Adaption of cloud computing types of software as a service

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Abstract. Cloud computing is an information technology service that can be used or accessed by users to manage data and applications through the internet network. Software as a service is one type of cloud computing service in the form of software. The purpose of this study is to analyze the use and students' acceptance on cloud computing types of Software as a service including the most used applications, factors that influence usage, benefits obtained, and to find out their use related to learning and learning activities in school. The researcher used a mixed method research design approach to obtain qualitative and quantitative data. Data collection by conducting interviews and giving questionnaires to 367 students from 10 high schools in Garut. The findings show that the Google application is widely used by students. The compatibility factor is the reason for using cloud computing technology as a type of software as a service. Broad access is a benefit obtained by students in using cloud computing type of software as a service. It needs to be given an understanding to students about the use of cloud computing type of software as a service for learning activities in education at school.

1. Introduction

Cloud computing as an innovation in internet technology. Cloud computing is a technology that makes the internet the center of data management and applications, where computer users are given access rights (login) [1-3]. The innovation of cloud computing provides benefits to users in the following table [4].

| Table 1. Differences between the traditional model and Cloud computing. |
|---------------------------------------------------------------|
| **Conventional Computing**                                    | **Cloud Computing**                      |
| Acquisition Model                                             | Service acquisition                      |
| Hardware, Physical Space, Infrastructure of installation and  |                                              |
| operation                                                     |                                              |
| Business Model                                                | Payment based on demand                   |
| Cost and depreciation of assets, administrative overhead      |                                              |
| (maintenance, support, the safety of equipment, refrigeration)|                                              |
| Access Model                                                  | Internet, through various types of devices|
| Internal network, intranet                                   |                                              |
| Technical Model                                               | Scalable, Elastic, Dynamic                |
| One tenant, Without sharing, Static                           |                                              |

Software as a Service (SaaS) as one type of cloud service in the form of software [5-7]. User software (SaaS) without having to understand and manage how data is stored or how the application is repaired...
because the service provider provides storage and maintenance facilities [8-11]. The applications are accessible from various clients such as a web browser. This study aims to determine the acceptance (adoption) of cloud services (SaaS), including the most widely used applications, the factors that influence usage, the benefits obtained, and understand its use related to learning and learning activities in schools.

2. Methods
This study uses a qualitative and quantitative approach. The population and sample in this study were 367 students in Senior High School as users of cloud computing (SaaS). Data collection is done by providing questionnaires and interviews. The interview was conducted on a sample of 106 students.

3. Results and discussion
3.1. Stage: Distribution of questionnaires
The questionnaire was given to 367 students aiming to find out the most widely used application on the Cloud Computing service type SaaS.

![Figure 1. The adaption and use of SaaS application.](image1)

In figure 1, google apps as the most widely used application by respondents 315 users. Google apps include google docs, google spreadsheet, and Gmail. Respondents who used Microsoft apps were 289 users. Microsoft apps are comprised of applications including Microsoft office (excel, PowerPoint, word) and email service (Hotmail, outlook). Adobe Creative Cloud is used by 56 respondents. Other research revealed the high level of google application users [12,13].

![Figure 2. The use of SaaS application online storage.](image2)
In figure 2, SaaS Cloud-based online storage application that is widely used by google drives with 320 users, one drive 215 users, Dropbox 200 users, iCloud 35 users, and 15 respondents did not use.

![Figure 3. Use SaaS on activity learning.](image)

The next question is about using SaaS in school learning and learning activities. Questionnaires were given to 367 students/respondents. In figure 3, 46% of respondents stated that they did not use cloud-based SaaS services in their learning activities at school. The use of social media is 22% and 32% uses email as a medium for students to support their learning activities. Learning activities include sharing the subject matter between students, receiving learning materials from the teacher, the place for discussion, and the place to do school work on e-learning. Several studies have been conducted on the impact of using cloud computing in learning and the results of students provide positive responses and significant learning outcomes [14,15].

3.2. **Stage interviews**

The interview phase was carried out to 106 students. This interview was conducted to find out information about the reasons for respondents using Cloud-based SaaS applications. Researchers group questions into 3 categories including complexity, compatibility, and reliability.

![Figure 4. Reasons for use.](image)

In figure 4, students as respondents made the suitability factor as a reason to use cloud computing services of the SaaS type. The compatibility factor includes everything that is needed by the user such as the suitability of the device used and owned by students, the use of applications that suit their needs,
facilities provided by the provision of services, functions received by the user, and benefits perceived by the user. The complexity factor is the difficulty level of students in using SaaS can be overcome properly. Based on the results of interviews, most students stated that they had no difficulty in using this service.

4. Conclusion

- The cloud-based SaaS application that is widely used by students is google apps (google docs, email service (Gmail), and google drive) 315 users.
- Use of cloud-based SaaS applications to support student learning activities in schools utilizing social media (22%) and e-mail (32%) and not using (46%).
- Compatibility factor as the highest reason 95 users for students to use cloud-based SaaS applications. Compatibility factors include the suitability of the device used, the benefits obtained according to the application function, and facilities provided by the provision of services.

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