clear connections to the main topic of cloud computing in academics, such as the introduction of blended learning, mobile learning, and remote learning.

Solutions:

1. To address the weaknesses, the literature review should provide specific references for the studies mentioned, allowing readers to access the original sources and gain a deeper understanding of the research.

2. The section can be reorganized to have a clearer structure, grouping related information together and ensuring a logical flow of ideas.

3. Statements that are not directly relevant to the topic of cloud computing in academics, such as blended learning and mobile learning, can be either omitted or expanded upon with clearer connections to the main topic.

Overall, the literature review effectively presents various aspects related to cloud computing in academia. However, improvements can be made to enhance the clarity, structure, and relevance of the information provided.

Related Work

Strengths:

1. Provides specific examples, such as Clever, to demonstrate how cloud solutions have positively impacted the ed-tech industry.

2. Highlights the convenience and accessibility offered by cloud-based platforms, particularly in terms of single sign-on functionality and connectivity within the educational community.

3. Emphasizes the importance of data privacy and the commitment of Clever to protecting customer data and maintaining a safe environment for users.

Weaknesses and Shortcomings:

1. The related work section could benefit from providing additional examples or studies that showcase the broader impact of cloud computing in academics.

2. The section could provide more context and information on the specific challenges faced in academia and how cloud

solutions have addressed those challenges.

Solutions:

1. To address the weaknesses, the related work section can be expanded to include more examples or studies that demonstrate the various ways in which cloud computing has been implemented in academia.
2. The section can provide more context by discussing the specific challenges faced by educational institutions, such as data security, scalability, or accessibility, and how cloud solutions have effectively addressed those challenges.

Overall, the related work section effectively presents the benefits of cloud solutions in academia through the example of Clever. However, further expansion and inclusion of additional examples or studies can strengthen the section and provide a more comprehensive overview of the impact of cloud computing in academics.

Important Cloud Services

Strengths:

1. Cloud storage services like Google Drive and Amazon S3 provide scalable and reliable storage solutions for educational institutions.
2. They offer various storage classes with different features and pricing options, allowing institutions to choose the most suitable storage type based on their specific needs.
3. These services provide advanced security features and compliance with industry standards, ensuring the protection of sensitive data.
4. Cloud storage services enable easy access, management, and control of data objects, including versioning and data analytics capabilities.
5. They integrate well with other cloud-based services, such as Amazon Athena, for enhanced data analysis and querying.

Overall, the important cloud services section highlights the benefits and features of Google Drive and Amazon S3 in the context of educational technology. By considering the cost, access controls, and data management strategies, institutions can effectively utilize these cloud storage services to meet their storage needs and enhance their overall educational technology infrastructure.

Proposed Model

Strengths:

1. The proposed model leverages the popularity and acceptance of AWS, a widely used cloud service provider, ensuring reliability and availability of the cloud-based application or platform.
2. The model incorporates various AWS services, such as Amazon S3 for secure data storage and Amazon EC2 for virtual desktop interfaces, providing scalability and flexibility to meet the needs of educational institutions.
3. By utilizing data analytics and machine learning algorithms, the model enables the generation of actionable insights

and reports, facilitating data-driven decision-making for faculty members, institution heads, and students.

4. The use of Amazon S3 buckets and encryption rules ensures data security while allowing for the efficient management and movement of data using lifecycle rules.

Weaknesses and Shortcomings:

1. One potential weakness is the complexity of setting up and managing the proposed architecture, especially for institutions with limited technical expertise. Implementation and configuration may require additional resources and expertise.
2. The reliance on a single cloud service provider like AWS may pose a vendor lock-in risk, limiting flexibility and making it challenging to switch to alternative cloud providers if needed.
3. Cost considerations should be taken into account, as the utilization of AWS services may involve ongoing expenses based on resource usage and subscription plans.

Solutions:

1. To address the complexity of setting up and managing the proposed architecture, institutions can consider partnering with experienced cloud service providers or consultants to ensure proper implementation and ongoing support.
2. To mitigate the vendor lock-in risk, institutions can adopt a hybrid cloud approach, leveraging multiple cloud service providers or maintaining some on-premises infrastructure for increased flexibility and vendor independence.
3. Cost optimization strategies should be implemented, such as monitoring resource usage, utilizing cost-effective pricing plans, and regularly evaluating the need for AWS services to ensure cost efficiency.

Overall, the proposed model showcases the benefits of leveraging AWS services for educational institutions. By addressing the complexity, vendor lock-in risk, and cost considerations, institutions can effectively implement and maintain the proposed cloud-based architecture, leveraging the strengths of AWS services to enhance their educational technology infrastructure.

Conclusion

Strengths:

1. The conclusion emphasizes the relevance and importance of the proposed cloud computing paradigm in addressing the challenges posed by the global pandemic and the increasing popularity of work-from-home arrangements.
2. The mention of the diagram depicting the relationship between users, threats, and vulnerabilities demonstrates the research's focus on addressing security concerns and mitigating risks.
3. The acknowledgment of the need for a more detailed architecture suggests the research's awareness of the importance of considering aspects such as cloud security, scalability, and performance in the proposed model.

Weaknesses and Shortcomings:

1. The conclusion could have provided more specific details on the proposed model's strengths and potential benefits to

academic institutions and stakeholders.

2. It does not explicitly address potential limitations or challenges that may arise during the implementation of the proposed model.

3. The conclusion lacks specific solutions or recommendations for addressing the identified weaknesses or shortcomings.

Solutions:

1. To enhance the conclusion section, the research paper could provide a concise summary of the strengths of the proposed cloud computing paradigm, such as improved accessibility, flexibility, and collaboration in the academic setting.

2. The paper could address potential challenges in implementing the model, such as the need for adequate infrastructure, training, and data security measures, and suggest strategies or best practices for overcoming these challenges.

3. It would be beneficial to provide specific recommendations for addressing the identified weaknesses, such as conducting thorough security assessments, implementing robust scalability measures, and continuously monitoring and optimizing performance in the cloud environment.

By incorporating these solutions, the conclusion section can provide a more comprehensive and actionable summary of the research findings, reinforcing the strengths of the proposed cloud computing paradigm while addressing potential weaknesses and shortcomings.

Other shortcomings of the manuscript:

•   Title of the manuscript is too general and broad. It should be specific and mention the main study and focus of the proposed scheme.

•   The number of references is not enough for a first-rate review paper. They should be increased not only by quantity but quality (include more recent and updated references).