ISSN: 4651 – 4806
Volume 10, Number 2, 2024
International Journal of Advancement in Marketing and Management

EMPLOYEE INFORMATION SYSTEM AND WORKFORCE RESILIENCE: A MODERATING ROLE OF SYSTEM DESIGN IN ORGANISATION

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ABSTRACT

The study determined the relationship between employee information system and workforce resilience in organisation. The study revealed that a relationship exists employee information system (and measures of workforce resilience organisation. It was also found that there is a moderating effect of system design/functionality on the relationship between employee information system and workforce resilience in organisation. The study concluded that investing in a robust employee information system is a strategic move for oil firms aiming to enhance their workforce's ability to withstand and recover from unforeseen challenges. Therefore, it was recommended amongst others that management of organisation should ensure that their onboarding process include comprehensive training on safety protocols, company culture and job specific skills to help new employee integrate smoothly and perform effectively; Management of organisation should create a customizable dashboard for different stakeholders that display relevant human resource metrics and insight in a format that meet their specific needs.

Key words: Employment Information System, Workforce Resilience, System Design

INTRODUCTION

One of the greatest problem faced by oil firms is poor workforce resilience. **Workforce resilience** in oil firms is increasingly compromised by several interrelated challenges, which undermine the industry's ability to maintain operational efficiency and adaptability in a rapidly evolving and high-stakes environment. The primary issues contributing to this problem include inadequate talent retention, a high proportion of inexperienced team members, and insufficient staff flexibility among others. The oil and gas industry faces significant difficulties in retaining skilled and experienced employees. High turnover rates contribute to disruptions in operational continuity, increased recruitment and training costs, and a loss of critical expertise. The lack of long-term retention impacts the stability of the workforce, leading to potential declines in productivity and morale, and compromising the organization's ability to maintain a competitive edge (Barrett & Spencer, 2021; Mohammed, 2015; Shamout, *et al.,* 2022).

With the retirement of seasoned professionals and the influx of less experienced workers, many oil firms are dealing with a workforce that lacks the depth of experience necessary for managing complex operations and high-risk environments. This shortage of experienced personnel can lead to operational inefficiencies, increased error rates, and heightened safety risks, ultimately affecting the firm's overall performance and resilience. The dynamic nature of the oil industry requires employees to be adaptable to changing roles, responsibilities, and working conditions. However, many firms struggle with poor staff flexibility, which hampers their ability to respond effectively to operational demands, technological advancements, and unforeseen challenges. Limited flexibility can result in inefficient resource management, reduced responsiveness to critical issues, and overall decreased organizational agility. Hence, there is no effective employee information system in oil firms in Rivers State characterized by recruitment system, manager/employee self-service portal and HR analytics/reporting system. Definitely, such leadership failure exposes the resilience of these oil firms to jeopardy and vulnerability as it

were (Ugbaka, *et al.,* 2021; Ipil, 2023; Hossain, *et al.,* 2019; Kushwaha & Singh, 2021; Barrett & Spencer, 2021).

Furthermore, the researcher happens to observe that the relationship between employee information system and workforce resilience of Oil Firms in Rivers State has not received adequate empirical research attention. Although, there has been several research efforts towards this effects. In confirmation, Okeke (2021) examined the effect of management information system on organizational performance in manufacturing firms in Anambra State, Nigeria; Nthiga and Samson (2024) examined the effect of human resource information systems on efficiency of information management on employees' performance at Murang'a water and sanitation companies, Kenya; Arif and Rahma (2019) studied the effect of information system on employee performance in Indonesia; Okpokwasili (2018) sought to determine the information systems application skills required of secretaries for job performance in public parastatals in Rivers State; Nnaji (2023) examined the relationship between information system skills and employee performance in Hospitality Industry in Rivers State and managerial effectiveness in Commercial Banks in South-South, Nigeria. While these studies attest to the capabilities of various components of how employee information system enhancing workforce resilience of organizations in different states and parts of the world, none of them provided empirical explanation on how dimensions of employee information system such as recruitment system, manager/employee self-service portal and HR analytics/reporting system interact with workforce resilience of Oil Firms in Rivers State. Therefore, there was the need to bridge this knowledge gap with this research effort, and that lent credence to undertaking the empirical study.

Concept of Employee Information System

An employee information system (EIS) in oil firms, like in other industries, is a digital platform designed to manage and streamline human resource (HR) processes. These systems are crucial in the oil and gas industry, where managing a large, diverse, and often geographically dispersed workforce is essential. An effective EIS in an oil firm ensures that HR processes are handled efficiently, supporting the company's operational needs and regulatory requirements. The oil and gas industry is heavily regulated, requiring strict adherence to safety and environmental standards. An effective EIS helps firms maintain compliance by tracking employee certifications and training requirements. It also facilitates accurate reporting to regulatory bodies by providing timely access to necessary documentation and data analytics (Almazán, *et al.,* 2017).

Oil firms often operate across multiple locations, including remote and offshore sites. An EIS helps manage a large, geographically dispersed workforce efficiently, ensuring that HR processes are streamlined and consistent across all locations. The oil industry is highly regulated, especially concerning safety and environmental standards. An EIS tracks compliance with these regulations, including safety training, certifications, and incident reporting, reducing the risk of non-compliance penalties (Okpokwasili, 2018). Automating routine HR tasks like payroll, leave management, and performance reviews reduces administrative burdens, allowing HR teams to focus on strategic initiatives. Efficient management of human resources ensures that the right personnel are available where needed, whether for ongoing operations or special projects. Okeke (2021) averred that an EIS ensures that employees have completed necessary safety training and that incidents are reported and addressed promptly. This is crucial in an industry where safety is paramount. Managing health benefits, tracking medical records, and ensuring access to healthcare are vital, especially for employees working in hazardous or remote environments. Efficient leave management and support for employee well-being can improve job satisfaction and reduce turnover in an industry known for its demanding work conditions.

Concept of Workforce Resilience

In the oil industry, where market conditions and operational environments can change rapidly, adaptability ensures that the workforce can pivot and continue operations without significant disruption. Thus, Chewning *et al.* (2023) defined workforce resilience as the capacity of employees and the organization to quickly adjust to new conditions or unexpected challenges, such as changes in market demand, new regulations, or technological advancements. Workforce resilience is crucial in today's fast-paced business environment, where change is constant. Resilient employees can adapt quickly to new circumstances and unexpected changes, which is essential for maintaining productivity and effectiveness. This adaptability allows organizations to navigate challenges without significant disruptions. Resilient employees approach problems with a creative and analytical mindset. They view obstacles as opportunities for growth rather than setbacks, enabling them to find multiple solutions and experiment with different approaches until they achieve the best outcome. Employees who possess resilience are more likely to maintain focus and motivation, even when faced with challenges. Studies have shown that resilient workers experience fewer absences due to stress-related issues, leading to higher overall productivity within the organization (Cumming *et al.,* 2020)

Operationally, workforce resilience in oil firms refers to the ability of the employees and the organization as a whole to adapt, recover, and continue functioning effectively in the face of challenges, disruptions, or crises specific to the oil industry. These challenges can include economic fluctuations, environmental disasters, technological changes, geopolitical tensions, and other external or internal stressors that could impact operations (Burnar & Bhamra, 2011). Workforce resilience equips employees with the skills necessary to manage stress effectively. This capability helps prevent burnout and promotes a healthier work-life balance, ultimately benefiting both individual well-being and organizational performance. A resilient workforce is better positioned to cope with mental health challenges such as anxiety and depression. By developing resilience skills, employees can recognize their emotions, maintain a positive outlook, and seek support when needed. Research of Ponomarov and Holcomb (2012) indicates that resilient workers report higher levels of job satisfaction compared to their less resilient counterparts. This satisfaction stems from their ability to overcome challenges, leading to a sense of accomplishment and fulfillment in their roles.

Although, Lee, *et al.* (2013) asserted that many employees experience high levels of stress due to demanding workloads, job insecurity, and lack of control over their work environments. This chronic stress can lead to burnout, which diminishes an employee's ability to cope with challenges effectively. The prevalence of workplace stressors contributes to mental health issues, further reducing overall resilience. Organizations often fail to provide adequate training focused on building resilience skills among employees. Without opportunities for professional growth and skill development, employees may struggle to adapt when faced with change or adversity. Resilience training can equip individuals with the tools they need to manage stress and navigate challenges effectively. When organizations make superficial commitments to DEI without implementing meaningful changes, it can lead to distrust among employees. If individuals perceive that their contributions are not valued or that they do not belong within the organization, it undermines their sense of worth and reduces overall resilience. While many organizations track diversity metrics, they often lack effective methods for measuring inclusion within the workplace. If employees do not believe they have a voice or influence in decision-making processes, their engagement levels will drop, negatively impacting workforce resilience.

Concept of System Design/Functionality

System design/functionality is critical for ensuring efficient, safe, and compliant operations. It encompasses a wide range of capabilities, from automation and data management to safety, environmental monitoring, and cybersecurity. Properly designed systems not only enhance productivity and reduce costs but also ensure that the firm can adapt to changing market conditions, technological advancements, and regulatory requirements (Amirize, 2021). The oil and gas industry involves multiple technical areas such as drilling, reservoir management, production chemistry, and pipeline engineering. A well-structured system design ensures that these diverse teams can work together effectively, sharing information and aligning their objectives to achieve common goals. This interdisciplinary approach minimizes the risk of miscommunication and enhances overall project efficiency. Effective system design encompasses lifecycle management, which is vital for optimizing performance from conceptualization through decommissioning. By considering the entire lifecycle of a project, oil firms can identify potential issues early on, reduce costs, and enhance safety measures throughout operations. This holistic view allows companies to make informed decisions that positively impact both short-term outcomes and long-term sustainability (Odu, 2021). A critical aspect of system functionality is requirements analysis, which involves defining technical specifications, environmental considerations, safety standards, and regulatory compliance needs. By thoroughly understanding these requirements during the design phase, oil firms can ensure that their projects meet industry standards while minimizing risks associated with non-compliance or operational failures.

System design/functionality in oil firms refers to the architecture and operational capabilities of technological and organizational systems that support the various processes within the industry. This includes the design and functionality of software, hardware, and integrated systems used in exploration, production, refining, transportation, and management of oil and gas resources. The inherent complexities of the oil and gas sector necessitate robust risk management strategies integrated into system design. Systems engineers assess potential hazards throughout the project lifecycle and develop mitigation strategies to address them proactively (Garud; Bailetti in Cerere, 2013). This focus on risk management helps prevent accidents and ensures safe operations in an industry where safety is paramount. Oil projects often require the integration of various technologies for drilling, extraction, processing, and transportation. A well-designed system facilitates this integration by ensuring that all components function cohesively to achieve project objectives. This seamless interaction between technologies enhances operational efficiency and reduces downtime caused by equipment failures or incompatibilities.

Empirical Review

Nnaji (2023) examined the relationship between information system skills and employee performance in Hospitality Industry in Rivers State and managerial effectiveness in Commercial Banks in South-South, Nigeria. The objective of the study was to examine how dimensions of information system skills such as communication skills, computer skills, and records management skills interact with measures of employee performance such as task accomplishment, innovativeness, and timeliness. The philosophical underpinning of the study was positivism. The study adopted the explanatory cross-sectional survey research design. The entire population of 22 Commercial Banks was used without sampling which makes it a census research. Using a combination of Taro Yamene formula and Bowley's Population Appropriation formula, a sample size of 306 respondents was drawn from a population of 1308 full time staff of 43 (3-5 Star Hotels) Hotels in Rivers State. After validation by the supervisor and other

experts and having determined the reliability of the instrument using Cronbach alpha, questionnaire was used as the instrument for data collection. Out of the total of 306 copies of the questionnaire distributed, a total of 250 copies were retrieved. Mean and standard deviation were used to carry out the univariate while the bivariate analysis was done using Spearman Rank Order. Partial Correlation was u for the multivariate analysis. Based on the results, the following findings were made: There is a significant positive relationship between communication skills and employee performance in Hospitality Industry in Rivers State; there is a significant positive relationship between computer skills and employee performance in Hospitality Industry in Rivers State; and that there is a significant positive relationship between records management skills and employee performance in Hospitality Industry in Rivers State. The study also revealed that technological infrastructure significantly moderates the relationship between information system skills and employee performance in Hospitality Industry in Rivers State. The study concluded information system skills boost the job performance of employees in Hospitality industry in Rivers State. The study recommended among other things that the management of Hospitality firms should invest more in digital upskilling programmes and technological upgrade in order to enable their staff fit in for improved performance. The study has therefore, bridged the knowledge gap that existed concerning the relationship between information system skills and employee performance within the context of Hospitality Industry in Rivers State. This was achieved providing scientific explanation of how dimensions of information system skills such as communication skills, computer skills, and records management skills interact with employee performance in terms of task accomplishment, innovativeness, and timeliness in Hospitality Industry in Rivers State.

System Design and Functionality as a Moderator between Employee Information System and Workforce Resilience

System design/functionality plays a crucial moderating role in the impact of an **employee information system (EIS)** on **workforce resilience**. The design and functionality of an EIS determine how effectively it can be utilized to enhance resilience among employees by influencing the user experience, accessibility, efficiency, and overall satisfaction with the system. A well-designed EIS with an intuitive interface allows employees and managers to easily access and manage information. If the system is user-friendly, employees are more likely to engage with it regularly, which helps them stay informed, reduce uncertainty, and make better decisions key components of workforce resilience. The system's functionality should include easy access across various devices and locations, ensuring that employees can retrieve critical information anytime and anywhere. This flexibility is particularly important in the oil industry, where employees may be in remote or on-site locations and need to access the system under challenging conditions.

Amirize (2021) opined that a user-friendly interface enhances employee engagement with the system. If employees find it easy to navigate the EIS, they are more likely to utilize its features effectively. This increased usage can lead to better-informed decisions during times of stress or change. Systems designed for real-time data access allow managers and employees to quickly retrieve necessary information when needed. This capability is crucial during emergencies or organizational shifts where timely decisions are essential for maintaining productivity. Systems designed for real-time data access allow managers and employees to quickly retrieve necessary information when needed. This capability is crucial during emergencies or organizational shifts where timely decisions are essential for maintaining productivity. The ability for organizations to customize their EIS according to specific needs allows them to address unique challenges faced by their workforce. Customizable features may include tailored reporting tools or specialized training modules that enhance employee skills relevant to current demands.

Odu (2021) averred that a well-integrated system design ensures that employees have a holistic view of their information, reducing fragmentation and confusion, which can undermine resilience. Effective functionality in terms of data flow between systems ensures that all relevant information is synchronized, preventing delays or discrepancies that could hinder the workforce's ability to respond effectively to challenges. A well-designed EIS includes comprehensive training modules to ensure that employees understand how to use the system effectively. If the system is complex but lacks adequate support and training, it may lead to underutilization or errors, which can negatively impact resilience. A secure EIS protects against data breaches, which could lead to significant disruptions and undermine workforce resilience. A system that automatically updates to reflect changes in compliance reduces the burden on employees and minimizes the risk of non-compliance, which supports organizational stability and resilience. Effective system design includes automation of routine tasks, reducing the administrative burden on employees. By freeing up time for more strategic activities, automation helps employees focus on tasks that contribute to resilience, such as problem-solving and innovation. Automation also minimizes the risk of human error in data entry and processing, ensuring that the system's outputs are reliable and reducing the likelihood of disruptions caused by inaccuracies.

CONCLUSION

Based on the analyses and discussion of findings, the study concluded that there is a significant positive relationship between employee information system and workforce resilience of Oil Firms in Port Harcourt. It was also concluded that system design and functionality has a moderating effect on the relationship between employee information system and workforce resilience of Oil Firms on Port Harcourt. Investing in a robust employee information system is a strategic move for oil firms aiming to enhance their workforce's ability to withstand and recover from unforeseen challenges.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. Management of Oil Firms should deign portals with a user-friendly interface that allow easy navigation.
2. Management of Oil Firms should ensure that their portals are mobile-responsive so that managers and employees can access them from any devices including smartphones and tablets.
3. Management of Oil Firms should create a customizable dashboard for different stakeholders that display relevant human resource metrics and insight in a format that meet their specific needs.
4. Management of Oil Firms should design and develop a functional/unified data platform that integrates data from various sources such as exploration, production, HR and finance systems.

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