Cloud Computing Services and Human Resource Information Systems Effectiveness of Major International Oil Companies in Nigeria

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Abstract: This study examined the relationship between cloud computing services and human resource information systems effectiveness of major international oil companies in Nigeria. This study is anchored on the positivist research paradigm; this study adopted the correlation survey research. Correlation survey research is a non-experimental research in which the researcher measures two variables and assesses the statistical relationship between them. The target population for this study was 103 human resource managers, Sectional heads, Supervisors drawn from the five (5) major international oil companies in Nigeria. The population was considered accessible as it focused on the human resource managers, Sectional heads, Supervisors in the head offices of the five (5) identified major international oil companies in Nigeria that operate with the Department of Petroleum Resources. The reliability of the study was tested using the Cronbach Alpha method, the result stood at 0.87 higher than the benchmark of 0.70. The study employed the Spearman Rank-order Correlation Coefficient for testing the various hypotheses formulated. The findings revealed that there is strong positive and significant relationship between infrastructure and human resource information system effectiveness of major international oil companies in Nigeria. Again, there is strong positive and significant relationship between platform and human resource information system effectiveness of major international oil companies in Nigeria. This study therefore concludes that cloud computing is a significantly predictor of HRIS effectiveness of major international oil companies in Nigeria. Based on the discussion and conclusion the study recommends that top management of major international oil companies in Nigeria should provide support for the adoption of infrastructure as a service as this will provide the organisation with much flexibility in accessing latest technology at a much smaller cost and they should carefully select platform as a service by identifying the strengths and weaknesses in terms of the processing type considered. As this will enables organisations to build and develop on software solutions to ease their work.

Keywords: Cloud Computing, HRIS, Platform as Service, Infrastructure as Service.

INTRODUCTION

Cloud computing services represent a revolutionary paradigm in computing that offers new perspectives in networking technologies. This paradigm shift has garnered significant attention from both organizations and academia (Shawish & Salama, 2013). Notably, cloud computing is recognized as one of the top ten concerns by industry analysts (Yang, Huang, Li, Liu, K & Hu,

2017). The surge in popularity has led to substantial involvement from individual and commercial entities, including major players like Microsoft, Amazon, and Google (Jaeger, Lin, & Grimes, 2008). Database manufacturers are also integrating cloud support features to align with this technological advancement. At its core, cloud computing involves a network of computing hardware machines, often referred to as servers, connected via communication networks such as the internet, intranet, LAN, or WAN (Suliman & Madinah, 2021). This technology is rapidly transforming business processes globally, especially in emerging markets. Information and communications technology (ICT) is increasingly based on cloud platforms, which offers an ideal environment for productivity and growth in these markets (Law, 2010).

The adoption of cloud computing services is becoming widespread across various regions, driving a need for increased capacity and investment in new data centers, security, and management services, particularly in fast-developing markets like Singapore (Pai & Aithal, 2019). Established markets such as the U.S. and U.K. have standardized cloud utilization, and emerging markets are beginning to follow suit. For instance, countries like Kenya are leveraging cloud computing to achieve developmental goals, stimulate economic growth, and access new opportunities (Suliman & Madinah, 2021). Singapore is a notable example of rapid cloud adoption. The country's government has implemented initiatives that encourage firms to adopt cloud services, offering significant tax incentives (Won, Hwang, & Binte Mohd Samion, 2022). This strategic move has positioned Singapore as a leader in the Asia Pacific region for cloud computing readiness, enabling enhanced global trade capabilities (Abell, Husar & May-Ann, 2021). Similarly, African countries are embracing cloud services to improve industry efficiency, job creation, and access to new products (Suliman & Madinah, 2021). This trend is evident in countries like Japan, India, and China, which are also moving towards cloud implementation (Won, Hwang, & Binte Mohd Samion, 2022).

In the field of human resource management, cloud computing offers innovative solutions for organizations, including international oil companies. Cloud technology streamlines HR processes, reduces paperwork, and enhances data security and accessibility (Ziebell, Albors-Garrigos, Schoeneberg, & Marin, 2019). The centralized data management facilitated by cloud services improves recruitment, employee training, and performance monitoring, fostering flexibility and efficiency (Luz, & Oluwafemi, 2024). Empirical studies have explored various aspects of human resource information systems (HRIS) and cloud computing. For instance, research has examined the relationship between HRIS dimensions and organizational performance in different sectors (Kalio & Zeb-obipi, 2018; Nawaz, & Gomes, 2017; Kananu, 2015; Munene, 2017). However, there is a notable gap in the literature concerning the relationship between cloud computing services and HRIS effectiveness. This study aims to bridge this gap by investigating the relationship between cloud computing services platform as a service (PaaS), infrastructure as a service (IaaS), and software as a service (SaaS) and HRIS effectiveness, measured by operational, administrative, and information effectiveness. Additionally, it will consider organizational resources, such as financial resources and managerial experience, as moderating variables in major international oil companies in Nigeria.

Statement of the Problem

Most international oil companies in Nigeria have not fully maximized the usage of cloud technology (Bakare, 2020). This underutilization stems from a lack of expertise in cloud

technology within the geographical location and the financial constraints associated with outsourcing and maintaining IT services (Ziebell, Albors-Garrigos, Schoeneberg, & Marin, 2019). These limitations have adversely affected the efficiency of human resource (HR) functions and activities in these industries. Consequently, these companies strive to maximize profit by ensuring that HR functions and activities are effectively managed using human resource information systems (HRIS) as a management tool (Bakare, 2020).

The adoption of cloud computing services has the potential to significantly enhance the effectiveness of HRIS. Effective HRIS is crucial for improving HR operations, administration, and information management within organizations (Dadhich, Rao, Sethy & Sharma, 2021; Abugabah & Sanzogni, 2010; Petter, DeLone, & McLean, 2008). Although several studies have proposed remedies to enhance HRIS, such as Kalio and Zeb-obipi (2018), who highlighted the benefits of employee information systems in streamlining selection processes and speeding up hiring also Nawaz, & Gomes (2017), who discussed the strategic importance of HRIS for organizational performance, however these studies have not explored the impact of cloud computing services on HRIS effectiveness. Therefore, this study investigates the effect of cloud computing services specifically platform as a service (PaaS), infrastructure as a service (IaaS), and software as a service (SaaS) on HRIS effectiveness. The study also considers organizational resources, such as financial resources and managerial experience, as moderating variables in the context of major international oil companies in Nigeria.

Purpose of the Study

The purpose of the study examines the relationship between cloud computing services and human resource information systems effectiveness of major international oil companies in Nigeria. In pursuance of this purpose, the study objectives are to:

   i. Determine the relationship between platform as a service and human resource information system   effectiveness of major international oil companies in Nigeria.

   ii. Examine the relationship between infrastructure as a service and human resource information system   effectiveness of major international oil companies in Nigeria.

Research Questions

In view of the objectives stated above the following research questions was postulated.

   i. What is the relationship between platform as a service and human resource information system effectiveness of major international oil companies in Nigeria?

   ii. What is the relationship between infrastructure as a service and human resource information system effectiveness of major international oil companies in Nigeria?

Research Hypotheses

Ho1:   There is no significant relationship between platform and human resource information system effectiveness of major international oil companies in Nigeria.

Ho2:   There is no significant relationship between infrastructureas a service and human resource information system effectiveness of major international oil companies in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Cloud Computing Services

Cloud computing services, as defined by Alizadeh, Chehrehpak, Nasr and Zamanifard, (2020), comprise two fundamental aspects. First, they involve using a web browser to dynamically allocate or de-allocate access to remote computing resources based on user demands (Misra & Mondal, 2011). This dynamic allocation ensures that users do not need to occupy servers or storage during peak usage times, which allows these resources to remain vacant for most of the time, thereby optimizing resource utilization (Wulf, Westner, M., & Strahringer, 2019). Second, cloud computing services pertain to paying for the actual use of computing resources and facilities (Liu, Yang, Qu, & Liu, 2016; Wulf et al, 2019). This model, known as pay-as-you-go, enables clients to reduce operational costs by renting servers, data storage, and applications based on their specific needs (Khayer, Bao, & Nguyen, 2020; Khajeh-Hosseini, Greenwood, Smith, & Sommerville, 2012). This approach not only minimizes the need for maintaining computing resources on-site, thereby saving on electricity and maintenance costs, but also delivers all IT services on-demand (Wulf et al, 2019). By offering such flexibility and cost efficiency, cloud computing services represent a significant advancement in the way IT resources are utilized and managed (Rochwerger et al., 2009).

Human Resource Information System Effectiveness

Human Resource Information Systems (HRIS) have undergone significant evolution since their inception in the 1960s (Quaosar, & Rahman, 2021). Initially, HRIS were simple record-keeping systems that converted manual records to computerized formats, a transformation described by Valcik, Sabharwal and Benavides, (2023). During this first generation, human resource specialists, known at the time as personnel staff, focused mainly on basic record-keeping with limited interaction in core business functions and strategic HR activities (Kavanagh & Johnson, 2017). Over time, HRIS have evolved into complex analytical tools that integrate advanced technology, significantly enhancing their scope and capabilities (Alomari, 2019). This evolution has expanded HRIS from basic data management systems to sophisticated platforms that support various strategic HR functions, influencing the roles of executives, managers, and employees (Mathis, Jackson, Valentine, & Meglich, 2017). The progression of HRIS reflects broader technological advancements that have profoundly impacted HR management activities, transforming them into critical components that drive efficiency and strategic decision-making within organizations.

Computing Services

Deployment Models (Types)

Private Cloud

Hybrid Cloud

Public Cloud

Community Cloud

Infrastructure as a Service (IaaS)(AmazonEC2, Windows Azure, Rack Space) it is (Virtualization Hardware, Storage, Delivery Networks, Servers, Cloud Management, and Data Center Firewall

Platform as a Service (PaaS)(AWS Elastic Bean stalk, Google App Engine) it is (Development & testing tools, OS, Application Platform.

Software as a Service (SaaS) (Google App, MicrosoftOffice36s) it is (Delivery App (software), Security, Personal Productivity, Storage App, Social Network, Project Management)
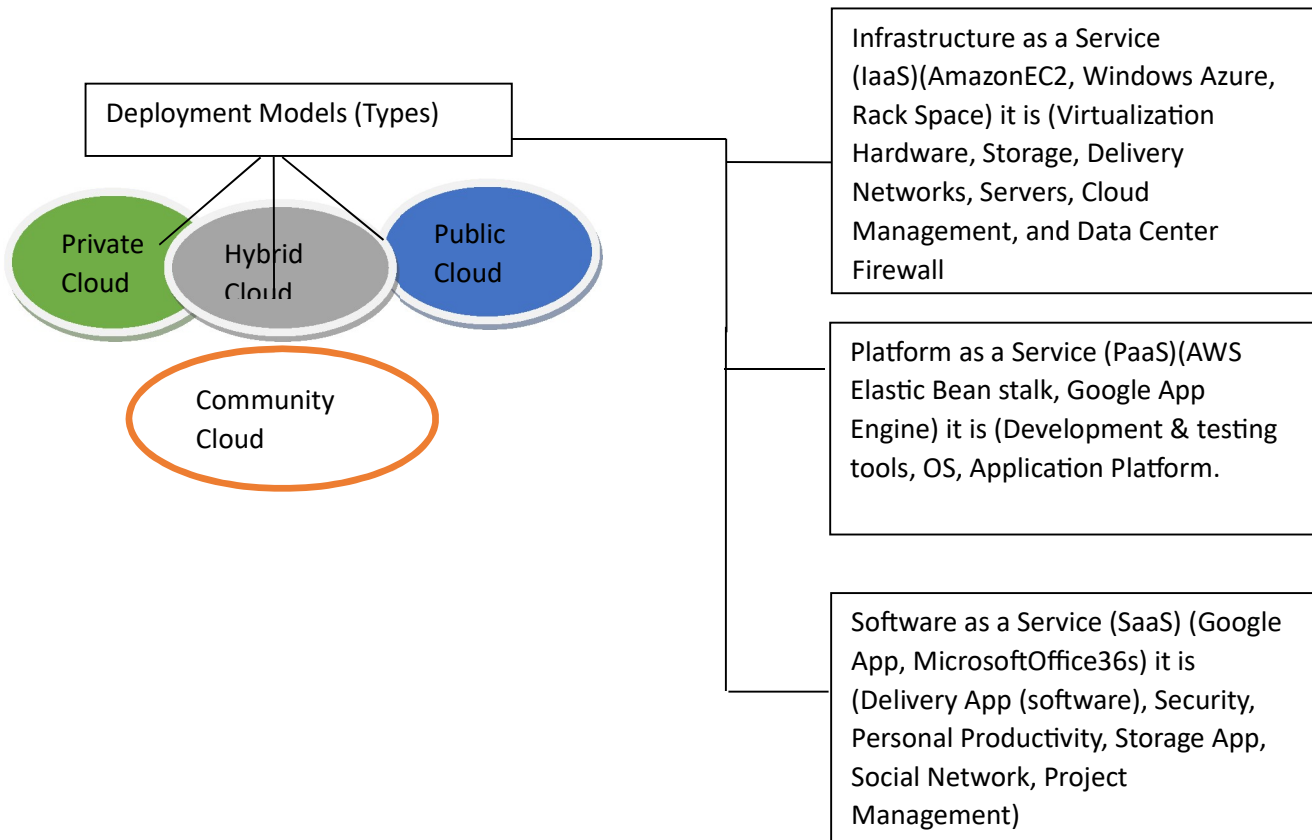
Figure 2.1

The National Institute of Standards and Technology (NIST) Service Models as a Level of Abstraction which includes Software as a Service, Platforms a Service and Infrastructure as a Service (Hurwitz, & Kirsch, 2020; Sangaiah, Shantharajah, & Theagarajan, 2019).

Dimensions of Cloud Computing Services

Infrastructure as a Service (IaaS)

Infrastructure as a Service (IaaS) represents a fundamental service model in cloud computing, providing users with access to virtualized computing resources over the internet. According to Goyal (2014), IaaS offers virtual server space, network connections, bandwidth, IP addresses, and load balancers. These resources are pulled from a diverse pool of hardware spread across multiple data centers, which are maintained by the cloud service provider. This setup allows clients to build their own IT platforms by utilizing these virtualized components, without the need to manage the underlying physical hardware themselves. The key benefits of IaaS include scalability, flexibility, and the reduction of operational costs, as users only pay for the resources they actually use, following a pay-as-you-go pricing model (Goyal, 2013).

Platform as a Service (PaaS)

Platform as a Service (PaaS) is another essential category of cloud computing that provides a comprehensive platform and environment for developers to build, test, and deploy applications over the internet. Goyal (2013) explains that PaaS services are hosted in the cloud and can be accessed through a web browser. These services enable users to create software applications using tools and resources supplied by the PaaS provider. PaaS offers a range of preconfigured features that users can subscribe to, selecting those that meet their requirements while discarding others. This flexibility allows for packages that can cater to both simple and advanced development needs.

PaaS manages the underlying infrastructure and applications, providing continuous updates and support. Developers are supported throughout the entire application lifecycle, from the initial concept to deployment. The subscription-based pricing model means that clients pay only for what they use, benefiting from shared infrastructure that lowers costs due to economies of scale. PaaS services typically include operating systems, server-side scripting environments, database management systems, server software, storage, network access, hosting, and tools for design and development. This makes PaaS ideal for developing new applications for web, mobile devices, and PCs (Goyal, 2013).

Theoretical Foundation

This study anchored on Actor Network Theory

The Actor-Network Theory (ANT), propounded by Bruno Latour and Michel Callon in 1981, is a sociological theory that explores the processes of technological innovation within heterogeneous networks (Callon, 2005; Latour, 1996; Law, 1992). These networks are composed of diverse elements, referred to as actors or actants, which can be human or non-human (social or technical) entities (Antonova, 2018). ANT posits three core principles: (1) all actors, whether human or non-human, are equally significant within a network (Alcadipani & Hassard, 2010); (2) actors are considered inseparable (Dolwick, 2009); and (3) the interactions and associations among actors within the network are central to understanding the network's function (Antonova, 2018). This theory addresses socio-technical situations without privileging either social or technical elements (Mathiassen & Soreness, 2008). For example, Antonova (2018) applied ANT to a socio-technical scenario involving technological innovation, illustrating that both human actors (e.g., customers, programmers, and development managers) and non-human actors (e.g., computers, modems, telephone lines, and web development tools) were essential in implementing a business-to-business e-commerce portal for regional SMEs in Melbourne, Australia. This demonstrates how ANT helps understand the complexity and fluidity of an organization's network and the dynamic role of technology in various contexts (Cresswell, Worth, & Sheikh, 2010).

In the context of cloud computing adoption, ANT is beneficial in appreciating the intricate network of relationships and influences among owner-managers, employees, and external parties that impact organizational decisions (Saya, Pee, & Kankanhalli, 2010). Cloud computing adoption decisions in organizations whether large, medium, or small is complex and involve many actors, both human and non-human. Rather than being determined solely by the characteristics of the technology (non-human actors), human issues also play a critical role in the adoption and migration to cloud computing (Datta, 2011; Low, Chen, & Wu, 2011). The theory provides a suitable

framework for analyzing these dynamics. It allows for a comprehensive understanding of how the interactions between various actors technological (e.g., cloud platforms) and human (e.g., HR managers, IT personnel) influence the effectiveness of HRIS. By recognizing the equal importance of all actors and their interactions, ANT helps elucidate the socio-technical complexities that impact the adoption and efficacy of cloud computing in enhancing HRIS functions within these organizations.

EMPIRICAL REVIEW

Wanjiku (2014) examined the adoption of cloud computing in medium and high-tech industries in Kenya using a descriptive survey research design that incorporated both quantitative and qualitative research methods. Data was collected using questionnaires from 126 medium and high-tech industries in Nairobi that utilize cloud computing technologies, and interviews were conducted with 25 cloud computing providers. The data analysis was performed using SPSS, and the results were presented and interpreted using frequency tables, charts, and mean scores. The study revealed that 70% of medium and high-tech industries have adopted cloud computing to facilitate service delivery. Both users and providers acknowledged that cloud computing is reshaping ICT and fostering innovation. The study identified cost, performance, and reliability of cloud applications as major factors influencing cloud computing adoption. Users indicated a need for better awareness regarding the most suitable model for adopting cloud computing (Wanjiku, 2014).

Dimitrov and Osman (2012) explored the impact of cloud computing on organizations with a specific focus on cost and security. They employed a qualitative research method to delve into the essential benefits and risks associated with cloud computing utilization. The research involved empirical data collection through interviews with IT professionals. The findings highlighted that the primary cost risk is the absence of accurate and sophisticated cost models in the current cloud market. On the other hand, the identified security benefits include enhanced data safety, faster data recovery and transfer, centralization, and improved security software mechanisms and maintenance. This study contrasts with previous research by not only addressing the cost and security benefits but also emphasizing the importance of considering these factors together (Dimitrov & Osman, 2012).

Munene (2017) investigated the relationship between cloud computing services and organizational performance among small and medium enterprises (SMEs) in Nairobi, Kenya. Using a descriptive survey approach, primary data was collected through questionnaires distributed to managers of 35 SMEs in Nairobi. The study found that the most commonly adopted cloud computing services were Software as a Service (SaaS), Hardware as a Service (HaaS), and Interface as a Service (IaaS). These services were linked to improved organizational performance, particularly in terms of data processing accuracy, timely reporting, and overall efficiency enhancements (Munene, 2017).

METHODOLOGY

This study is anchored on the positivist research paradigm; this study adopted the correlation survey research. Correlation survey research is a non-experimental research in which the researcher measures two variables and assesses the statistical relationship between them. The

target population for this study was 103 human resource managers, Sectional heads, Supervisors drawn from the five (5) major international oil companies in Nigeria. The population was considered accessible as it focused on the human resource managers, Sectional heads, supervisors in the head offices of the five (5) identified major international oil companies in Nigeria that operate with the Department of Petroleum Resources. Thus, the population of this study is the five major international oil companies in Nigeria. According to the website of the Department of Petroleum Resources (2019), there are five (5) registered major international oil companies in Nigeria; these companies are the Shell Petroleum Development Company Nigeria Limited (SPDC), Mobil Producing Nigeria Unlimited (MPN), Chevron Nigeria Limited (CVNL), Nigeria Agip Oil Company (NAOC), Total Exploration and Producing Nigeria Limited (TP&ENL); Retrieved from https://www.dpr.gov.ng/gas/2018/02/2018-list-of-International-oil-companies-in-Nigeria.html. Copies of the questionnaire were administered and distributed to the management staff. The reliability of the study was tested using the Cronbach Alpha method, the result stood at 0.87 higher than the benchmark of 0.70. The study employed the Spearman Rank-order Correlation Coefficient for testing the various hypotheses formulated for the study with the aid of the Statistical Package for Social Sciences (SPSS) Version 23.0.

Data Analysis
Table 1: Outcomes of Questionnaire Distribution

S/N	Names of Organisation	Population	Returned Questionnaires	Not Returned Questionnaires	Usable Questionnaires
1.	Shell Petroleum Development Company Nigeria Limited	25	18	7	16
2.	Mobil producing Nigeria Limited	21	16	5	14
3.	Cheveron Nigeria Limited	17	13	4	11
4.	Nigeria Agip Oil Company Limited	19	16	3	14
5.	Total Exploration & Production Nigeria Limited	21	17	4	16
	Total	103	80	23	71
		(100%)	(77.69%)	(22.31%)	(88.75%)

Source: Field Report 2024
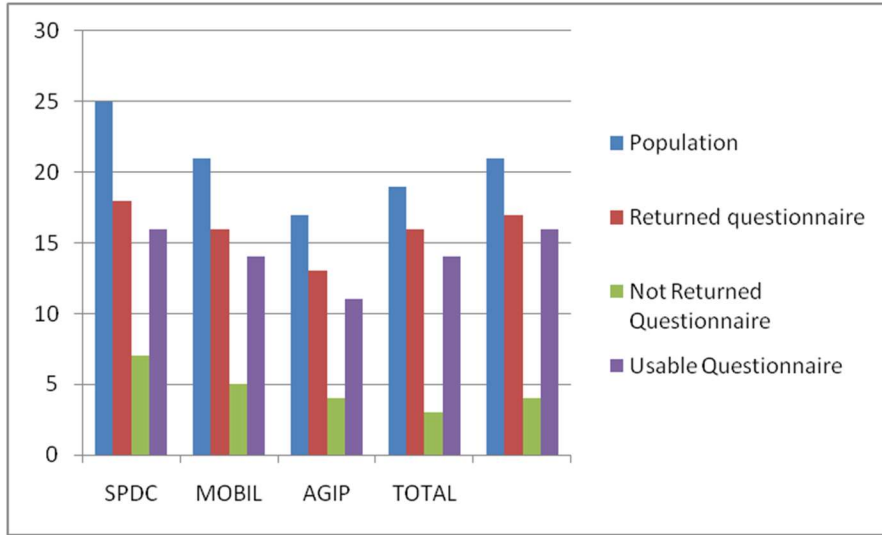
Source: SPSS output version 23.0

Table 2: Data Respondents for Cloud Computing Services, HRISE and Organizational Resources Cloud Computing Services Respondents.

S/N	Cloud Computing Services	SA	A	N	D	SD	M	Std
1	Platform as a Service Platform as a service enables our organization to build and develop on software solutions to ease their work.	18 (25.0%)	39 (54.9%)	5 (7.0%)	5 (7.0%)	4 (5.6%)	3.87	1.055
2	Platform as a service uses server platform as a business model to delivers services in the organization.	17 (23.9%)	25 (35.2%)	5 (25.0%)	11 (15.5%)	13 (18.3%)	3.31	1.460
3	Platform as a Service allow the human resource functions and activities to go online like recruitment, screening and learning management	29 (40.8%)	12 (16.9%)	4 (5.6%)	19 (26.8%)	7 (9.9%)	3.52	1.491
4	A platform as a service provides the company with the infrastructure platform instead of a certain application.	18 (25.4%)	30 (43.2%)	7 (9.9%)	6 (8.5%)	10 (14.1%)	3.56	1.339
1	Infrastructure as a Service Vendors provide our company with a virtual server (usually in the form of a website) to deliver specific applications	19 (26.8%)	23 (32.4%)	5 (7.0%)	12 (16.9%)	12 (16.9%)	3.35	1.465
2	Infrastructure as a service gives our organization the flexibility to access the latest network technology at a much smaller cost.	34 (47.9%)	21 (29.6%)	6 (8.5%)	4 (5.6%)	6 (8.5%)	4.03	1.253
3	Infrastructure as a service enables our organization to outsource the equipment used to support operations.	35 (49.3%)	17 (23.9%)	7 (9.9%)	8 (11.3%)	4 (5.6%)	4.00	1.254
4	Services previously provided traditional computing model experts are now provided remotely by cloud providers under this model.	16 (22.5%)	35 (49.3%)	5 (7.0%)	12 (16.9%)	3 (4.2%)	3.69	1.129

Source: SPSS output version 22.0

Platform as a service: item oneof the list dimension two, respondents affirmed that platform as a service enables our organization to build and develop on software solutions to ease their work. Respondent responses shows that 4 (5.6%) strongly disagree, 5 (7.0%) disagree, 5(7.0%) neutral, 39 (54.9%) agree, 18(25.4%) strongly agrees. Item two respondents affirmed that Platform as a service uses server platform as a business model to deliver services in the organization. Respondent responses shows that 13(18.3%) strongly disagree, 11(15.5%) disagree, 5(7.0%) neutral, 25

(35.2%) agree, 17 (23.9%) strongly agrees. Item three respondents affirmed that platform as a service allow the human resource functions and activities to go online like recruitment, screening and learning management. Respondent responses shows that7 (9.9%) strongly disagree, 19(26.8%) disagree, 4(5.6%) neutral, 12 (16.9%) agree, 29(40.8%) strongly agrees. Item four respondents affirmed that Platform as a service provides the company with the infrastructure platform instead of a certain application. Respondent responses shows that 10 (14.1%) strongly disagree, 6 (8.5%) disagree, 7(9.9%) neutral, 30 (42.3%) agree, 18(25.4%) strongly agrees.

Infrastructure as a service: item one of the list dimension three, respondents affirmed that vendors provide our company with a virtual server (usually in the form of a website) to deliver specific applications through infrastructure as a service. Respondent responses shows that 12 (16.9%) strongly disagree, 12 (16.9%) disagree, 5(7.0%) neutral, 23 (32.4%) agree, 19(26.8%) strongly agrees. Item two respondents affirmed that Infrastructure as a service gives our organization the flexibility to access the latest network technology at a much smaller cost. Respondent responses shows that 6(8.5%) strongly disagree, 4(5.6%) disagree, 6(8.5%) neutral, 21 (29.62%) agree, 34(47.9%) strongly agrees. Item three Infrastructures as a service enable our organization to outsource the equipment used to support operations. Respondent responses shows that 4(5.6%) strongly disagree, 8(11.3%) disagree, 7(9.9%) neutral, 17 (2.9%) agree, 35(49.3%) strongly agrees. Item four respondents affirmed that previous services provided us with the traditional computing model while infrastructures as a service expert are now providing remotely by cloud providers under infrastructure as a service model. Respondent responses shows that 3(4.2%) strongly disagree, 12 (16.9%) disagree, 5(7.0%) neutral, 35 (49.3%) agree, 16(22.5%) strongly agrees.

Bivariate Analysis

Hypothesis 1

Ho1:   There is no significant relationship between platform and human resource information system effectiveness of major international oil companies in Nigeria.

			platform	HRISE
Spearman	platform	Correlation Coefficient	1.000	.633**
(rho)		Sig. (2 tailed)	.	.001
		N	90	90
		Correlation Coefficient	.633**	1.000
	HRISE	Sig. (2 tailed)	.001	.
		N	90	90

**Correlation is significant at 0.01 levels (2 tailed)
*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-Generated Output

Table 3 presents the result of bivariate analysis carried out between platform and human resource information system effectiveness of major international oil companies in Nigeria. The result shows that platform has a strong positive correlation with human resource information system effectiveness of major international oil companies in Nigeria(rho = .633**) and this correlation is significant at 0.01 level as indicated by the symbol **. As a result of this, we then reject the null hypothesis (Ho1) and accept the alternate hypothesis which states that there is strong positive and significant relationship between platform and human resource information system effectiveness of major international oil companies in Nigeria.

Hypothesis 2

Ho2:   There is no significant relationship between infrastructure as a service and human resource information system effectiveness of major international oil companies in Nigeria.

			infrastructure	HRISE
Spearman (rho)	infrastructure	Correlation Coefficient	1.000	.681**
		Sig. (2 tailed)	.	.001
		N	90	90
	HRISE	Correlation Coefficient	.681**	1.000
		Sig. (2 tailed)	.001	.
		N	90	90

**Correlation is significant at 0.01 levels (2 tailed)
*Correlation is significant at 0.05 levels (2 tailed)

Source: SPSS-Generated Output

The result of bivariate analysis carried out between infrastructure and human resource information system effectiveness of major international oil companies in Nigeria. The result indicates that infrastructure is strongly and positively correlated to human resource information system effectiveness of major international oil companies in Nigeria(rho = .681**) and the symbol ** signifies that this correlation is significant at 0.01 level. Based on this result, the null hypothesis

(Ho2) is rejected and the alternate hypothesis is accepted. This means that we then accept that there is strong positive and significant relationship between infrastructure and human resource information system effectiveness of major international oil companies in Nigeria.

DISCUSSION OF FINDINGS

The study reveals a strong positive and significant relationship between platform and the effectiveness of Human Resource Information Systems (HRIS) within major international oil companies in Nigeria. This finding is corroborated by a previous study conducted by Kariuki (2017), which investigated the use of WhatsApp as an organizational communication platform within Kenya's Safaricom technology division. Over the past decade, the proliferation of technology in communication, particularly with the advancement of mobile technology, has led to instantaneous information dissemination and reception. This technological advancement has given rise to various platforms that have been widely adopted by users. WhatsApp, for instance, has witnessed a substantial increase in its adoption rate since its inception in 2009, with over 1 billion users across 180 countries as of 2016 (WhatsApp, 2016). In Kenya, approximately 49% of mobile users utilize WhatsApp (Adika, 2016).

Similarly, the study identifies a strong positive and significant relationship between infrastructure and the effectiveness of HRIS within major international oil companies in Nigeria. This finding aligns with the research conducted by Kushagra and Dhingra (2019), which explored the impact of infrastructure service adoption in organizations in Bengaluru, India, specifically focusing on organizational factors influencing the adoption of mobile device management software products. The study revealed that awareness of infrastructure service among IT teams in Indian companies influences the adoption of infrastructure service technology. Additionally, the study highlighted three organizational factors organizational size, readiness, and top management support that play a crucial role in determining the acceptance or rejection of infrastructure service adoption. Furthermore, the study found that the utilization of existing infrastructure service deployment does not significantly influence the adoption of infrastructure service within organizations.

IMPLICATION OF STUDY

The study illuminates crucial implications at the intersection of technology adoption and organizational efficiency. It underscores the significance of leveraging cloud computing services, like Platform as a Service (PaaS) and Infrastructure as a Service (IaaS), to enhance HR functions within major international oil companies in Nigeria. By doing so, organizations can streamline processes, minimize paperwork, and bolster data security and accessibility, ultimately improving overall operational efficiency. This emphasizes the need for strategic decision-making regarding technology adoption, highlighting the potential benefits of investing in cloud solutions for HR management. Moreover, the study underscores the importance of considering organizational resources, such as financial resources and managerial experience, as moderating variables in the relationship between cloud computing services and HRIS effectiveness. This suggests that successful implementation of cloud solutions requires not only technological considerations but also a comprehensive understanding of organizational capabilities and resources. By acknowledging the role of both global technological trends and local organizational contexts, the study provides valuable insights into the complex dynamics of technology adoption in a specific industry and geographical region.

The research methodology employed, which integrates quantitative and qualitative approaches, contributes to a nuanced understanding of the relationship between cloud computing services and HRIS effectiveness. By combining empirical evidence with theoretical frameworks like Actor-Network Theory (ANT), the study enriches the discourse on technology-driven organizational transformation. It underscores the implications of the findings for both policymakers and organizational practitioners, emphasizing the need for creating an enabling environment for technology adoption and investing in technological infrastructure and human capital. Lastly, it contributes to theoretical advancements and practical implications, highlighting the importance of strategic decision-making, resource management, and the interaction between global technological trends and local organizational contexts. Ultimately, the study underscores the transformative potential of cloud computing services in enhancing organizational efficiency and effectiveness.

CONCLUSION

The study reveals a clear link between the extensive adoption of cloud-based services and heightened effectiveness of Human Resource Information Systems (HRIS) in major international oil companies based in Nigeria. Organizations actively leveraging cloud services for various HR functions, including recruitment, employee engagement, development, statutory compliance, data management, and candidate attraction, selection, and onboarding, tend to report superior HRIS effectiveness. Conversely, smaller organizations that utilize cloud services to a lesser extent exhibit lower rates of HRIS effectiveness.

Based on these findings, the study concludes that cloud computing serves as a significant predictor of HRIS effectiveness within major international oil companies in Nigeria. Specifically, Platform as a Service (PaaS) emerges as a significant predictor of HRIS effectiveness, indicating that its tools and software solutions play a crucial role in enhancing HR operations. Likewise, Infrastructure as a Service (IaaS) is identified as a predictor of HRIS effectiveness, highlighting its role in furnishing the requisite infrastructure for robust HR information systems. These results underscore the critical role of cloud computing in optimizing HR processes and strategies within large, internationally operating oil companies in Nigeria. By embracing cloud-based services, organizations can unlock significant enhancements in their HR operations, thereby facilitating smoother and more efficient management of human resources on a global scale.

RECOMMENDATIONS

Based on the conclusions drawn from the study:

It is recommended that top management in major international oil companies in Nigeria actively support the adoption of Infrastructure as a Service (IaaS). Implementing IaaS can afford the organization greater flexibility by providing access to the latest technology at a reduced cost. This strategic approach not only streamlines operations but also enhances the company's technological capabilities in a cost-effective manner.

Additionally, it is advisable for these companies to judiciously select Platform as a Service (PaaS) providers. This selection process should involve a thorough assessment of the strengths and weaknesses of each platform, particularly in relation to the specific types of processing required by the organization. By choosing the appropriate PaaS, companies can effectively tailor software solutions that simplify and improve workplace productivity and operational efficiency. These steps will ensure that the organization not only keeps pace with technological advancements but also optimizes its human resource management practices.

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