



Utilization of Cloud Technology Applications for Efficient Office Administration among Secretaries in Rivers State Universities

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Abstract

The study aimed at assessing the utilization of cloud technology applications for efficient office administration among secretaries at Rivers State universities. Three research questions were posed and answered, while three corresponding hypotheses were formulated and tested at 0.05 level of significance. The research design adopted for this study is an analytic-descriptive design. The population for this study consisted of all 91 secretaries at Rivers State universities. The instrument used for data collection was the "Cloud Technology Applications Questionnaire (CTAQ)". The CTAQ was composed of 30 items graded on a four-point scale. The instrument was subjected to content and validity checks by three experts, and a reliability test was conducted using Cronbach's alpha, which gave an overall coefficient of stability of 0.75. Data gathered for research questions was analyzed using mean and standard deviation, and the formulated null hypotheses were tested with a t-test at 0.05 alpha. The findings revealed, among other things, that secretaries in Rivers State universities used platform as a service (PaaS) for office administration to a lesser extent than they used software as a service and communication as a service (CaaS) for office administration. Also, findings revealed that there is no statistically significant difference in the mean ratings of university secretaries at Rivers State University and Ignatius Ajuru University of Education for their use of platform as a service (PaaS), software as a service (SaaS), and communication as a service (CaaS) for office administration. Based on the findings, it was recommended, among others, that universities should create a digital environment to increase and support the use of cloud computing services or applications among employees.

Key Words: Cloud Technology Applications, Software as a Service, Communication as a Service, Office Administration, Secretaries.

Introduction

With the introduction of the internet, universities in Nigeria are making their way into cloud computing unevenly but with a sense of inevitability to process, disseminate, and access organized information from a position of rest at any given point in time. In the workplace, it has been a great relief for workers to participate in meetings as well as communicate with desk-based employees in the organization through cloud technology applications (Jadeja & Modi, 2012). Having a mobile office can potentially boost employee productivity and reduce the stress of



working from desk to desk with a volume of files. Cloud technology provides a more convenient way for individuals and organizations to collaborate in order to carry out their daily operations and activities within an organization.

Many organizations, universities, and individuals use computers in the office or at home for administrative and other activities. This blend of office activities is made possible with the application of cloud technology tools in managing day-to-day tasks. Cloud technology is defined as a conglomerate of computing services, which include servers, storage, databases, networking, software, analytics, and intelligence over the internet (the cloud), to offer faster innovation, flexible resources, and economies of scale for businesses (Microsoft International, 2021). Cloud technology is the delivery of computing services (servers, storage, databases, networking, software, analytics, and intelligence) over the cloud to offer faster innovation, flexible resources, and economies of scale. Cloud computing is a big shift from the traditional way office businesses are carried out in organizations for various reasons, including cost, global scale, performance, security, productivity, speed, and reliability.

Cost: With cloud computing, you don't have to buy hardware, software, set up and run on-site datacenters with racks of servers, electricity for power and cooling around the clock, or manage the infrastructure.

Global scale or scalability: The benefits of cloud computing services include the ability to scale elastically. In cloud computing language, global scale or scalability refers to how quickly your system can change and adapt to new needs.

Performance: The biggest cloud computing services run on a worldwide network of secure datacenters, which are regularly upgraded to the latest generation of fast and efficient computing hardware. This has a lot of advantages over a single corporate data center, like shorter network latency for applications and better economies of scale (Etim, Erema, & Ekpo, 2016).

There are many policies, technologies, and controls that cloud providers can use to make sure your data, apps, and infrastructure are safe from threats.

Speed: Most cloud computing services are self-service and on demand, which means that even huge amounts of computing resources can be set up in minutes, usually with just a few mouse clicks. This gives businesses a lot of flexibility and takes the stress out of capacity planning.

Productivity: On-site datacenters typically require a lot of "racking and stacking"—hardware setup, software patching, and other time-consuming IT management chores. Cloud computing removes the need for many of these tasks, so IT teams can spend time on achieving more important business goals.

Reliability: The reliability of cloud computing is the expectation that the app or service is up and running, accessible on any device at any time from any location, with no interruptions or downtime, and able to perform the tasks the user needs to get his or her job done.

Not all cloud computing services are the same, and not one type of cloud computing is right for everyone. Many different types, models, and services have been developed to help businesses find the right solution. These things have helped businesses find the right solution.



In fact, most cloud computing services fall into four broad categories as a service: infrastructure as a service (IaaS), platform as a service (PaaS), communications as a service (CaaS), software as a service (SaaS), and three categories of network, which are public, private, and hybrid (Ibraheem, 2015). These are sometimes called the "cloud computing stack" because they are built on top of one another. Knowing what they are and how they are different makes it easier to accomplish office tasks and goals for the organization.

Infrastructure as a Service (IaaS) is a way to get rid of the things that help you run your business, like storage, hardware, servers, and networking parts.

Platform as a Service (PaaS) is a method for delivering operating systems and associated services over the Internet without downloads or installations. It builds on the basics of Software as a Service (SaaS) and adds some special requirements for communications applications, such as voice over IP (VoIP or Internet telephony), instant messaging (IM), collaboration and videoconferencing applications using fixed and mobile devices, and finally,

Software as a service (SaaS) is a way to distribute software in which applications are hosted by a vendor or service provider and made available to customers over a network, most often the Internet. This model is called "Software as a Service."

On the other hand, as a network;

1. Public Clouds: The cloud infrastructure is accessible to the public audience or to a big business group and is operated by a cloud services company; Amazon Web Services (AWS), Microsoft Azure, IBM Soft Layer, and Google Compute Engine are examples of the public cloud.
2. Private Clouds: The cloud infrastructure that is only available for an organization itself, which means it is not accessible for the public or other organizations.
3. Hybrid Clouds: It combines private cloud with one or more public cloud facilities and proprietary software to allow the interaction of each product. A hybrid cloud approach allows companies to move workloads between cloud alternatives more flexibly as requirements and expenses fluctuate (Mohammad, Mohammad &, Ahmad, 2020).

However, only a few institutions have the necessary resources to maintain an on-premises infrastructure that is sufficient to house all their operations if they handle dynamic workloads and need to be able to scale up and down in the administration of the office.

Office administration is the process of overseeing the day-to-day performance of office tasks. These tasks are usually the responsibility of an office secretary or administrator, which depends on the general operating structure of the organization. One of the core tasks associated with office administration in universities is the management of students' and employees' records. Typically, office secretaries are responsible for supervising the office staff and assisting the heads of departments, deans, directors, etc. by making sure that each employee has the resources necessary to competently carry out his or her assigned duties. Also, administrators function as troubleshooters, providing support and assistance to employees when unusual situations arise, inhibiting the completion of assigned tasks (Akpomi, 2018; Kayii, 2017). It is not unusual for



secretaries to be responsible for conducting periodic employee evaluations, recommending pay increases, or providing employees with remedial or cross-training as a means of assisting other staff to improve their relationships with the employer.

Fathey, Othman, and Norafida (2016) described a secretary as a professionally trained graduate with prerequisite experience in office and information management and other administrative skills such as word processing, communication, filing, record management, etc. While Ibrahim and Ameen (2015) described a secretary as an office assistant with impressive mastery skills and the ability to assume responsibility without direct supervision to display initiative, exercise judgment, and make decisions within the scope of his or her authority, A secretary in an organization can be an executive or administrative secretary, a corporate or company secretary, an honorary secretary, or a confidential or executive assistant.

Executive/Administrative Secretary: This category serves national and international organizations like the Pensions Trust Fund (PTF), the African Union (AU), the Economic Community of West African States (ECOWAS), and the heads of ministerial parastatals.

Corporate or Company Secretary: Company secretaries established under the Companies Act are by law or statute required to engage the services of a company secretary. They function as the company's business manager and registrar and take charge of the company's administration.

Honorary Secretary: Non-profit organizations such as clubs and associations select their secretary. This kind of secretary does not earn wages for services rendered to the organization.

Confidential Secretary or Executive Assistants: In the public sector, office administrators are categorized into different cadres or classes: administrative, scientific, and professional based on their area of specialization. A confidential secretary is a high-level employee whose responsibility it is to generate and formulate ideas and views required for policy decisions (Enyekit & Ubulom, 2015).

Thus, to contribute to the body of knowledge on office administration, this study draws on the extant literature on cloud technology to establish a conceptual background that extends and contextualizes the dimensions of cloud technology to enhance understanding of the measures of efficient office administration through the lens of the cloud computing service (models) framework (infrastructure as a service (IaaS), platform as a service (PaaS), communications as a service (CaaS), and software as a service (SaaS) (Vaishali, 2014).

The university landscape in the country is in a constant state of flux and evolution, mainly as a result of significant challenges arising from efforts to adopt new and emerging technologies. It is becoming increasingly acknowledged that using technology effectively in offices is essential for providing effective office administration. In some institutions, the adaptation of new technology is very slow, mainly due to the cost implications (Vaishali, 2014), the challenge of software and hardware upgrading, and the integration into day-to-day activities (Omar, Amir, & Mohamad, 2018). The cloud enables universities to create a customized infrastructure that is more efficient and flexible, where they can quickly and easily scale up during peak usage times (e.g., enrollment, back-to-school season, and graduation) and scale down over breaks (holidays) when usage is not high. However, it can be hard to keep track of changes in cloud usage and



reservations and discounts across different departments, cost centers, locations, and needs when office administrators are used to keeping records and cabinets.

On the one hand, cloud-based technology has enabled universities to benefit from instant internet access, digital libraries, and their pursuit of qualitative research, teaching, and learning. Despite its many benefits, the cloud also comes with its own set of challenges for universities, all of which are compounded and accelerated by the rapid pace and scale of adoption. Ughelu (2016) posits that a lot of teachers and administrators lack the prerequisite knowledge of cloud computing tools and their application for efficient job performance. Sogbeye, Ekpu, and Udoh (2019) and Abdulsalam and Zambuk (2011) identified a lack of equipment to support operations, including storage, hardware, servers, and networking components, and a highly unsteady and inadequate electricity power supply as factors militating against the application of emerging technologies in teaching and learning in Nigeria's higher institutions, which could be solved with cloud computing. Despite the array of benefits, the researcher observed that as the volume of paper work in offices increased due to population explosion, industrialization, and government policies, efficiency and effectiveness appeared lacking because secretaries in universities may have adequately used cloud technology tools to plan, control, and coordinate all activities or not in managing their day-to-day activities. So, this study will look at how secretaries at universities in Rivers State use cloud technology apps and how they run their offices.

The study aimed at assessing the utilization of cloud technology applications for efficient office administration among secretaries in Rivers State universities. Specifically, the sought to assess:

1. The extent to which platform as a Service (PaaS) is utilized among secretaries in Rivers State universities for efficient office administration.
2. The extent to which Software as a Service (SaaS) is utilized among secretaries in Rivers State universities for efficient office administration.
3. The extent to which Communication as a Service (CaaS) is utilized among secretaries in Rivers State universities for efficient office administration.

This investigation provides answers to the following research questions.

1. To what extent are secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration?
2. To what extent are secretaries in Rivers State universities utilized platform as a Software as a Service (SaaS) for office administration?
3. To what extent are secretaries in Rivers State universities utilized platform as a Communication as a Service (CaaS) for office administration?

These three corresponding null hypotheses are statistically tested at the 0.05 level of significance.

1. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of platform as a Service (PaaS) for office administration.

2. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of software as a service (SaaS) for office administration.
3. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of communication as a service (CaaS) for office administration.

2. Review of Related Literature

The concept of cloud technology goes with the delivery of information technology services that run on any internet browser; these services give secretaries' access to a vast array of documents that are connected to each other by means of electronic connections that link related pieces of information in order to allow a user easy access to them. Technically, the word "cloud" is a metaphor for the internet. Dahunsi and Owoseni (2015) and Vaishali (2014) describe a computing paradigm in which tasks are split up into groups of connections, software, and services that can be accessed over a network.

The cloud technology tools used in the office consist of hardware and software resources made available on the internet and managed by third-party services. It is a process by which computer tasks are performed using services delivered entirely through the web or over wireless technology. Cloud computing is a form of computing that relies on sharing a pool of physical and/or virtual resources rather than deploying local or personal hardware and software. It's kind of like the term "utility computing," because users don't have to deal with the equipment needed to make their own computing resources.

Cloud computing is a large-scale distributed computing paradigm in which a pool of abstracted, virtualized, dynamically scalable, managed computing power, storage, platforms, and services is delivered on-demand to external customers over the internet.

It is presumed that cloud computing is a completely internet-reliant service offered to external customers who have no control over the cloud to which they are tied. In line with this, Hewitt (2008) saw cloud computing as a concept in which information is permanently stored on computer servers on the internet and cached temporarily on clients that include desktops, tablet computers, notebooks, wall computers, sensors, monitors, etc. Hence, cloud computing is a style of computing in which IT-related capabilities are provided as a service, allowing users to access technology-enabled services from the internet (in the cloud) without prior knowledge of expertise or control over the technology infrastructure that supports them (Craig & Leger, 2008).

Cloud computing can track skills that will enable users to update their knowledge daily. It is used to create records and files, storing these created files among educators and learners (Ariwa, Ibe-Ariwa, & Ibe, 2014). For instance, Maass (2011) reported that office procedures are changing to suit the demands of modern offices due to the modernization of office equipment and innovations in education. Cloud computing offers a fresh alternative to building coherent, accessible, and multipurpose networking tools to reduce the congestion of office cabinets (Omar, Amir, & Mohamad, 2018; Sang, 2013). The adoption of various technological innovations in academics is accelerated by cloud computing infrastructures, and educational institutions can access the facilities and resources of educational institutions on demand (Olanrewaju, Khan,

Baba, Mir, & Lone, 2016). Al-Samarraie & Saeed (2018) assessed the contemporary issues in the administration of a corporate organization and how it can be transformed into an effective, efficient, and secure e-office setting. Qasem, Abdullah, Jusoh, Atan, and Asadi (2019) reported that business center operators perceived word processing and spreadsheet competencies as highly required software for office organization. Qasem et al. recommended, among others, that employers should incorporate the various competencies during induction and within the probationary period for workers' acquaintances with the packages. Also, in a related study, Mohd Saleh, Musa, Sulaiman, and Norlisa (2017) examined the office technology management performance of the secretary in the Malaysian private sector, and findings revealed that communication as a service (CaaS) competency is a major factor that contributes to the performance of the secretary in the organization. The paper concludes that training and re-training of the secretary are very important in order to update her on emerging office technologies. Comparatively, it has been revealed that the secretarial education students who were drilled in software application courses conventionally outperformed their counterparts using technology between 2012 and 2015 (Bupo, 2016).

However, using cloud computing in educational institutions is not an exception to using the cloud in other applications or institutions in terms of quality (Ercan, 2010), legal, security, and environmental (Tao & Long, 2011) challenges. Therefore, educational institutions must consider these challenges when applying cloud computing techniques in the office, administration, teaching, and learning.

The literature reviewed in this study consists of both theoretical and empirical reports. Theoretically, business applications are based on cloud service providers. Today, every organization requires a cloud business application to grow their business. It also ensures that office applications are available to users at any time. Empirically, most reviews revealed that cloud technologies are viewed as a new business model rather than a new technology that provides appealing opportunities for the acquisition and management of computing resources and software platforms, as well as the ability to rapidly add new features in response to changing needs in research and teaching (Olanrewaju et al., 2016; Al-Samarraie & Saeed, 2018; Qasem et al., 2019). An overview of the related studies shows that most of the studies on cloud technology and efficient office administration are foreign; they focus on teaching and learning. A few related local studies were found to focus on the teaching of software application courses with modern technology (Bupo, 2016; Jadeja & Modi, 2012). It became necessary to fill the gap by investigating cloud technology applications related to office administration.

3. Methodology

The study adopted an analytical-descriptive survey. According to Nwankwo (2013), in an analytical-descriptive design, the variables being studied for any sample are compared for the variously identified portion of the sample through the use of hypotheses. In this study, the researchers described the extent of utilization of cloud technology applications by secretaries and also went further through the use of hypotheses to establish the significance of the difference in respondents' response ratings.

Table1: Population of secretaries in Rivers State Universities

Institution	No. of secretaries in Faculties	No of secretaries in Departments
RSU	11	65
IAUE	6	26
Total		91

Source: Institutions Academic Planning Unit for 2020/2021sessions

There was no sample, as the researchers used the entire population for the study. This investigation is restricted to the population of secretaries deployed to work with heads of departments running undergraduate programs. Other categories of respondents (secretaries) attached to postgraduate schools and directorate units are not part of the population distribution, even though they perform similar duties. The instrument used for data collection was the "Cloud Technology Applications Questionnaire (CTAQ)." The Cloud Technology Applications Questionnaire (CTAQ) is made up of 17 items that are rated on a four-point scale ranging from Very High Extent (VHE-4) to High Extent (HE-3), Moderate Extent (ME-2) to Low Extent (LE-1). The instrument was subjected to content and face validity checks by three experts, and a reliability test was conducted using Cronbach's alpha, which gave a coefficient of stability of 0.75. The administration of the instrument was personally administered by the researcher and research assistants, an exercise that yielded a 100% return rate. Data gathered for research questions was analyzed using mean and standard deviation, and the formulated null hypotheses were tested with a t-test at 0.05 alpha.

4. Results and Discussion

Research Question 1: To what extent are secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration?

Table 2: Mean Score on extent secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration.

S/NO	ITEM STATEMENT	INSTITUTIONS				Avrg Mean	Remark
		RSU		IAUE			
		$\bar{X}$	SD	$\bar{X}$	SD		
1.	Utilized Versatile recording and transcription app that such as “Just Press” make notes taking much easier in office.	2.38	1.05	1.98	1.29	2.18	LE
2.	Utilized PaaS help build customized solutions with the help of advanced tools in the office.	2.17	0.96	3.16	0.98	2.67	HE
3.	Utilized cloud PaaS help secretaries	2.43	0.75	2.69	0.75	2.56	HE

	build and customized applications more easily.						
4.	Cloud PaaS provides many supporting services for secretaries.	2.49	0.97	2.42	1.08	2.46	LE
5	PaaS provides the middle layer on which software as a service (SaaS) solutions are built.	2.5	0.68	1.63	0.83	2.07	LE
6	Utilized cloud apps like Lambda help run code without the need to provision for resources or server management	2.3	0.9	2.58	0.81	2.44	LE
	Grand Mean	2.38		2.41		2.39	LE

Table 2 showed that items (2 and 3) had mean scores below cut off point of 2.5\0. This revealed that respondents considered the items high on extent secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration. On the other hand, seven items (1, 4, 5, and 6) had mean scores below the cut off 2.50, indicating that respondents considered the items low on the extent secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration. in Rivers State Universities. With the grand mean of 2.41, indicates that the extent secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration is low.

Research Question 2: To what extent are secretaries in Rivers State universities utilized platform as a Software as a Service (SaaS) for office administration?

Table 3: Mean Score on extent secretaries in Rivers State universities utilized software as a Service (SaaS) for office administration.

S/NO	ITEM STATEMENT	INSTITUTIONS				Avrg Mean	Remark
		RSU $\bar{X}$	SD	IAUE $\bar{X}$	SD		
7	Students relations management	2.67	0.77	2.65	1.08	2.64	HE
8	Management information systems	2.67	0.93	2.75	0.86	2.68	HE
9	Student information management	1.33	0.81	2.52	1.15	1.89	LE
10	Content management	2.79	0.74	2.99	1.11	2.8	HE
11	Data management	2.78	0.85	2.88	0.93	2.7	HE
12	Human resource management	2.3	0.78	2.45	0.85	2.37	LE
	Grand Mean	2.42		2.71		2.51	HE

Table 3 showed that items (9 and 12) had mean scores below cut off point of 2.50. This revealed that respondents considered the items low on extent secretaries in Rivers State universities utilized software as a Service (SaaS) for office administration. On the other hand, seven items (7, 8, 10, and 11) had mean scores above the cut off 2.50, indicating that respondents considered the items high on extent secretaries in Rivers State universities utilized software as a Service (SaaS) for office administration. With the grand mean of 2.51, indicates that the extent secretaries in Rivers State universities utilized software as a Service (SaaS) for office is high.

Research Question 3: To what extent are secretaries in Rivers State universities utilized Communication as a Service (CaaS) for office administration?

Table 4: Mean Score on extent secretaries in Rivers State universities utilized Communication as a Service (CaaS) for office administration.

S/NO	ITEM STATEMENT	INSTITUTIONS				Avrg Mean	Remark
		RSU		IAUE			
		$\bar{X}$	SD	$\bar{X}$	SD		
13	Web conferencing	1.88	1.05	2.86	0.9	2.37	LE
14	Collaboration tools	2.32	0.96	3.5	1.11	2.91	HE
15	Videoconferencing	2.33	0.75	2.5	0.77	2.415	LE
16	Social media tools	2.71	0.97	2.63	0.93	2.67	HE
17	Instant messaging	2.67	0.68	2.25	0.81	2.46	HE
	Grand Mean	2.382		2.75		2.565	HE

Table 4 showed that items (12 and 15) had mean scores below cut off point of 2.50. This revealed that respondents considered the items low on the extent secretaries in Rivers State universities utilized Communication as a Service (CaaS) for office administration. On the other hand, seven items (14, 16, and 17) had mean scores above the cut off 2.50, indicating that respondents considered the items high on the extent secretaries in Rivers State universities utilized Communication as a Service (CaaS) for office administration. With the grand mean of 2.51, indicates that the extent secretaries in Rivers State universities utilized Communication as a Service (CaaS) for office administration is high.

Hypotheses

H₀₁: There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of platform as a Service (PaaS) for office administration.

Table 7: t-test Analysis on utilization of Platform as a Service (PaaS) for efficient office administration in Rivers State universities.

Institutions	N	X	SD	Df	t-cal	Sig. level	t-crit	Decision
RSU	65	2.38	0.88	89	0.39	0.05	1.989	Not Sig.
IAUE	26	2.41	0.95					

Table 7 showed that the calculated (t-cal) value is 0.39, critical (t-crit) is 1.989 at 89 degree of freedom and 0.05 level of significance. The calculated value of 0.39 is less than the critical value of 1.989 at 0.05 level of significance. Therefore, the null hypothesis of no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of platform as a Service (PaaS) for office administration is retained. This implies that respondents from both institutions do not differ in their opinion on the extent secretaries in Rivers State universities utilized Platform as a Service (PaaS) for office administration.

H₀₂: There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of software as a service (SaaS) for office administration.

Table 8: t-test Analysis on utilization of Soft as a Service (SaaS) for efficient office administration in Rivers State universities

Institutions	N	X	SD	Df	t-cal	Sig. level	t-crit	Decision
RSU	65	2.42	0.81	89	0.41	0.05	1.989	Not Sig.
IAUE	26	2.71	0.99					

Table 8 showed that the calculated (t-cal) value is 0.41, critical (t-crit) is 1.989 at 89 degree of freedom and 0.05 level of significance. The calculated value of 0.41 is less than the critical value of 1.989 at 0.05 level of significance. Therefore, the null hypothesis of no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of software as a service (SaaS) for office administration is upheld. This implies that respondents from both institutions do not differ in their opinion on the extent secretaries in Rivers State universities utilized software as a Service (SaaS) for office administration.

H₀₃: There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of communication as a service (CaaS) for office administration.

Table 9: t-test Analysis on utilization of Communication as a Service (CaaS) for efficient office administration in Rivers State universities.

Institutions	N	X	SD	Df	t-cal	Sig. level	t-crit	Decision
RSU	65	2.38	0.88	89	0.16	0.05	1.989	Sig
IAUE	26	2.75	0.90					

Table 9 showed that the calculated (t-cal) value is 0.16, critical (t-crit) is 1.989 at 89 degree of freedom and 0.05 level of significance. The calculated value of 0.16 is less than the critical value of 1.989 at 0.05 level of significance. Therefore, the null hypothesis of no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of communication as a service (CaaS) for office administration is upheld. This implies that respondents from both institutions do not differ in their opinion on the extent secretaries in Rivers State universities utilized communication as a Service (SaaS) for office administration.

In summary, the findings of this study are:

1. The extent secretaries in Rivers State universities utilized platform as a Service (PaaS) for office administration is low.
2. The extent secretaries in Rivers State universities utilized software as a Service (PaaS) for office administration is high.
3. The extent secretaries in Rivers State universities utilized communication as a Service (CaaS) for office administration is high
4. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of Platform as a service (PaaS) for office administration.
5. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of software as a service (SaaS) for office administration.
6. There is no statistically significant difference in the mean ratings of university secretaries in Rivers State University and Ignatius Ajuru University of Education for their use of communication as a service (CaaS) for office administration.

Discussion of Findings

The findings of the first research question and hypothesis of this study are that the utilization of Platform as a Service (PaaS) among secretaries to enhance efficient office administration in Rivers State universities is to a low extent and that no significant difference exists in the mean rating of respondents on the utilization of Platform as a Service (PaaS) among secretaries to enhance efficient office administration in Rivers State universities.

This finding agreed with Sang's (2013) findings, which supported the idea that not all of a company's existing infrastructure can be built for the cloud. Also, in line with this finding is

Omar, Amir and Mohamad (2018) revealed that data security needs to be considered and scrutinize to ensure that the system is private enough to store sensitive information out of cloud.

This finding disagreed with the finding of Maass (2011), who reported that office procedures are changing to suit the demands of modern offices due to the utilization of subscription free third party platforms for deployment and management of factory production.

The findings of the second research question and hypothesis of this study, which focused on the extent of utilization of software as a service (SaaS) among secretaries to enhance efficient office administration in Rivers State Universities, The result shows that the extent of utilization of software as a service (SaaS) among secretaries to enhance efficient office administration in Rivers State universities is high, and there is no significant difference in the mean rating of respondents on the utilization of software as a service (SaaS) among secretaries to enhance efficient office administration in Rivers State universities. This implies that respondents do not utilize SaaS resources enough for efficient office administration. Only Google Workplace and Drop Box are utilized for students' information management and human resource management.

This finding agreed with the findings of Al-Samarraie and Saeed (2018) that the utilization of Software as a Service (SaaS) is not effective and efficient enough to be in sync with a modern e-office setting. This finding is not in line with Qasem, Abdullah, Jusoh, Atan, and Asadi (2019), whose findings revealed that software is required for office organization. And also, I disagreed with the findings of Olanrewaju, Khan, Baba, Mir, and Lone (2016) that the adoption of cloud computing infrastructures does not accelerate academic activities.

The findings of the last research question and hypothesis of this study are that the extent of utilization of Communication as a Service (CaaS) among secretaries in Rivers State universities for efficient office administration is high and that there is no significant difference in the mean rating of respondents on the utilization of Communication as a Service (CaaS) among secretaries in Rivers State universities for efficient office administration. The finding further revealed that the extent of utilization of CaaS as a collaborating tool, social media tools, and instant messaging among secretaries in Rivers State universities for efficient office administration is high.

This finding contradicts the findings of MohdSaleh, Musa, Sulaiman, and Norlisa (2017), who discovered that office technology management and communication as a service (CaaS) competencies contribute to the organizational performance of secretaries, and Bupo (2016), who discovered that students who were drilled in software application courses outperformed their counterparts.

5. Conclusion

Cloud technologies offer attractive opportunities for efficient office administration, and software platforms prompt the addition of new features according to changing needs in administration, research, and teaching. Therefore, the study concludes that there is no significant difference in the utilization of Software as a Service (SaaS) and Communication as a Service (CaaS) by secretaries in Rivers State universities.

Based on the findings above, the following recommendations were made:



1. University Management should create a digital environment to increase and support the use of cloud computing services or applications among employees.
2. Departments in universities should collaborate with private organizations and individuals to provide training for secretaries to enhance the utilization of cloud technologies.

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