The Effect of Human Resource Information Systems in South African Public Healthcare Practice

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ABSTRACT
The quest for improved healthcare practice has directed several establishments to consider various processes, such as the initiation of human resource information systems (HRIS). Ideally, to realise the sustainable development goal (SDG #3) would warrant studies on the effect of HRIS on growth and development in economies such as South Africa. The research aims to identify the effect of HRIS application in South African public healthcare. A qualitative research method was employed through interviews in the public healthcare system. Research approvals were granted by the South African Health Department and the affiliated university. The inductive approach and interpretive paradigm were initiated in the research. Tests were carried out on the data instrument to determine its reliability. The individuals who participated were purposively selected from the public healthcare sectors that participated. The research found flaws in HRIS on productivity discrepancy in public healthcare practices due to lack of motivation, cooperation, privacy, support structures, approaches, access, inspection and government commitment. These rationales negatively affect public healthcare practice, depriving sustainability in the health sector of the economy. The research contends effective HRIS in public healthcare practice. A further highlight is a deficiency in HRIS inspection which has a negative effect on public healthcare practice. The recommendations include the government initiating support structures for HRIS technology to achieve sustainable healthcare practice. A guideline is gestured for future

1. INTRODUCTION

The commitment to achieving universal healthcare, safety and peace, poverty eradication, prosperity, and well-being is a primary focus of the United Nations' Sustainable Development Goals (SDGs) Vision 2030 (WHO, 2019). This research addresses SDG Goal # 3, emphasising good health and well-being by ensuring global access to affordable healthcare services. Despite the framework of the SDGs, several nations—particularly in Africa—continue to face significant challenges in providing affordable healthcare (UNESCO, 2018). A critical shortage of skilled health personnel in these regions has also been highlighted (Chatterjee & Pandit, 2017). Numerous studies have emphasised the inadequate state of public healthcare infrastructures in many countries, underscoring the urgent need for efficient Human Resource Information Systems (HRIS), especially in countries such as South Africa (Munir et al., 2020).

HRIS is defined as "the process of maintaining, collecting, storing, retrieving, and validating employees' information within an organisation" (Kovach & Cathcart, 1999, p. 276). It involves acquiring, manipulating, analysing, and distributing employee data through an automated system (Kavanagh et al., 1990, p. 13). However, the effectiveness of HR management through information systems depends on the complexities involved in managing employee data (Abdullahi & Suleiman, 2024). The effect of HRIS on public healthcare practices is particularly significant in developing economies, where its adoption can strengthen public healthcare (Hassan, 2021).

Globally, the importance of healthcare practice is widely recognised due to its centrality to human well-being and livelihood (Pratiwi et al., 2021). Effective healthcare can serve as a driver of economic growth and strategic achievement when public health is prioritised. The healthcare sector requires robust HRIS to address employee management and contribute to economic development (Lema, 2018). Research has underscored the need for healthcare workers to be acquainted with HRIS and other information systems to enhance productivity (Adebayo et al., 2024). An automated HRIS in the healthcare sector can significantly benefit developing nations by promoting workforce efficiency.

Studies on HRIS have underscored its effect on healthcare by identifying skilled personnel and establishing sustainable HR practices (Udekwe & Iwu, 2023). Accordingly, this focus can reveal

HRIS's effects on employee management in healthcare settings. Further research is warranted on the role of effective HRIS in improving healthcare employee performance, retention, and overall success metrics in the economy (Arefin & Hosain, 2019). Pouransari (2016) also highlights the need to examine factors that limit HRIS efficiency in healthcare. Such insights could assist in achieving the United Nations' SDG Vision 2030 through the strategic implementation of HRIS (WHO, 2021). This qualitative research thus explores the effect of HRIS on public healthcare practices in South Africa, aiming to shed light on the implications of HRIS adoption in the public healthcare system.

2. LITERATURE REVIEW

Several researchers, including Udekwe (2022), have raised concerns about the effect of HRIS on healthcare practices and productivity. Ineffective HRIS implementations in monitoring, maintaining, and identifying skilled personnel have contributed to workforce reductions in the healthcare sector (Nwankwo et al., 2024). Consequently, regulatory practices need to incorporate HRIS efficiency for improved healthcare outcomes. Lema (2018) also emphasised the insufficiency of appropriate HRIS systems to support efficient healthcare practices, particularly in identifying skilled employees and addressing skill shortages. Therefore, coordinating employee and healthcare data through HRIS is crucial for accurate identification and accountability of healthcare practitioners. Moreover, establishing principles to enhance HRIS credibility in selecting qualified personnel for diverse healthcare functions, supported by strategic implementation, is necessary (Udekwe et al., 2023a).

Mahlulo (2020), highlighted the need for efficient HRIS with comprehensive software for employee management in various organisations. The lack of comprehensive HRIS could un-compromise the identification of skilled employees and their reward structures in promoting healthcare practice in the country. Thus, a sub-standard healthcare practice in several countries could be attributed to flawed information systems such as HRIS implementation and deficient government support (Were et al., 2019). They also highlighted deficient funding for information systems such as HRIS improvement in organisations such as healthcare. This, therefore, appears to fit the tale of eagerness for efficient HRIS as challenging due to the low number of skills, poor funding, and government support towards HRIS technology initiatives (Dey & Saha, 2020; Udekwe et al., 2021). These challenges therefore deprive efficient HRIS initiation towards achieving sustainable healthcare practice.

The effect of HRIS is significant towards productive healthcare practices for which, several reasons could deprive the accomplishment of good healthcare activities towards the development of countries. Thus, there is an indication that HRIS in public healthcare in countries such as South Africa lacks effectiveness in managing and strategizing employees' information, thereby creating a deficiency of employees in healthcare (Hussein & Ghorbel, 2024). However, the deficiency of employees creates opportunities for bogus healthcare practitioners to take over the profession in several countries (McJury, 2024). Therefore, inquiries are needed to determine the effect of bogus healthcare workers and the implications of HRIS in identifying such misconduct in public healthcare.

According to Alam et al. (2016) several reasons that deprive efficient HRIS are unfavourable salary, performance, incentives, decisions, planning and competitive advantage. Emphasis on these reasons for efficient HRIS is necessary for better assistance in performance through regulations and policies to comprehend healthcare practices and sustenance. Therefore, a need for efficient HRIS is required to achieve productivity and identification in organisations such as public healthcare for strategic accomplishment (Qadir & Agrawal, 2017; Udekwe et al., 2023a).

Shahreki (2024), mentioned the need for relevance of interactive arrangements through HRIS to accomplish enthusiasm, eagerness and collaborative practice in organisations. This would require strategy implementation to embrace competent and qualified skills, commitment, collaboration and motivation in healthcare through efficient HRIS. In essence, the absence of efficient HRIS could deprive the expectation of healthcare practices towards the development of nations (Aizhan Tursunbayeva et al., 2017). According to Belizón and Kieran (2021) they emphasised their belief that effective HRIS can have a positive effect on employees' confidence and productivity. Therefore, there is a need to identify and employ a qualified workforce through HRIS for effective healthcare practice and to achieve SDG strategy.

There is a notion that information security and privacy are important, especially in significant sectors

such as healthcare. The demand for the safety of information has promulgated a need for effective information systems such as HRIS initiation in various disciplines for employee management consciousness (Lukaszewski et al., 2016). There is a further belief that several healthcare employees are not passionate about improvement in infrastructures and technology, even, when there might be complaints regarding their information errors and privacy bridges (Al Shikhy et al., 2019). Thus, employees' information needs to be kept safe and secured through efficient HRIS. Therefore, there is a need for HRIS reliability for the security of employees' information and sustainability in healthcare practices. There is a further need to identify the necessity of requirements to safeguard healthcare data and integrity through information systems such as HRIS (Fitriyani et al., 2024).

3. METHODOLOGY

The research was conducted using qualitative methodology. An inductive approach with an interpretive paradigm was portrayed in this research (Ritchie et al., 2014). The data for the research were collated from four public hospitals in South Africa, through interviews and analysed using Atlas-ti (Smit, 2021). An exploratory research design was followed in alignment with the methodology applied in the research (Islam & Shuvro, 2014; Bae & Choi, 2016). This selection is regarding HRIS-related research in diverse disciplines (Bradley, 2017; Kumar & Jagadeesan, 2024). The exploratory research design was initiated to acquire a novel understanding of the effect of HRIS sensation towards healthcare practice. Multiple case strategy research was also applied (Stake, 2006; Yin, 2018). Interviews were conducted to obtain concise information about participant's views of the HRIS effect in healthcare. Psychometric property testing was conducted for the validity and satisfaction of the data instrument (Bullinger et al., 2008).

The public healthcare organisations who participated in the research are in the range of district and day-care categories, of which the majority lack sophisticated infrastructures and information systems. Also, data were collected during the COVID-19 pandemic, which was a limitation in the number of healthcare workers and individuals interested in participating. Several research were underlined such as (Muriithi et al., 2014; Pouransari, 2016; Makembo & Oluoch, 2018; ElNakib et al., 2021; Maamari & Osta, 2021; Nthiga & Nyang'au, 2021; Mutio & Samuel, 2022; Adebayo et al., 2024; Palupiningtyas et al., 2024). The authors highlighted the effect of HRIS in various disciplines and were the basis for finding the research gaps in the literature.

3.1 Research approval

Ethics is regarded as a shared layout between researchers and individuals who participate in research on issues regarding injury, consent, privacy, voluntary, deception, beneficence, anonymity and justice (Runciman et al., 2007). The researchers adhered to the ethical issues indicated. Ethics clearance and approvals were obtained from the Public Healthcare Department in South Africa and the affiliated institution.

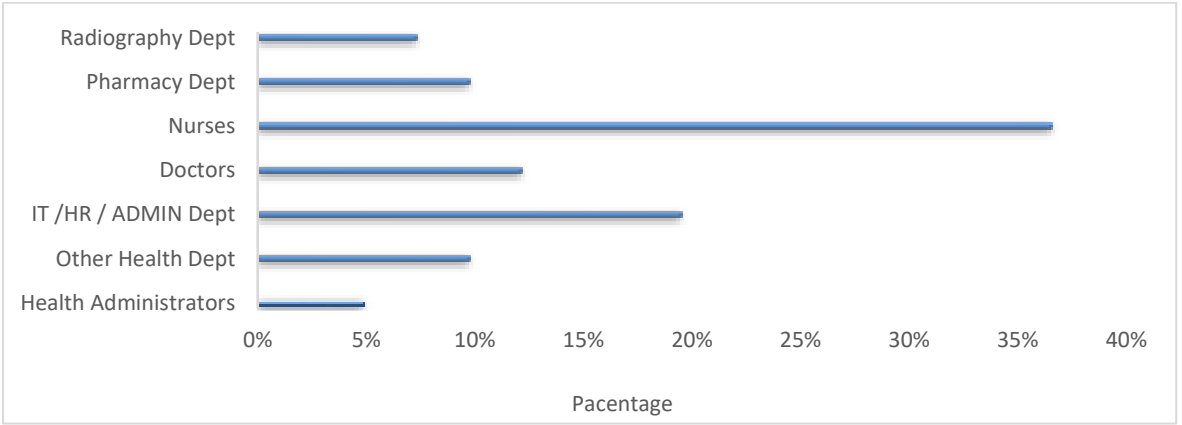


Figure 1. Individuals who participated

Figure 1 indicates that nurses comprise the most participants in the research (36%), followed by the IT/HR/ADMIN department (20%). Next are doctors (12%), followed by the pharmacy department and other health departments (10%) respectively. The radiography department is next at (7%) and the last is health administrators (5%).

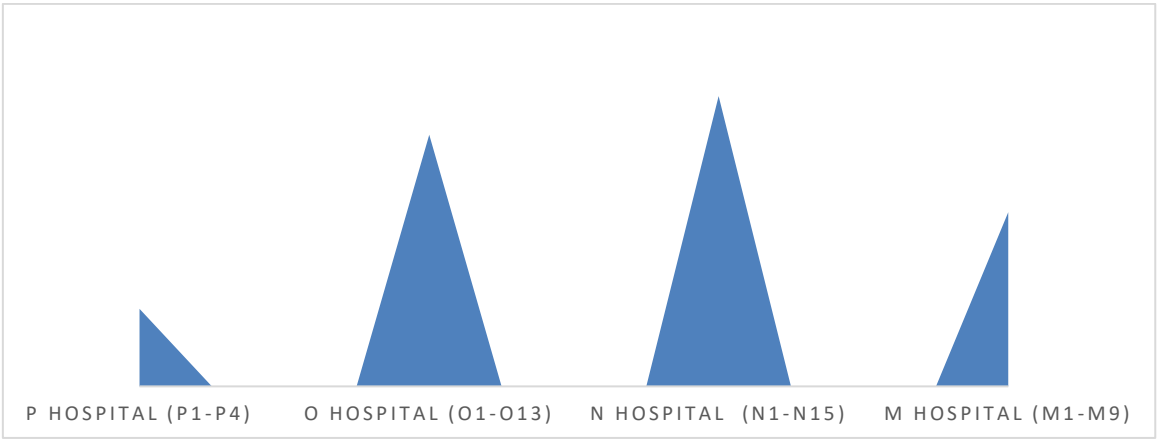


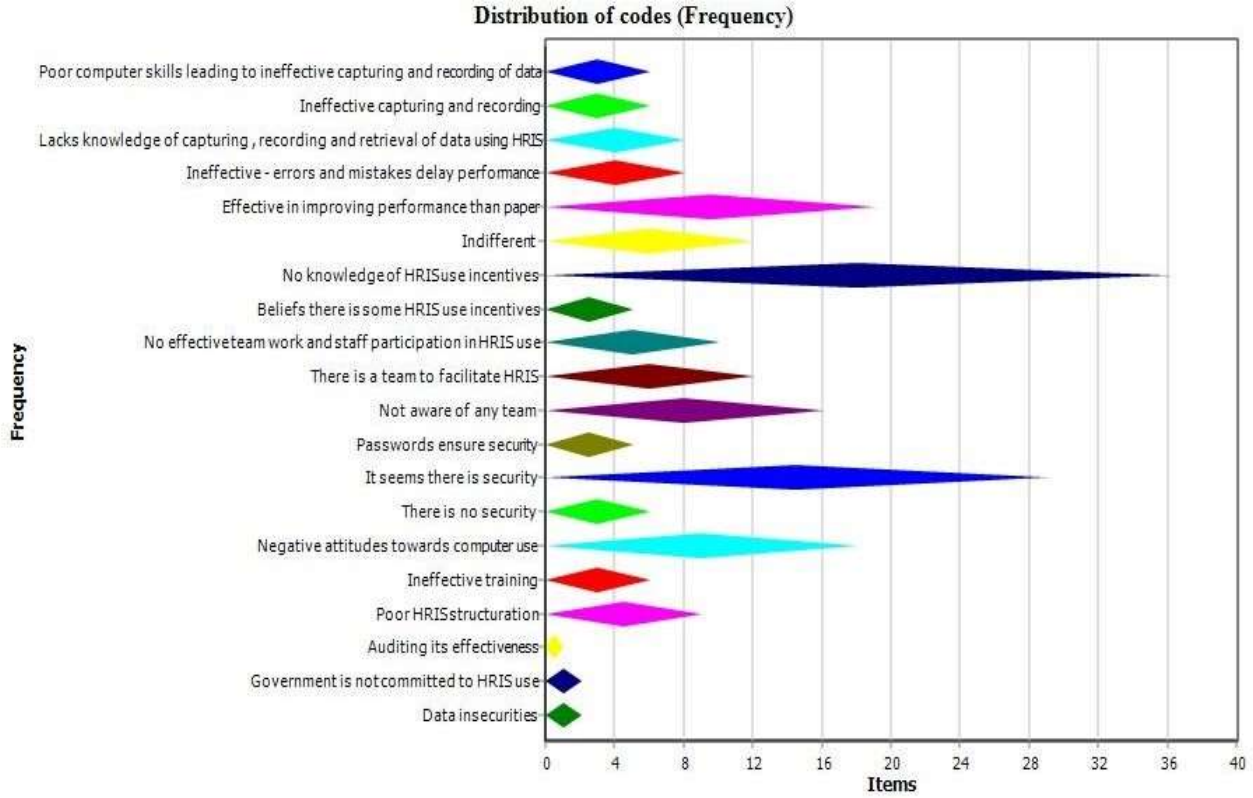
Figure 2. Representation of the hospitals and individuals who participated

Figure 2 shows the public healthcare organisations that participated in the research and the number of individuals who participated in the organisations. N Healthcare has the most participants (36%), followed by O Healthcare (32%). The next is M Healthcare (22%), and the last is P Healthcare (10%).

4. RESULTS AND DISCUSSIONS

The research aimed to highlight the effect of HRIS on South African public healthcare practice. Figure 3 provides data from the interviews conducted in codes.

Figure 3. The effect of HRIS on code frequency output



4.1 System inspection.

In Figure 3, system inspection was highlighted by some individuals who use HRIS 2 (4.9%), making it known that HRIS in public healthcare lacks system inspection. This response came from HRIS users. Also, other individuals 2 (4.9%) indicated the lack of systems such as HRIS inspection resulted from poor government commitment and support towards public healthcare improvement. In this regard, an individual (M5) mentioned that

"The HRIS used in their healthcare lacks inspection and upgrade since it was installed."

The lack of system inspection is critical towards the effect of systems such as HRIS. This research corresponds with Dissanayake and Nandasena (2019) they emphasised the importance of information

systems such as HRIS and the necessity for upgrades, assessment and review of the system for simplicity, convenience and automation in organisations' performance.

4.2 Enhancement and productivity.

The effect of HRIS on workforce enhancement and productivity in healthcare was portrayed in Figure 3, 19 (46.3%) mentioned that HRIS could be better in enhancing workforce productivity if accurately utilised. However, 8 (19.5%) indicated that the HRIS used in public healthcare generates errors and omissions on reports and payslips, and the resolving effect has been prolonged and discouraging. This prolonging of resolving errors and omissions creates a defect in workforce enhancement and productivity. Some individuals 12 (29.3%) maintained that several public healthcare facilities' HR systems are not on HRIS. In this regard, an individual (O13) mentioned the

> "Lack of computer availability in several public healthcare negatively affect workforce enhancement and productivity."

Another individual (N8) indicated that

> "A paper-based system in facilities is demoralising, which affects their productivity and services in the workplace."

A third individual (O7) also highlighted

> "The stress of not focusing on their work whenever they have discrepancies in their payslips affects their passion and productivity at work."

The lack of sufficient computers including omissions and errors in payslips and reports, reduces enhancement and productivity in public healthcare. This research is in line with Setiawan and Wakhyuni (2024), they mentioned the deficiency of information systems such as HRIS usage and updates of information in the system at the right time for trusted reports, could demoralise employees' productivity and not be focused at work.

4.3 Information storage and dissemination.

In Figure 3, information storage and dissemination were highlighted, with 19 (46.3%) indicating that efficient HRIS could assist in improving workforce performance, but the system is not performing such a function. An individual (P3) reflected on a comment that

> "HRIS to be efficient, would require improvement in technology infrastructures in the public healthcare system."

However, 8 (19.5%) underlined their lack of understanding of the practicality of information storage and dissemination in HRIS. This was supported by their strangeness with what happens in HRIS. Also, 17 (41.5%) highlighted their negligence towards using computers. This response was supported by 6 (14.6%) mentioning the lack of sufficient computer availability and skills, negatively affect information storage and dissemination in healthcare. In this regard, an individual (N14) made it known that

> "Public healthcare uses HRIS that is not fully functional, also, people do not have time to work on computers."

Another individual (M6), indicated that

> "Information storage and dissemination through HRIS would require extensive support structures."

This high rate of negative response to information storage and dissemination in public healthcare was attributed to a lack of technology improvement. This finding is in line with Mbamba and Sanga (2024) that the effect of HRIS towards information storage and dissemination would require system improvement to recent technology structures, this improvement would assist in accomplishing standards in HRIS usefulness.

4.4 Information privacy.

Information privacy in public healthcare was also pointed out in Figure 3. A fraction of individuals 5 (12.2%) indicated the availability of secured codes by HRIS users. This response is believed to be people in HR using HRIS. However, 29 (70.7%) highlighted the likelihood of information security existing in HRIS of public healthcare but are not confident of their response because they are healthcare practitioners and do not use HRIS. However, 6 (14.6%) disagreed with the availability of information privacy because several public healthcare systems are deficient in appropriate technology, computers

and systems such as HRIS. In this regard, some individuals (M5 and N4) indicated their belief in

> "The existence of secured codes to use HRIS by those having access."

However, an individual (N1) maintained that

> "Several public healthcare facilities are still lagging regarding infrastructures and technologies to support HRIS including paper-based systems, which are depriving effective information privacy."

The lack of effective systems such as HRIS in public healthcare deprives effective information privacy of workers (Zafar et al., 2017). This perhaps could create a security consequence in public healthcare. This research aligns with Al-Mutawa and Manuel (2022), they emphasised that workers' information privacy through a system such as HRIS would significantly influence successful healthcare delivery. In this regard, healthcare facilities would be expected to emphasise the importance of healthcare workers, and the safety and confidentiality of their information.

4.5 Motivation approach.

Figure 3 highlights the effect of motivation as an approach to HRIS in public healthcare. 5 (12.2%) mentioned a likely presence of motivation on HRIS but are not confident of its efficiency. However, there is a high rate of disagreement of 35 (85.4%) regarding motivation for HRIS in healthcare. This huge response was attributed to most of the individuals being healthcare workers. Hence, this signifies a lowly motivational approach to supporting HRIS performance in public healthcare. In this regard, an individual (O5) mentioned that

> "They are unaware of motivation to support the use of HRIS in public healthcare."

Other individual (O3) also maintained

> "That motivation is focused on an individual area of specialisation and not on HRIS or other systems usage in public health."

Thus, the lack of a motivational approach to HRIS could negatively impact the efficiency of public healthcare activities. This is in line with Safaâ and Mohamed (2020) research**,** they emphasised the need for motivation as a criterion to support transformation, digitalisation and innovation in the workplace. Also, improving computers and information systems such as HRIS in public healthcare through motivation could impact competitiveness and SDG accomplishment.

4.6 Cooperation and support.

The effect of workforce cooperation and support on HRIS in public healthcare was also highlighted in Figure 3. 12 (29.3%) agreed on cooperation among HRIS users to navigate the available modules. However, 10 (24.4%) disagreed with the existence of cooperation and support towards HRIS because they do not relate to the system. In support, 16 (39.0%) maintained their unawareness of cooperation and support existence in HRIS because they are not conversant with HRIS. In this regard, an individual (M4) mentioned that

> "They are not acquainted with what goes on in HRIS because their work is on health-related activities, not HR."

Also, other individuals (N7 and N12) maintained that

> "Most public healthcare organisations in the country are not technologically improved to support information systems such as HRIS usage."

The inconsistency in information systems and technology such as HRIS usage was attributed to a deficiency in workforce support and cooperation towards HR system access in public healthcare. This research supports Alam et al. (2016) and Bhatti (2023), who indicated efficient HRIS can influence cooperation and support in the workplace towards assisting individuals to perfect themselves in its usefulness. This cooperation and support structure among the workforce would have an effect towards achieving sustainable development of public healthcare practice in the country (Naimoli et al., 2015; Fisk et al., 2024).

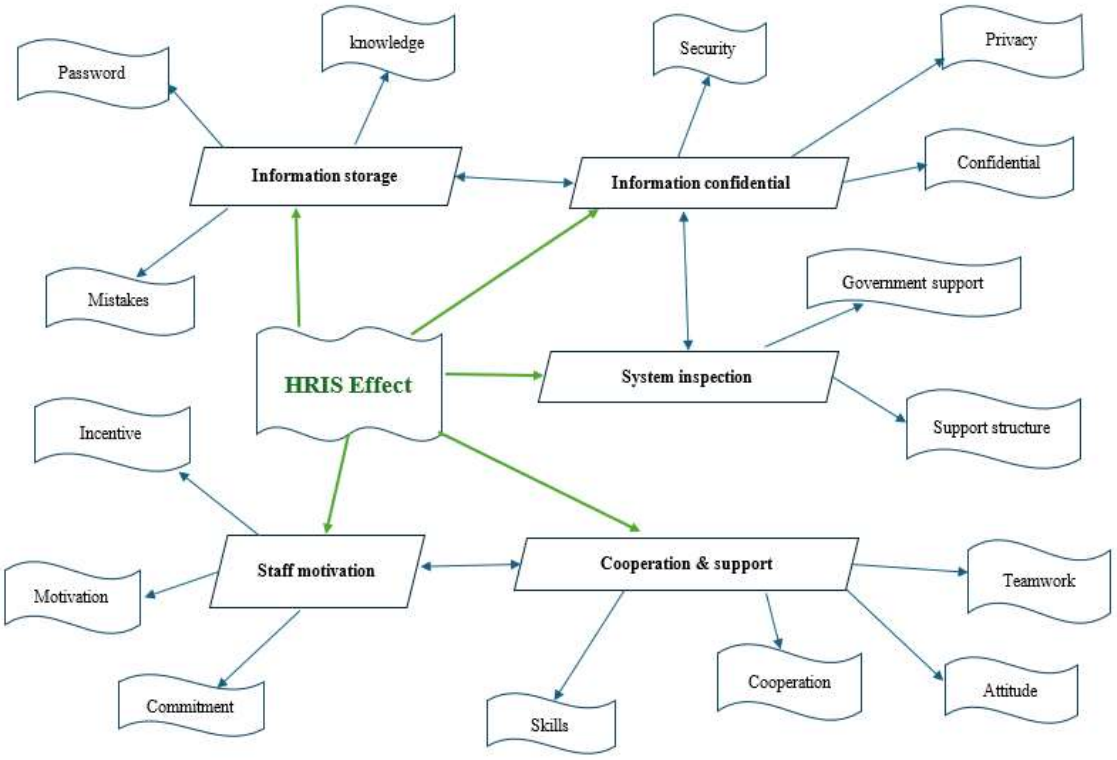


Figure 4. Summary of the research

Figure 4 summarises the findings to include privacy, security, confidentiality, passwords, support structures, incentives and motivation, teamwork and cooperation, government support and commitment, errors and mistakes, attitudes, beliefs, knowledge, and skills requirements.

5. CONCLUSION

The implementation of Human Resource Information Systems (HRIS) is pivotal for enhancing productivity and ensuring sustainability in public healthcare. These systems can achieve their full potential through motivation, collaboration, and structured support mechanisms aligned with Sustainable Development Goal (SDG) objectives. However, for HRIS to be effective, advancements in technology, infrastructure, and system upgrades are necessary. These improvements are crucial for ensuring the secure storage and efficient dissemination of healthcare workers & #3 of SDG; information while maintaining data privacy and security. Evidence suggests that HRIS could significantly benefit public healthcare by fostering workplace productivity and operational efficiency. However, realising these benefits requires government support, including mechanisms to motivate healthcare workers, provide ongoing training, and ensure regular system inspections and updates. These measures would promote sustainability and competitiveness in public healthcare through effective HRIS deployment.

6. RECOMMENDATION

6.1 Enhancing information privacy and security

This research highlights that while HRIS in public healthcare offers reasonable data privacy through secure user codes, challenges such as errors, omissions, and reliance on paper-based systems undermine its efficiency (Katurura & Cilliers, 2018; Nyasulu & Pandya, 2020; Udekwe & Iwu, 2023). To address these issues, it is recommended that public healthcare institutions should transition to fully automated HRIS processes. These would ensure skilled healthcare workers' HRIS accessibility through individual secure codes, to boost user confidence and data privacy while alleviating HR staff burdens.

6.2 Improving workforce information storage and dissemination

The storage and dissemination of workforce information were critical issues prompting efficient HRIS. However, many public healthcare organisations struggle with outdated systems, lack of infrastructure, and limited computer literacy among staff (Valcik et al., 2023; Udekwe et al., 2023b)). Hence, it is recommended that governments allocate resources to upgrade HRIS technology and infrastructure.

Adequate funding and organisational support will enable secure storage and seamless dissemination of workforce information, strengthening public healthcare practices.

6.3 Fostering workforce cooperation and support

Workforce cooperation and support are essential for maximising HRIS benefits. Despite the potential of HRIS to enhance collaboration, this study found that many healthcare practitioners are not adequately trained to utilise the system. Conversely, workers familiar with HRIS reported improved cooperation but did not observe significant impacts on overall healthcare delivery (Alam et al., 2016). Public healthcare organisations should invest in user-friendly HRIS that fosters collaboration, enabling staff to share knowledge and improve their system proficiency. Such initiatives would also enhance workplace relationships, contributing to a more cohesive healthcare environment.

6.4 Regular HRIS inspection and upgrades

A lack of routine HRIS inspections and upgrades was noted in the research as a significant limitation, leading to reduced system reliability and productivity in public healthcare practice. This deficiency also results in document mismanagement and errors (Mbugua, 2015; Njeru & Muchelule, 2024). Therefore, regular inspections and upgrades of information systems such as HRIS are recommended to address these (mismanagement and error) issues. Continuous HRIS evaluation will also mitigate malpractices, enhance operational efficiency, and ensure its alignment with evolving public healthcare needs.

6.5 Incorporating motivational approaches

The absence of a motivational strategy approach for HRIS usage was identified in the research as a barrier to its efficiency. Many healthcare workers were unaware of enticement-based approaches to using HRIS (Tursunbayeva, 2018; Udekwe et al., 2021). Given the critical role of public healthcare in serving large populations, the research recommends introducing motivation strategies as imperative. Such initiatives could include training programs, performance-based rewards, and recognition for HRIS management. These approaches would encourage greater engagement with HRIS among healthcare workers, reduce workload, and improve productivity, ultimately contributing to competitive public healthcare practices and the achievement of SDG objectives.

By addressing these recommendations, public healthcare systems can optimise HRIS implementation, thereby improving workforce management and service delivery. This progress is essential for advancing public healthcare standards and fostering sustainable development in line with global objectives.

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Conflict of interest

The researchers declare no potential conflict of interest regarding the research conducted.

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