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EMPLOYEE DIGITAL COMPETENCE AND INFORMATION MANAGER JOB PERFORMANCE IN OIL AND GAS FIRMS IN YENAGOA

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ABSTRACT

The study examined employee digital competence and information manager job performance in Oil and Gas Firms in Yenagoa. The objectives of the study were to examine the relationship between dimensions of employee digital competence (internet skill and troubleshooting skill) and measures of information manager job performance such as information security and information timeliness in Oil and Gas Firms in Yenagoa. The study was anchored on Diffusion of Innovation Theory as its theoretical foundation. The study adopted explanatory cross-sectional survey research design. The population of the study consisted of One Hundred and One (101) information managers of Twenty-Five (25) registered Oil and Gas Firms presently operating in Yenagoa. The above information was obtained from the Human Resource Departments of the Firms understudy. The entire population was used without sampling. Thus, the study was a census research. Structured questionnaire was used as the main instrument for the collection of primary data. To establish the validity of the instrument, copies of the questionnaire was submitted to the project supervisor and two other experts in Office and Information Management. Their comments were used to validate the final copy of the instrument that was administered. Thus, Cronbach alpha via SPSS (Statistical Package for Social Sciences, Version 20.0) was used to ascertain the reliability of the instrument. A total of One Hundred and One (101) copies of the questionnaire were administered through the help of two research assistants. The researchers were able to retrieve Ninety-One (91) copies distributed. The Spearman Rank Order (Rho) with the aid of Statistical Package for Social Sciences (SPSS) Version 20.0 was used for the analysis. It was found that there is a significant positive relationship between dimensions of employee digital competence and measures of information manager job performance in Oil and Gas Firms in Yenagoa. It was concluded that by fostering a culture of continuous learning and digital skills development, organizations can empower their workforce to adapt to evolving technologies and drive innovation. Consequently, the study recommends that management of Oil and Gas Firms should integrate internet skills into job roles and responsibilities, emphasizing their importance for achieving organizational objectives.

Keywords: Internet Skill, Troubleshooting Skill, Information Security and Information Timeliness

Background to the Study

In the dynamic and complex landscape of the oil and gas industry, effective management of information assets is paramount for ensuring operational efficiency, regulatory compliance, and strategic decision-making. At the forefront of this endeavor are Information Managers, tasked with overseeing the acquisition, storage, retrieval, and dissemination of vast amounts of data critical to the success of oil and gas firms. The role of Information Managers extends beyond mere data management; they serve as stewards of information integrity, guardians of cybersecurity, and facilitators of knowledge sharing within organizations (Clement, 2017; Urang, 2018). Thus, information manager job performance refers to the effectiveness and efficiency with which an individual in the role manages information assets within an organization to achieve strategic objectives. Information manager job performance is measured in terms of information security and information timeliness.

Amidst a backdrop of geopolitical tensions, economic competition, and technological disruption, the protection of information assets has become a strategic imperative for oil and gas firms. The oil and gas industry, characterized by its global reach, intricate supply chains, and critical infrastructure, faces an array of complex challenges in safeguarding its valuable assets, including information (Alhassana & Adjei-Quaye, 2017). In an era marked by increasing digitalization and interconnectedness, the importance of robust

information security measures cannot be overstated. As custodians of vast reserves of sensitive data, ranging from exploration and production data to proprietary technology and market intelligence, oil and gas firms are prime targets for cyber threats, espionage, and malicious attacks. In the fast-paced and dynamic world of the oil and gas industry, access to timely and accurate information is not just advantageous, it's essential for maintaining operational efficiency, ensuring regulatory compliance, and making informed strategic decisions (Heliyon, 2023). From real-time data on drilling operations and production metrics to market intelligence and supply chain logistics, the ability to access, analyze, and act upon information in a timely manner can mean the difference between success and stagnation in this highly competitive sector.

However, in the ever-evolving environment of the oil and gas industry, digital competence among employees has emerged as a linchpin for organizational success. As the industry embraces digital transformation to enhance efficiency, optimize operations, and drive innovation, the ability of employees to harness digital technologies and adapt to digital workflows has become increasingly critical. From field operators and engineers to analysts and executives, the workforce in oil and gas firms must possess the digital skills and competencies necessary to thrive in a rapidly changing technological landscape (Onyeije, 2019). Employee digital competence means the ability of an information manager to use technology proficiently, interpret and understand digital content and assess its credibility, create, research, and communicate with appropriate tools. This work dimensionalized employee digital competence through internet skill and troubleshooting skill.

The role of internet skills has emerged as a cornerstone for organizational effectiveness and competitiveness in Oil and Gas Firms. As the industry undergoes digital transformation, fueled by advances in technology and increasing connectivity, the ability of employees to leverage internet skills has become indispensable for driving efficiency, innovation, and resilience in a rapidly evolving landscape. Owhondah (2020) averred that internet skills encompass a diverse set of competencies, ranging from basic proficiency in web browsing and online communication to advanced capabilities in data analysis, cybersecurity, and digital collaboration. In the high-stakes environment of the oil and gas industry, where operations are often conducted in remote and challenging locations, the ability to troubleshoot technical issues swiftly and effectively is indispensable for maintaining operational continuity, ensuring safety, and maximizing productivity (Howard, *et al.,* 2017). From drilling rigs and production facilities to pipeline networks and refineries, the complexity and criticality of equipment and systems demand a workforce equipped with strong troubleshooting skills to address unforeseen challenges and mitigate operational risks. This background necessitated this study.

Statement of the Problem

One of the maladies bedeviling the success of Oil and Gas Firms in Nigeria and Yenagoa in particular is low job performance among information managers. The incessant cases of unsatisfactory service delivery and poor work quality, points to the fact that some of the information managers are not very effective (Dike, 2019). The researcher has also observed that many of the information managers in Oil and Gas Firms seem to be wanting in terms of digital proficiency. It appears that the level of digital literacy among information managers in some of the Oil and Gas Firms in Yenagoa is low.

Another issue that necessitated this study is the seeming dearth of empirical studies on the relationship between employee digital competence and information managers' job performance within the context of Oil and Gas Firms in Yenagoa (Philips, 2018; Frank, 2017; Michael, 2018; Egula, 2019; Geoffery, 2019). The findings of the various studies cited above revealed that internet skill and troubleshooting skill enhance information managers' job performance in the workplace but not fully represented in this study. This suggests that the relationship between these two variables seems not to have received adequate research attention. This is the knowledge gap which this study seeks to fill. This gives credence to this research effort.

Conceptual Framework

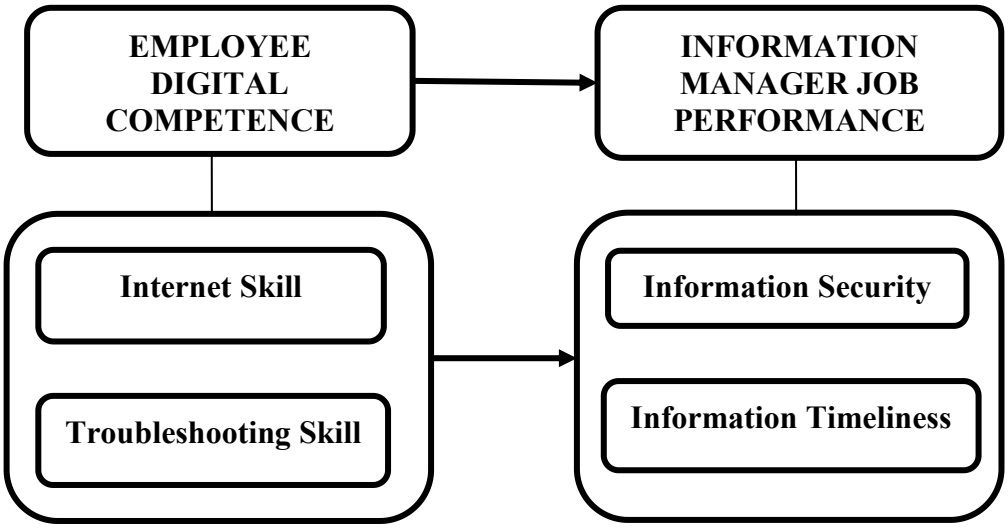

Fig. 1: Conceptual Framework.
Source: Owhondah (2020)

Aim/Objectives of the Study
The aim of the study was to examine the relationship between employee digital competence and information manager job performance in Oil and Gas Firms in Yenagoa. Specifically, the study seeks to:

1. investigate the relationship between internet skill and information security in Oil and Gas Firms in Yenagoa.
2. determine the relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa.

Hypotheses
In line with the objectives, the following null hypotheses were formulated:

Ho_1: There is no significant relationship between internet skill and information security in Oil and Gas Firms in Yenagoa.

Ho_2: There is no significant relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa.

Conceptual Review
Concept of Employee Digital Competence
Bawden (2018) defined employee digital competence as the set of attitudes, understanding and skills of an employee to handle and communicate information and knowledge effectively, in a variety of media and formats. Bell and Shank (2018) quoted in their work that digital competence is the ability to use digital technology, communication tools or networks to locate, evaluate, use and create information. It is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. It is also a person's ability to perform tasks effectively in a digital environment. Digital literacy includes the ability to read and interpret media, to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments (Jenkins, 2009). Employee digital competence means the ability of an information manager to use technology proficiently, interpret and understand digital content and assess its credibility, create, research, and communicate with appropriate tools (Smart in Onyeije, 2019). According to Onyeije (2019), employee digital literacy is the knowledge, skills, and behaviours used in a broad range of digital devices such as smart phones, tablets, laptops and desktop PCs, all of which are seen as network rather than computing devices (Wikipedia, 2020). Thus, internet skill and troubleshooting skill are used as dimensions of employee digital competence.

Dimensions of Employee Digital Competence

Internet Skill

Internet skills refer to the abilities and competencies required to effectively navigate, utilize, and communicate through the internet. These skills encompass a broad range of technical, cognitive, and social capabilities that enable individuals to access, evaluate, create, and share information online. Internet skill refers to the ability of a staff to connect their smart devices to internet service through the use of wifi, modems, wireless networks or hot spotting. As simple as it may seem, getting a computer system, laptop and other smart communication devices is not very easy; it requires some technical steps. Luke and Osahon (2016) averred that developing and honing these internet skills is essential in today's digital age, enabling individuals to effectively navigate the vast resources and opportunities available online while also mitigating potential risks and challenges associated with internet use.

Troubleshooting skills refers to the digital ability to diagnose and fix minor faults on computerized devices, systems and networks and being able to restore functionality to a malfunction computerized system. As found by Odu (2019), there is a tendency for information and communication technology gadgets and networks to develop sudden faults and in the user lacks basic troubleshooting skills, the office manager may not be able to continue working until a technician comes. Possessing basic troubleshooting skills can help office workers to minor technology-related office issues like printer hanging, restarting a smart phone or laptop when it malfunctions, and being able to troubleshoot the system network when it fails to connect to the wifi (Otamiri *et al.,* 2020). Troubleshooting skill denotes the identification or diagnosis of trouble in the management flow of a system caused by a failure of some kind. The problem is initially described as symptoms of malfunction, and troubleshooting is the process of determining and remedying the causes of these symptoms. Troubleshooting skill is the technical capability to manage the process of figuring out how to solve a computer problem. Even with the most updated software and hardware, occasionally computers can malfunction (Frank, 2018).

Concept of Information Manager Job Performance

Online Business Dictionary (2018) describes the information manager as an employee of a business or organization whose duties typically include allocating physical resources such as office space and supplies, scheduling internal events, overseeing operational staff such as accountants, technicians, and administrative personnel, and other details necessary to run an office in any industry or field. An information manager is responsible for monitoring and reviewing systems, usually focusing on specific outcomes such as improved timescales, turnover, output, sales, etc. They may supervise or manage a team of administrators, allocating roles, recruiting and training, and issuing assignments and projects (Olayanju & Asogwa, 2010). In the view of Bedford in Olayanju and Asogwa (2010), information managers are in charge of customer service, report writing, budget management, database management, systems analysis, purchasing, book keeping, human resources supervision, recruitment, sales and marketing, records management, form/template design, website maintenance, project management, management consultancy, facilities management, space management, risk management, and payroll management in most public and private establishments.

Thus, information manager job performance refers to the effectiveness and efficiency with which an individual in the role manages information assets within an organization to achieve strategic objectives. This includes various responsibilities such as data governance, data security, data quality assurance, information accessibility, and technology management. The performance of an Information Manager is typically evaluated based on their ability to effectively manage information assets to support organizational goals, ensure compliance with regulations, and meet the needs of stakeholders (Urang, 2018). Information Managers ensure that data is accurate, reliable, and up-to-date. This is essential for informed decision-making and maintaining trust in the organization's information. Efficient management of information resources improves operational efficiency by facilitating quick and easy access to information when needed. This streamlines processes and enhances productivity across the organization. Information security and information timeliness are used as measures of information manager job performance in Oil and Gas firms in Yenagoa.

Measures of Information Manager Job Performance

Information Security

Conceptually, information security is the extent to which data and information contents in office are safe and protected from file theft, loss, damage, and/or unauthorized access. Information security simply referred to as InfoSec, is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction (Alhassana & Adjei-Quaye, 2017). There is the need for an organization's information security policy, this should not simply convey a plan of action, for example, its purpose, goals, applicability, importance and activities; most importantly organizations should also document who is ultimately responsible for carrying out the security agenda across the enterprise (Allen, 2015). It is also imperative for organizations to track dissemination of policies and procedures through employee attestation, as this helps provides a valuable input into policy enforcement and education processes (Kennedy, 2016).

Information Timeliness

Information timeliness refers to a situation where information manager has access to information that is for due him/her on time. In Oil and Gas Firm where there is communication health, managers are not kept away from information that they should be privy to, or get informed late. Rather, they are being passed information right on time. The timely flow or delivery of information to managers in a workplace is a strong determinant of communication health in a workplace. The communication health of an organization such as a hospitality company is one in which managers do not hoard information, but rather spread it across accordingly (Otamiri, 2019). Information timeliness refers to the speed with which information is made available to the public. When information is made available in a timely manner, it can be used to create positive change and improve the competence of employees (Computer Security Resource Center, 2022). However, if information is released too slowly, it can be out of date and irrelevant.

Theoretical Review

This work is anchored on Roger's 1962 Diffusion of Innovation Theory. The diffusion of innovation theory assumes that:

i) In a social system, there will always be a disparity in the level and time at which individuals within a given social system adopt new ideas, techniques, and technology.
ii) Individuals and arms of institutions that adopt innovations early will naturally outperform late adopters and the laggards.

This theory was succinctly adopted as the theoretical underpinning of this study because it is related to the predictor variable of this study (employee digital competence as an innovation). The theory predicts that employees that adopt innovations on time will experience better job performance than those who stick to traditional systems of operations.

Method

The study adopted explanatory cross-sectional survey research design. The population of the study consisted of One Hundred and One (101) information managers of Twenty-Five (25) registered Oil and Gas Firms presently operating in Yenagoa. The above information was obtained from the Human Resource Departments of the Firms understudy. The entire population was used without sampling. Thus, the study was a census research. Structured questionnaire was used as the main instrument for the collection of primary data. To establish the validity of the instrument, copies of the questionnaire was submitted to the project supervisor and two other experts in Office and Information Management. Their comments were used to validate the final copy of the instrument that was administered. Thus, Cronbach alpha via SPSS (Statistical Package for Social Sciences, Version 20.0) was used to ascertain the reliability of the instrument. A total of One Hundred and One (101) copies of the questionnaire were administered through the help of two research assistants. The researchers were able to retrieve Ninety-One (91) copies of the questionnaire distributed and were used for analysis. The Spearman Rank Order (Rho) with the aid of Statistical Package for Social Sciences (SPSS) Version 20.0 was used for the analysis. The formula is presented below:

$$r = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

Where:

n = number of pairs of data
d = difference between the ranking in each set of data.
∑ = Summation.

Results

Ho_1: There is no significant relationship between internet skill and information security in Oil and Gas Firms in Yenagoa.

Table 1: Correlations of Internet Skill and Information Security

			Internet Skill	Information Security
Spearman's rho	Internet Skill	Correlation Coefficient	1.000	**.791****
		Sig. (2-tailed)	.	.000
		N	91	91
	Information Security	Correlation Coefficient	**.791****	1.000
		Sig. (2-tailed)	.000	.
		N	91	91

****. Correlation is significant at the 0.05 level (2-tailed).**

Source: Survey Data, 2024 (SPSS V. 20.0)

Table 1 above reveals r value of 0.791 at a P=0.00<0.05 for the hypothesis relating internet skill and information security. Since the significance value 0.00 is less than the alpha level of 0.05, the null hypothesis (Ho_1) which states that there is no significant relationship between internet skill and information security in Oil and Gas Firms in Yenagoa was rejected and the alternate (Ha_1) was accepted. This implies that there is a high positive relationship between internet skill and information security in Oil and Gas Firms in Yenagoa.

Ho_2: There is no significant relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa.

Table 2: Correlations of Troubleshooting Skill and Information Timeliness

			Troubleshooting Skill	Information Timeliness
Spearman's rho	Troubleshooting Skill	Correlation Coefficient	1.000	**.548****
		Sig. (2-tailed)	.	.000
		N	91	91
	Information Timeliness	Correlation Coefficient	**.548****	1.000
		Sig. (2-tailed)	.000	.
		N	91	91

****. Correlation is significant at the 0.05 level (2-tailed).**

Source: Survey Data, 2024 (SPSS V. 20.0)

Table 2 above reveals r value of 0.448 at a P=0.00<0.05 for the hypothesis relating troubleshooting skill and information timeliness. Since the significance value 0.00 is less than the alpha level of 0.05, the null hypothesis (Ho_2) which states that there is no significant relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa was rejected and the alternate (Ha_2) was accepted. This implies that there is moderate positive relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa.

Discussion of Findings

The test of hypotheses one and two revealed that there is a high positive relationship between internet skill and information security in Oil and Gas Firms in Yenagoa; and there is moderate positive relationship between troubleshooting skill and information timeliness in Oil and Gas Firms in Yenagoa. This implies that appropriate employee capability in internet skill and troubleshooting skill brings about a corresponding improvement in the job performance of information managers in Oil and Gas Firms in Yenagoa. In line with

the above finding, Frank (2018) found that individuals such as information managers with internet skills are often more aware of common security risks, such as phishing attacks, malware, and data breaches. They are better equipped to recognize suspicious online activities and take appropriate precautions to protect their information. Internet-savvy individuals are more likely to implement security best practices, such as using strong passwords, enabling two-factor authentication, regularly updating software, and avoiding risky behaviors online. This helps mitigate the risk of security incidents and breaches. In the workplace, employees with strong internet skills can either strengthen or compromise organizational security. Those who adhere to security policies and procedures contribute to a culture of security awareness, while others may inadvertently introduce security vulnerabilities through careless or risky online behavior. Internet skills play a crucial role in shaping individuals' ability to protect themselves and others from online security threats.

Similarly, the finding of Otamiri *et al.* (2020) revealed that effective troubleshooting helps maintain the reliability and performance of information systems and technologies. By promptly addressing issues such as server failures, network disruptions, or software glitches, information professionals can ensure uninterrupted access to critical data and resources. Individuals with strong troubleshooting skills can quickly identify and resolve technical issues that may arise with information systems, networks, or software. This rapid problem-solving ability minimizes downtime and ensures that information remains accessible and up-to-date. Skilled troubleshooters can troubleshoot and resolve these issues swiftly, ensuring that users can access the information they need in a timely manner. Troubleshooting skills not only help address existing issues but also enable proactive identification and mitigation of potential problems before they impact information timeliness.

CONCLUSION

Base on the findings, the study concluded that information managers rely on a workforce adept in digital technologies to ensure the accuracy, integrity, timeliness, and security of information assets. Employees with strong internet and troubleshooting skills can swiftly address technical issues, minimizing downtime and ensuring timely access to critical data. In Oil and Gas Firms, where the management of vast amounts of data is paramount, employee digital competence directly impacts operational efficiency, risk management, and strategic decision-making. By fostering a culture of continuous learning and digital skills development, organizations can empower their workforce to adapt to evolving technologies and drive innovation.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. Management of Oil and Gas Firms should integrate internet skills into job roles and responsibilities, emphasizing their importance for achieving organizational objectives. Encourage employees to apply their internet skills in their day-to-day tasks, reinforcing their relevance and practical utility.
2. Management of Oil and Gas Firms should provide opportunities for hands-on practice in simulated or real-world scenarios. Encourage employees to troubleshoot common technical issues encountered in their roles, such as software glitches, network connectivity problems, or hardware malfunctions.

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