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Human Resource Database Security and Employee Productivity in Telecommunication Companies in South-South, Nigeria

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ABSTRACT
This study investigates the relationship between human resource database security and employee productivity within telecommunication companies in South-South Nigeria. The research employs a cross-sectional survey design, utilizing a census approach to sample the entire population of 162 employees, managers, and supervisors from four telecommunication firms. Primary data was collected through a 5-point Likert scale questionnaire, and hypotheses were tested using Spearman's Rank Order Correlation Coefficient. Findings reveal a positive significant relationship between human resource database security and various measures of employee productivity, including timeliness of work, achievement of targets, and employee innovativeness. Specifically, the results indicate strong correlations (rho = 0.741 for timeliness, rho = 0.684 for target achievement, and rho = 0.892 for employee innovativeness), all with p-values less than 0.05, leading to the rejection of the null hypotheses. The study concludes that robust database security not only protects sensitive employee information but also fosters a productive work environment, thus contributing to overall organizational effectiveness. Recommendations include implementing strong security protocols, providing continuous employee training, and fostering a culture of innovation to further enhance productivity in the telecommunication sector.

Keyword: Human Resource Database Security, Employee Productivity, Timeliness, Achievement of targets, Employee Innovativeness

INTRODUCTION

The business environment is becoming increasingly competitive, compelling firms to enhance their competencies and expand their capabilities in order to be more cost-effective, innovative, and competitive (Awan & Tahir, 2015). A firm's ability to compete is determined by its financial strength, resources both

tangible (such as facilities) and intangible (such as patents) technical know-how, and, most importantly, its employees. Among these resources, employees stand out as the most strategic asset. As Mosammod and Kabir (2011) highlight, employees are not just the backbone of a business but also instrumental in its development. They are the driving force behind the management of production processes, ensuring that organizational goals are met through optimal utilization of resources (Alamdar, Muhammad, & Wasim, 2012).

Furthermore, modern industries are increasingly reliant on employees' intellectual capabilities rather than physical inputs. According to Alamdar et al. (2012), no industry has been able to achieve and sustain high productivity without a sufficient number of competent employees. The synergy between skilled employees, efficient equipment, and effective procedures directly impacts a firm's productivity. Regardless of a business's size, enhanced employee productivity is essential for-profit maximization and competitive advantage within the industry.

Recognizing the importance of employee productivity, industries are exploring innovative ways to improve it. This includes adopting advanced technology, creating conducive work environments, offering flexible working hours, competitive pay, benefits, and opportunities for supervision, promotion, and career advancement (Shane, 2017). However, maintaining high productivity should not solely rely on the employees. Firms must also foster an accommodating work culture and environment to encourage employees to excel in their roles.

In addition to the role of employees, information plays a crucial part in business success. Garlėja and Skvorcova (2015) argue that a person's social status is increasingly tied to access to regular information streams. Information connections with the outside world create opportunities for activities, especially those that are socially important. The quality, quantity, and content of information are critical; a shortage of information can hinder personal development and lead to psychological issues. This phenomenon, referred to as "information hunger," can be detrimental to personal and professional growth.

Over the past thirty years, the volume of information has grown significantly due to technological advancements, enabling people to access data from various sources rapidly (Zeleny, 2020; Hicks, 2016). As Herms (2014) notes, information has now become a form of modern capital. This underscores the importance of secure and efficient human resource databases, particularly in enhancing employee productivity. Therefore, the purpose of this paper is to examine the relationship between human resource database security and employee productivity in telecommunication companies in South-South, Nigeria. The specific objectives of the study included to:

i. Examine the relationship between human resource security management and timeliness of work in telecommunication companies in South-South, Nigeria?
ii. Determine the relationship between human resource security management and achievement of targets in telecommunication companies in South-South, Nigeria?
iii. Access the relationship between human resource security management and employee innovativeness in telecommunication companies in South-South, Nigeria?

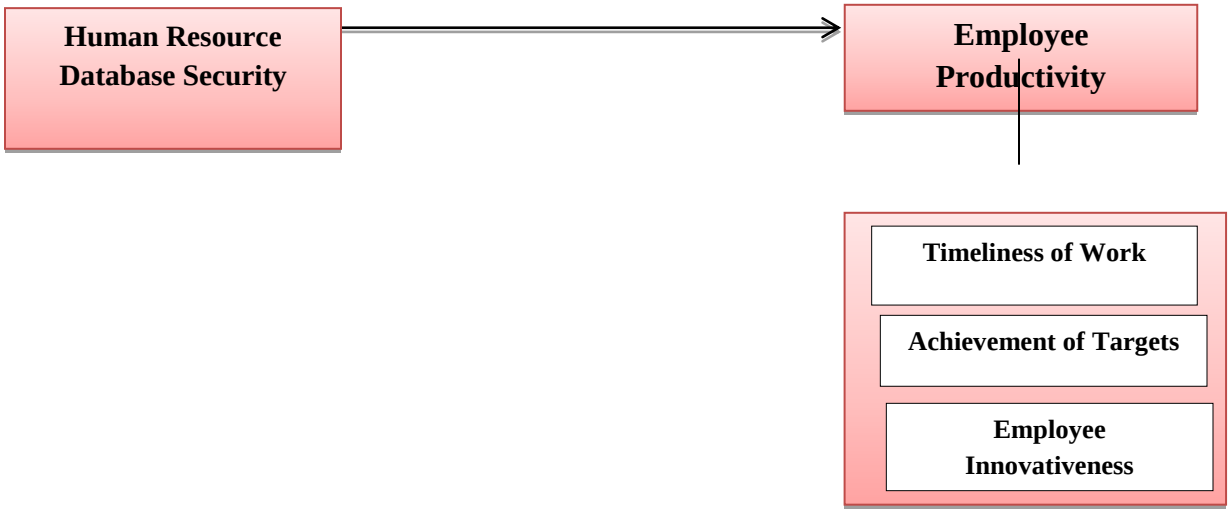

Figure 1: conceptual model for the relationship between human resource data security and employee productivity.
Source: Desk Research (2024)

LITERATURE REVIEW

Theoretical Foundation

Technology Acceptance Model

The Technology Acceptance Model (TAM), proposed by Davis (1989), is one of the foundational models used to understand how external factors influence individuals' decisions to adopt new technologies, primarily from economic, usability, and behavioral perspectives. The model was extended to TAM2 by Venkatesh and Davis (2000) to include social and cognitive influences on perceived usefulness (PU) and usage intentions. Subsequently, TAM3 was introduced by Venkatesh and Bala (2008), adding anchor and adjustment factors to better explain perceived ease of use (PEOU). Despite these advancements, Bernadette (1996) argues that the original TAM remains more suitable for most adoption studies compared to its later extensions.

The original TAM posits that perceived usefulness (PU) is a major determinant of a user's intention to adopt technological innovations (Davis, 1989). PU is defined as the degree to which a person believes that using a particular technology will improve their job performance within an organizational setting. Additionally, perceived ease of use (PEOU) refers to the degree to which an individual expects that adopting a technology or system will be free of effort (Davis, 1989). In essence, the more useful and easier to use a technology appears, the more likely it is to be adopted.

However, TAM has faced criticism for its narrow focus on the technological aspects of adoption, neglecting the broader organizational and human factors that also play significant roles in adoption decisions. Several researchers, including Shih et al. (2011), Wayne (2016), Wu et al. (2011), and Yarbrough and Smith (2007), have pointed out that TAM does not adequately account for external variables such as organizational culture, management support, and human factors, which are critical in the adoption process. Despite these criticisms, scholars like Marc (2011) and Shabir and Padma (2017) have advocated for the inclusion of customized variables beyond the technical domain to improve the model's comprehensiveness.

In this regard, Park (2009) proposed that factors influencing the actual use of information technology can be categorized into four main contexts: human, technological, social, and organizational. The social context refers to the influence of others on an individual's decision to adopt a technology, while the

organizational context emphasizes the role of organizational support and policies in facilitating or hindering the use of information technology. This holistic view suggests that technology acceptance cannot be understood in isolation from the human and organizational environments in which it operates.

Human Capital Theory

Human capital theory, first introduced by Becker (1962) and Rosen (1983), posits that individual workers possess a set of skills or abilities that can be improved or accumulated through education and training. This theory forms the foundation for understanding how the development of human capital impacts both individual and organizational success. The concept of human capital can be traced back to Schultz (1962), who initially defined it as the "knowledge, skills, and abilities of people employed in an organization" (p. 140). While Schultz's definition was concise, it overlooked the importance of "value" and "investment" in human capital. Schultz later revised this definition, stating that human capital encompasses all human abilities, whether innate or acquired, and that these attributes can be augmented through appropriate investment (Schultz, 1981).

The essence of human capital theory is that investments in workers, such as education and training, enhance their earning capacity and overall value to the organization. Alnachef and Alhaijar (2015) argue that the development of human capital within an organization primarily aims to (a) increase the individual's value to the organization, (b) enhance the organization's revenue-generating capacity, and (c) ensure alignment between employees' skills and the organization's goals. Thus, the theory plays a central role in understanding employer-employee relations and the exchanges that occur within an organization.

Horokhivska (2019) further expands on this by suggesting that the transformation of workers through learning and development programs should adhere to organizational standards or benchmarks. This transformation process should not be the sole responsibility of the employees but should be a collective effort, emphasizing that "the transformation is everybody's job" (Horokhivska, 2019). In this sense, organizations are encouraged to foster an environment that promotes continuous education and self-improvement among their employees.

In the context of small businesses, human capital theory is particularly relevant. It is commonly assumed that the human capital of business founders, such as their knowledge and experience, improves the likelihood of small firms' survival (Bruederl et al., 1992). Human capital acts as a resource, providing competitive advantages in business operations. However, studies on human capital often assume that experiences directly translate into knowledge and skills. While factors like managerial experience or education are frequently significant in large-scale studies, they are not always strong predictors of success in smaller firms (Bruederl et al., 1992; Rauch & Frese, 2006).

HR Database Security

Information assets, including data, information, and software, have become crucial to organizational success. As noted by Von Solms and Von Solms (2005), inadequate protection of these assets "could have profound business and legal implications" (p. 1). They further argue that the scope of information security extends beyond the direct protection of data, information, and software (Von Solms & Von Solms, 2005). This broad scope implies that securing information assets involves multiple dimensions, from technological safeguards to organizational culture and human behavior.

A significant debate in the field is whether information security is primarily the responsibility of executive management or if it should be handled by the organization's security officer. While some may view it as a purely technical function, information security management encompasses more than just technical measures. To effectively manage information security in a university or any other organization, it is critical to understand various factors such as information security policies, regulations, human resource systems, infrastructure, and user behavior.

Herath and Rao (2009) argue that, although organizations have long employed information security technologies, relying solely on these tools is insufficient for protecting information assets. They suggest that human behavior, particularly end-user security attitudes, presents a major vulnerability (Herath & Rao, 2009). Observing and addressing these behaviors is challenging, but essential to any robust security

strategy. Viljoen (2008) supports this view, noting that "information security is not the sole responsibility of security experts with technical confidence" (p. 13). Every member of the organization must play a role in ensuring the security of information assets, as shared responsibility is critical for effective management (Viljoen, 2008).

In the realm of database security, organizations must deploy tools and technologies that enhance their visibility into where critical data resides and how it is used. Database security is defined as the process of protecting databases from unauthorized access, modification, or destruction. To achieve a comprehensive data security solution, three key requirements must be met: (1) confidentiality, which protects data against unauthorized disclosure; (2) integrity, which prevents improper data modification; and (3) availability, which ensures that the database remains accessible and recoverable in the event of hardware, software, or malicious disruptions.

Herath and Rao (2009) further emphasize that organizational policies, while designed to guide employee behavior, do not always produce the desired outcomes. This discrepancy is particularly evident in the realm of information security, where clearly defined policies may still be met with resistance or indifference from end-users (Herath & Rao, 2009). Information security governance is a responsibility that extends from executive management to every stakeholder within the organization. However, the question remains whether organizations are truly exercising this responsibility effectively. As Armoni (2002) points out, protecting data from intruders is vital for organizational survival, as the availability, comprehensiveness, and reliability of financial and operational data are essential for decision-making and sustainability.

Concept of Employee Productivity

Employee productivity refers to the efficiency with which organizations and their employees convert inputs into valuable outputs. According to Cheese (2015), productivity measures how effectively resources are utilized to generate value. Joshi and Balyan (2011) describe employee productivity, also known as labor productivity, as the output produced by each worker or system. Samnani and Singh (2014) further define productivity as the ratio of outputs to inputs, emphasizing that a more productive organization is also more efficient because productivity is an efficiency metric.

Productivity brings significant benefits to an organization. Chen et al. (2015) argue that productivity contributes to real income, allowing a firm to meet its obligations to customers, suppliers, employees, shareholders, and the government while remaining competitive or even enhancing its market position. Onyije (2015) supports this view, noting that higher productivity leads to lower unit costs, a critical driver of organizational success. High productivity enables both employees and employers to achieve satisfaction by fostering business growth. Ude, Zeb-Obipi and Oparanma (2022) recommends that a sense of psychological empowerment should be fostered within firms by providing staff members with opportunities to meet their desire for competence, relatedness, and autonomy while working on interesting projects that present a satisfying level of challenge and increased responsibilities.

Traditionally, labor productivity focused on the work of manual laborers, excluding managers and professionals (Scarth, 2002). However, Mathis and John (2003) assert that productivity measures both the quantity and quality of work, considering the cost of resources. Increased productivity gives organizations a competitive advantage by lowering production costs for goods and services. Improved productivity doesn't necessarily mean producing more; it could involve using fewer resources, such as money, time, or personnel, to achieve the same output.

McNamara (2003) adds that productivity results are the specific outputs desired from employees, often expressed as products or services for internal or external customers. However, productivity results can also be measured in financial terms, such as cost, quality, quantity, or time. McNamara explains that measuring productivity involves determining the time an average worker needs to achieve a certain level of output. Organizations can also monitor how much time employees spend on various activities, such as production, travel, or idle time due to waiting for materials or fixing broken equipment. This method helps identify inefficiencies that can be managed or reduced to optimize performance.

Measures of Employee Productivity

Timeliness of Work

Timeliness is a critical measure of employee productivity, reflecting whether a task or unit of work is completed correctly and within the required timeframe. As time is a fundamental resource for any activity, its effective management directly impacts the accomplishment of organizational goals and objectives (Ugwulashi, 2011). Time plays a pivotal role in determining the importance of other resources in achieving these objectives (Adeojo, 2012). According to Nwaiwu (2000), time is defined as the interval between the start and completion of an operation. It is an intangible, inelastic, and scarce resource, which, once misused, cannot be recovered. Kalu (2012) echoes this view, noting that time erodes quickly and cannot be stored, regained, or recalled, emphasizing its dynamic and irrecoverable nature.

Effective time management is crucial for achieving organizational goals with minimal resources. Time, as Mullins (1999) notes, is one of the most valuable yet limited resources available to managers. Administrators must, therefore, utilize time to its fullest potential. Failure to recognize time as a scarce resource often leads to employees running out of time before achieving expected results, thereby negatively affecting their productivity.

In various organizational settings, including manufacturing and education, time is allocated for specific tasks to ensure their timely completion. Maduagwu and Nwogu (2006) highlight the importance of timeliness in effective supervision, particularly in academic workplaces, where timely inspection contributes to quality outcomes. An efficient time management process ensures clear objectives, proactive planning, well-defined priorities, and the successful delegation of tasks. Time, as noted by Hisrich and Peters (2002), is a unique and finite resource that cannot be bought, rented, or stored. Its passage is consistent for everyone, making it essential to invest time wisely to achieve optimal results.

Effective time management involves making strategic decisions about how time is spent to maximize productivity. The principle of time management emphasizes doing the right tasks rather than merely completing tasks correctly. The ability to distinguish between what is important and what is trivial, and maintaining focus on the most critical activities, is a key determinant of effective time management (Hisrich & Peters, 2002). Persistence in following the right sequence of actions ensures that time is utilized to produce the best possible outcomes.

Achievement of Targets

Achievement of targets is a key measure of employee productivity, reflecting their contributions to overall organizational effectiveness. It encompasses actions that are integral to the formal reward system and align with the role's prescribed responsibilities (Williams & Karau, 1991). Essentially, achievement of targets indicates the degree to which an employee achieves specified targets. In a broader context, achievement of targets includes activities that translate organizational policies, missions, and resources into both tangible and intangible outputs, thereby facilitating efficient operations (Motowidlo et al., 1997). It addresses the fulfillment of the requirements stipulated in the employment agreement between the employee and the organization.

Borman and Motowidlo (1993) further elaborate that achievement of targets entails both effectiveness and efficiency in performing activities that contribute to the organization's technical core. Additionally, they emphasize the role of achievement of targets in shaping the psychological climate of the organization. They identify two key components of achievement of targets: interpersonal facilitation and job dedication. Interpersonal facilitation involves cooperative and supportive behaviors that enhance the effectiveness of coworkers, fostering a collaborative work environment. On the other hand, job dedication reflects an employee's self-discipline and motivation to align their efforts with organizational objectives and goals (Van Scotter & Motowidlo, 1996). Together, these elements of achievement of targets underscore the importance of individual contributions to the collective success of the organization.

Employee Innovativeness

Employee innovativeness is characterized by the extent to which individuals are willing to innovate within their roles. This includes their propensity to try new methods, adopt fresh ideas, and implement

innovation strategies in their work (Miller & Friesen, 1982; Khandwalla, 1987). Innovativeness reflects an employee's tendency to engage in and support novel ideas, experimentation, and creative processes (Lumpkin & Dess, 1996). Such behaviors can lead to the development of new products, services, or technological processes, potentially propelling the organization toward new heights of success (Swiezczek & Ha, 2003). Moreover, innovativeness implies the pursuit of creative and unconventional solutions to challenges and needs. Schumpeter (1934) posited that employees inherently engage in creative activities, with entrepreneurs acting as innovators who execute new combinations of resources—such as personnel, capital, materials, machinery, and management. He identified four key areas where innovation can occur: (1) new products, (2) new production methods, (3) new markets, and (4) new organizational forms.

Employee innovativeness can also be defined as engagement in innovative behaviors encompassing various stages of the innovation process, including idea generation, promotion, and realization, all aimed at producing meaningful innovations (Ramamoorthy, Flood, Slattery, & Sardessai, 2005). Innovations may be categorized as either technological—encompassing changes in products, services, and production processes—or administrative, which pertain to modifications in activities, social processes, and organizational structures. Additionally, innovations can be classified as either radical or incremental based on their impact on existing products or processes (Damanpour, 1991). Ultimately, employee innovativeness can be examined throughout the entire innovation process, from initial idea generation through product development and commercialization, to the adoption of new processes or organizational structures (Vincent, Decker, & Mumford, 2002).

From the foregoing discourse, the study hypothesized thus:

Ho_1: There is no significant relationship between human resource database security and timeliness of work in telecommunication companies in South-South, Nigeria.

Ho_2: There is no significant relationship between human resource database security and achievement of targets in telecommunication companies in South-South, Nigeria.

Ho_3: There is no significant relationship between human resource database security and employee innovativeness in telecommunication companies in South-South, Nigeria.

METHODOLOGY

The study adopted a cross sectional survey research design. The population of this study was made up of 162 employees, managers and supervisors of the four telecommunication companies in South-South, Nigeria. Since the entire population of 162 employees of the four (4) telecommunication companies in South-South, Nigeria was small, the entire population was adopted as a census. Primary data was collected using a 5-point Likert scaled questionnaire. The hypotheses were tested using the Spearman's Rank Order Correlation Coefficient with the aid of Statistical Package for Social Sciences version 23.0 as shown below:

DATA ANALYSIS AND RESULTS

Table 1 shows the result of correlation matrix obtained for human resource database security and measures of employee productivity. Also displayed in the table is the statistical test of significance (p - value), which makes us able to answer our research question and generalize our findings to the study population.

Table 1 Correlations Matrix for HR Database Security and Measures of Employee Productivity

			HR Database Security	Timelines s of Work	Achievement of Targets	Employee Innovativeness
Spearman's rho	HR Database Security	Correlation Coefficient	1.000	.741**	.684**	.892**
		Sig. (2-tailed)	.	.000	.000	.000
		N	143	143	143	143
	Timeliness of Work	Correlation Coefficient	.741**	1.000	.890**	.846**
		Sig. (2-tailed)	.000	.	.000	.000
		N	143	143	143	143
	Achievement of Targets	Correlation Coefficient	.684**	.890**	1.000	.790**
		Sig. (2-tailed)	.000	.000	.	.000
		N	143	143	143	143
	Employee Innovativeness	Correlation Coefficient	.892**	.846**	.790**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	143	143	143	143

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output version 23.0

H_{o1}: There is no significant relationship between human resource database security and timeliness of work of telecommunication companies in Nigeria.

Table 1 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.741 on the relationship between human resource database security and timeliness of work. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in timeliness was as a result of the adoption of HR database security. Therefore, there is a strong positive correlation between HR database security and timeliness of work of telecommunication firms in South-South, Nigeria. Similarly displayed in the table 1 is the statistical test of significance (p-value) which makes possible the generalization of our findings to the study population. From the result obtained from table 1, the sig- calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource database security and timeliness of work of telecommunication companies in Nigeria.

H_{o2}: There is no significant relationship between human resource database security and achievement of targets of telecommunication companies in Nigeria.

Similarly, Table 1 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.684 on the relationship between human resource database security and achievement of targets. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in achievement of targets was as a result of the adoption of HR database security. Therefore, there is a strong positive correlation between human resource database security and achievement of targets of telecommunication firms in South-South, Nigeria. Also displayed in the table 1 is the statistical test of significance (p-value) which makes possible the generalization of our findings to the study population. From the result obtained from table 1, the sig- calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource database security and achievement of targets of telecommunication companies in Nigeria.

H_{o3}: There is no significant relationship between human resource database security and employee innovativeness of telecommunication companies in Nigeria.

Furthermore, Table 1 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.892 on the relationship between human resource database security and employee innovativeness. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in employee innovativeness was as a result of the adoption of HR database security. Therefore, there is a very strong positive correlation between human resource database security and employee innovativeness of telecommunication firms in South-South, Nigeria. Also displayed in the table 1 is the statistical test of significance (p-value) which makes possible the generalization of our findings to the study population. From the result obtained from table 1, the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource database security and employee innovativeness of telecommunication companies in Nigeria.

DISCUSSION OF FINDINGS

The findings of this study indicate a positive and significant relationship between human resource database security and employee productivity in telecommunication firms in Nigeria. This aligns with the empirical research conducted by Lemchi, Oparanma, and Ejo-Orusa (2018), which examined the impact of management information systems (MIS) on the organizational performance of Seven-Up Bottling Company in Aba and Port Harcourt. Their study concluded that there is a positive and significant relationship between MIS and organizational performance, demonstrating that effective management information systems play a crucial role in enhancing organizational outcomes.

Supporting this, Oyibo, Tamunomiebi, Gabriel, and Asawo (2021) investigated the relationship between strategic human resource information systems and workers' adaptive performance in deposit money banks in South-South Nigeria. Their findings indicated that strategic human resource information systems significantly contribute to adaptive learning, creativity, and worker flexibility. The study concluded that organizational actions and decisions grounded in strategic human resource information systems can enhance outcomes related to adaptive learning and flexibility, ultimately improving workers' adaptive performance within these banks.

Further reinforcing this perspective, Eze, Agboola, and Aremu (2021) conducted a related study on the impact of management information systems on firm performance in Nigeria's manufacturing sector. They specifically examined two elements of MIS: the Decision Support System (DSS) and the Executive Information System (EIS). The findings revealed that both DSS and EIS have individually significant positive effects on the performance of manufacturing firms. The study concluded that these MIS components are critical determinants of firm performance in the manufacturing sector.

Overall, these studies collectively underscore the importance of effective information systems, including human resource database security, in driving productivity and performance across various sectors in Nigeria.

CONCLUSION AND RECOMMENDATIONS

This study explored the relationship between human resource database security and employee productivity in telecommunication companies in South-South Nigeria. The findings indicated a significant positive correlation between the effective implementation of human resource database security measures and various dimensions of employee productivity, including timeliness of work, achievement of targets, and employee innovativeness. Consequently, telecommunication companies in South-South Nigeria must prioritize the development and implementation of comprehensive human resource database security protocols. This investment in security can lead to improved employee outcomes, thereby enhancing overall organizational effectiveness in a competitive industry landscape. This study contributes

to the understanding of how human resource database security can significantly influence employee productivity. By recognizing the importance of securing sensitive employee information, organizations can not only protect themselves from potential threats but also unlock pathways for greater productivity and innovation among their workforce.

Based on the findings of this study on human resource database security and employee productivity in telecommunication companies in South-South Nigeria, it is recommended that telecommunication companies should prioritize the establishment of comprehensive human resource database security protocols. This includes employing advanced security technologies, such as encryption and multi-factor authentication, to safeguard sensitive employee information. Such measures not only protect against unauthorized access but also foster employee confidence in the organization's commitment to security.

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