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FACTORS AFFECTING HUMAN RESOURCE INFORMATION SYSTEMS' EFFECTIVENESS IN THE SOUTH AFRICAN PUBLIC HEALTH SECTOR

FACTORES QUE AFECTAN LA EFECTIVIDAD DE LOS SISTEMAS DE INFORMACIÓN DE RECURSOS HUMANOS EN EL SECTOR DE LA SALUD PÚBLICA DE SUDÁFRICA

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Abstract

Systems for managing human resources such as Human Resource Information Systems (HRIS) are thought of as change enablers that help organisations gain a competitive edge. The health sector has a significant need for effective HR practices, which often stimulate research projects. It is interesting to note that despite the focus of researchers and HR practitioners on the advantages of using an HRIS in the health sector, it is still not clear how this system can be used to its full potential to support workforce sustainability in South Africa's public health sector. Based on this, the study seeks to determine the factors that affect the effectiveness of HRIS in the health sector. A partially integrated mixed-method research was conducted through a combination

of qualitative and quantitative examination. Data was gathered from four (4) selected public hospitals in the Western Province of South Africa and (87) participants were purposively selected from the hospitals. The questionnaire was completed by forty-six (46) persons, while forty-one (41) people were interviewed. According to the findings, the South African public health sector makes use of Persal as the preferred HRIS and several factors that deprive its effectiveness were identified as being from 'an outdated system', which is manually operated and compromising information security, to name a few. The study proposes that these factors be addressed to improve HRIS utilisation and skilled health employee engagement.

Keywords: Human resource information systems, effective HRIS, sustainable workforce, system acquaintance, system enhancement, South African health.

Resumen

Los sistemas de gestión de recursos humanos, como los sistemas de información de recursos humanos (HRIS), se consideran facilitadores del cambio que ayudan a las organizaciones a obtener una ventaja competitiva. El sector de la salud tiene una gran necesidad de prácticas eficaces de recursos humanos, que a menudo estimulan los proyectos de investigación. Es interesante notar que a pesar del enfoque de los investigadores y profesionales de recursos humanos sobre las ventajas de usar un HRIS en el sector de la salud, todavía no está claro cómo se puede usar todo el potencial de estos sistemas para apoyar la sostenibilidad de la fuerza laboral en la salud pública de Sudáfrica. Con base en esto, el estudio busca determinar los factores que inciden en la efectividad de HRIS en el sector salud. Se llevó a cabo una investigación de método mixto parcialmente integrado a través de una combinación de metodologías cualitativa y cuantitativa. Los datos se recopilaron de cuatro (4) hospitales públicos seleccionados en la provincia occidental de Sudáfrica y (87) participantes fueron seleccionados de los hospitales. El cuestionario fue completado por cuarenta y seis (46) personas, mientras que cuarenta y una (41) personas fueron entrevistadas. Según los hallazgos, el sector de la salud pública de Sudáfrica utiliza Persal como el HRIS preferido y se identificaron varios factores que privan a su eficacia y son considerados de "un sistema obsoleto", que se opera manualmente y compromete la seguridad de la información, por nombrar algunos. El estudio propone que estos factores se aborden para mejorar la utilización de HRIS y la participación de los empleados de salud calificados.

Palabras clave: South African health (Sistemas de información de recursos humanos (SIRH), SIRH efectivos, fuerza laboral sostenible, conocimiento del sistema, mejora del sistema, salud sudafricana.

1. Introduction

It is recognised that a variety of factors influence organisational transformation. These factors might be internal or external. Administrative, new emphasis, and/or workforce considerations are internal factors, while rivals, customers, and governmental restrictions are external factors. The workforce and its management are necessary components in any value chain transformation. Human Resource Information Systems (HRIS) are seen to be change facilitators for Human Resource Management (HRM) to gain a competitive edge (Das & Barman, 2018; Warui, Mukulu, & Karanja, 2015; Al-Zagheer, 2017; Iwu, Allen-Ile, & Ukpere, 2012; Trinovianti & Ruslan, 2021).

HRIS aids in gathering, storing, analysing, and disseminating data on human resources (Kavanagh, Gueutal, & Tannenbaum, 1990:13). However, because managing staff may be a difficult endeavour, the usefulness of information systems (IS) in managing human resources (HR) resides in their capacity to simplify the process (Udekwe, Iwu, de la Harpe & Daramola, 2021a). Therefore, the effectiveness of HRIS may be a crucial strategic activity in any economy, and the need to implement such an information system might energise the provision of an effective healthcare service (Sultan, Mannan, & Jabeen, 2021; Zakumumpa, Taiwo, Muganzi, & Ssengooba, 2016).

According to Anthony & Balu (2018), there is an increasing need for effective HRIS performance, which usually sparks a variety of research projects. According to Wright, Mahony, & Cilliers (2017), various studies have shown the advantages of a good HRIS in the health sector. The manual recording of patient and personnel data within public healthcare is condemned by Haule & Muhanga (2021). They contend that this hinders the efficiency of HRIS since certain crucial data of patients and the workforce may be lost or not recorded when required for effective decision-making (Anupam & Sharma, 2017; Matimbwa, Shillingi, & Masue, 2021). An example is the Life Esdimeni disaster in the South African health system, where several mentally sick patients were erroneously transferred from licensed to unlicensed facilities, resulting in the deaths of over 140 of those patients, some of whom are still unaccounted for to date (Timeslive, 2018; Udekwe, Iwu, de la Harpe & Daramola, 2021b). Thus, unfavourable material should not be disregarded, even if it is proven that the public healthcare management's carelessness played a significant role in this catastrophe (Dhai, 2018). Perhaps, identifying avoidable life-threatening errors in the health sector might be made easier with the use of an effective HRIS (Aletaibi, 2016; Keogh, 2014). The inadequacy of information systems in the health sector could result in the needless loss of human lives (Abbas, 2020; Dhai, 2018).

Interestingly, while information systems and human resources practitioners emphasise the advantages of adopting an HRIS in the health sector, it is even more important to comprehend the barriers to effective HRIS deployment in the South African health sector (Suryanarayana & Bhusal, 2019). This knowledge is crucial because it makes it possible to address problems regarding HR management more effectively and promptly (Gautam, 2017; Gavurová, Balloni, Tarhaniová, & Ková, 2018). Furthermore, excellent management, effective workforce planning, and retention tactics could provide favourable results in promoting the necessity of a robust health sector in any economy (Adams, Ryan, & Wood, 2021; Maduagwu & Ugwu, 2018; Mayende & Musenze, 2018).

Due to the significance and usefulness of maintaining human resources, the public health sector would be one of the most important sectors in a sustainable economy

(Iwu, 2013; Muthoka, 2016) because there is a clear connection between economic progress and human resources in the health sector. The health sector is seen as one of Africa's most valued, fastest-growing, and most important sectors for both economic and social development (Mayende & Musenze, 2018; Iwu, Choto, & Tengeh, 2019). As a result, HRIS may be used by governments to make decisions concerning the state of the health workforce in their nations (Maruru, 2014; Kuyo, Muiruri, & Njuguna, 2018). According to Udekwe et al. (2021b), the health sector is made up of all organisations, institutions, and resources that are used and managed to enhance healthcare in a country. Consequently, investment in HRIS should be seen as a significant component used to assess the sector's overall efficiency (Iwu & Benedict, 2013; Manya, Sahay, Braa, & Shisia, 2018).

Given the importance of HRIS in the health sector to an economy, research on the factors influencing its usage is necessary to ascertain how it will affect productive workforce management and the sector as a whole (Tursunbayeva, Pagliari, Bunduchi, & Franco, 2015; Mawaddah & Retnowardhani, 2023). This allows for the discovery of the dynamics of influencing the usage of HRIS to support HR tasks in the health sector (Alam, Masum, Beh, & Hong, 2016). According to Tjoflt et al. (2018), identifying these dynamic criteria may help determine the potential of HRIS as it contributes to organisational effectiveness and efficiency via staff training, personnel planning, financial planning, administration, and analytic tools.

This study aimed to identify the obstacles preventing the successful adoption of HRIS in the South African health sector. Four public health institutions in the Western Province served as the study's focus.

Essentially, the study's main research question was: What factors affect HRIS effectiveness in the health sector?

2. Review of literature

The confidentiality of personal records of both patients and employees of any healthcare sector may be compromised by failing to maintain adequate patient and employee records, using antiquated systems, and manually storing data (Mlambo & Adetiba, 2017; Gavurová et al., 2018; Sirili et al., 2018; Tjoflt et al., 2018). This is the claim made by numerous researchers who focused on HRIS-related studies. Due to these circumstances, personnel in the health sector also experience job discontent (Adams et al., 2021; Zongjun, 2019). Therefore, according to researchers like Driessen et al. (2015) & Lema (2018), HRIS need to be applied in the health sector, particularly in poor nations. Their argument seems to suggest that HRIS implementation must be supported by investment in upgrades of the system including acquainting users with the system (Dlamini, 2012; Iwu & Benedict, 2013; Matsiko, 2019).

The epidemic of socioeconomic issues that plague developing countries has not been spared by the absence of effective HRIS in the health sector. The lack of manpower in the South African health sector results in workload issues, which are some of the reasons why healthcare professionals in the nation look for greener pastures elsewhere (Bester, 2018; Harsha, 2021; Iwu et al., 2012; Odebiyi, 2021). Although Tjoflt et al. (2018) think that certain healthcare professionals in Africa are proud and dedicated to their work, they are however frustrated by the demoralisation that the high worker attrition rate causes (Iwu, 2013; Kuo et al., 2021; Padarath & Barron, 2017). In agreement with Tjoflt et al. (2018), Sirili et al. (2018) claim that the absence of HRIS in the African health sector influences health professionals' choice for better employment possibilities in other continents.

The use of HRIS in the health sector will aid in the elimination of the traditional ways of managing information of the health sector workforce, which is a significant factor in the socioeconomic growth of a country. In this regard, it is useful to look at the establishment of appropriate policies for the effective use of HRIS in the health sector (Chankova, Muchiri, & Kombe, 2009). According to Chankova et al. (2009), Spero, Mcquide, & Matte (2011), and Udekwe et al. (2021a), identifying the elements that can help, with the use of HRIS, to keep a record of the health workforce and also help with tracking and monitoring their activities for retention purposes is crucial for the success of the retention policy in the health sector. This would probably lessen the recent wave of resignations in the sector, as well as help with monitoring the data and maintaining correct information (Spero et al., 2011).

According to Chakraborty (2015), the adoption of technology has been extensively acknowledged in many phases from start to assessment, implementation, and integration. The actions of recognising the need for adopting and gaining acquaintance and awareness of new technologies in organisations are included in the initiation phase. The measures required to increase worker comprehension to facilitate an effective process, however, were unreliable due to the inadequate readiness of HRIS (Dilu, Gebrselassie, & Kebede, 2017). To improve worker settings and raise knowledge and cognizance of HRIS use via workshops, education, and training, it is crucial to effectively monitor and regulate HRIS in the health sector (Kitson, 2019; Udekwe, Iwu, Daramola, & de la Harpe, 2023). According to Maduagwu & Ugwu (2018), an effective HRIS may boost productivity by allowing workers to become familiar with the necessary knowledge and abilities for HRIS access through a dependable system for workforce comfort.

Information security within the health sector is a crucial concern. Given the sensitivity of the personal information of employees in the sector, Kankaew (2021) contends that HRIS utilisation calls for effective information security. According to Spero et al. (2011), to strengthen the health sector using the HRIS, the following are required: data quality and security of information, strengthened information communication and technology (ICT) infrastructure, development of HRIS software solutions, development of an HRIS capacity to sustain the sector, and access for workers to the HRIS to eliminate manual functions.

It is one thing to have a policy that encourages the adoption and use of HRIS in the health sector, but its actual use depends on several factors such as insufficient funding, a lack of experienced workers, and a lack of commitment to the health sector, amongst others (Dilu et al., 2017). This emphasises the claim that the South African health sector seems unprepared to deploy and utilise HRIS successfully (Manya et al., 2018; Udekwe, Iwu, & de la Harpe, 2023). The latter also makes the case that the South African government should prioritise its spending on HRIS and other information system technical advancements rather than more obvious infrastructure initiatives since doing so would help elevate the health sector. Could this be seen as a major factor that deprives the successful use of HRIS in the South African health sector? This view seems to be shared by researchers like Maruru (2014), Saka (2013), and Udekwe et al. (2021b). Saka (2013) makes the case for a government-funded health workforce information system that makes it easier to design, construct, manage, and use the system well. According to Maruru (2014), government choices about health issues, particularly those about the workforce, should be supported by verified data that HRIS can provide. According to Udekwe and his colleagues (2021), a perfect HRIS should be able to manage a broad community of health workforces across its numerous subsystems with less difficulty. In summary, it is evident from the results of numerous

studies that several factors can hinder the effectiveness of HRIS in the health sector. These include government support, funding issues, a preference for outdated systems, a lack of change-related motivation, and even a lack of knowledge about the benefits of HRIS.

The WHO (2018) states that the availability of competent health staff is essential for any health sector to operate effectively. Determining the potential for an effective HRIS to promote skilled staff retention in the health sector is vital. Additionally, determining the factors that influence HRIS efficacy in the South African health sector will help achieve this objective.

3. Research methodology

This study was conducted using partially integrated mixed methods. This indicates the use of qualitative and quantitative tools for data collection, analysis, and interpretation, basically using one data tool to support the other (Saunders, Lewis, & Thornhill, 2019). Due to the lack of sufficient quantitative data, this approach was chosen. A pragmatic paradigm with an abductive approach was initiated in this study (Hayton, Botma, & Heyns, 2021; Saunders et al., 2019). An abductive approach assists in collecting study data using a variety of data collection tools and methodologies to investigate the phenomena, and to identify or establish new knowledge based on the findings (Saunders & Rojon, 2014). Using interviews and questionnaires, the data was gathered from four selected public hospitals in the Western Cape Provincial Department of Health and Wellness of South Africa (WCPDHWSA).

3.1. Research design

We set out to determine the factors that influence the effective use of HRIS in the health sector of South Africa. We used the methodological practices of Beadles II, Lowery, & Johns (2005), Hamod & Majeed (2021), and Kakade & Sharma (2019) in adopting a descriptive and exploratory research design. These authors looked at HRIS-related elements in various sectors, nations, and regions. The use of the descriptive and exploratory research approach enabled us to gain fresh perspectives on factors affecting HRIS effectiveness in the healthcare sector.

3.2. Research strategy

Survey and multiple case research strategies (Booker, Austin, & Balasubramanian, 2021; Lavrakas, 2008; Yin, 2018) were initiated in this study involving four selected public hospitals in the Western Cape Provincial Department of Health and Wellness of South Africa (WCPDHWSA. In all, eighty-seven (87) people were purposively selected from the hospitals. Forty-one (41) persons were interviewed while forty-six (46) questionnaires were filled out and returned for this study. The following table shows how the participants from the chosen public hospitals are divided. The participants are all employed in the four selected hospitals and are classified in Table 1 below;

Table 1. List of the classification of participants in the study

S/NO	Classification of participants	Qualitative participants	Quantitative participants	Cumulative total
1	HR/ADMIN Managers/ Assistants	6	3	9
2	IT Managers/Assistants	2	2	4
3	Medical Doctors	5	6	11
4	Nurses	15	14	29
5	Pharmacists	4	10	14
6	Other health workers	9	11	20
	TOTAL	**41**	**46**	**87**

The questions used to construct the interview guide and questionnaire were drawn from the gaps identified in the literature regarding the critical elements that enable the realisation of the research problem, research question, and objectives of the study (Lesmini et al., 2023).

A semi-structured interview guide was used to gather the qualitative data, which were subsequently transcribed manually by the researchers and analysed using Atlas-ti qualitative analysis tool to identify the data in patterns and codes (Barry, 1998; Scales, 2013; Smit, 2002; Zamawe, 2015). For the quantitative data, a multiple-type Likert-scale questionnaire was used to collect the data, captured manually by the researchers in a spreadsheet before being transferred into SPSS quantitative tool to draw the results in tables, graphs, and charts (Burns & Burns, 2008; Zaman, Radu, Răpan, & Berghea, 2021). The selected hospitals and the interviewed respondents were recognised in codes as shown in Table 2 below:

Table 2. List of hospitals and the interviewed respondents in the study

S/NO	Selected hospitals codes	Respondents codes	Frequency	Percentage	Valid percentage	Cumulative percentage
1	M Hospital	M01 – M09	9	22.0	22.0	22.0
2	R Hospital	R01 – R15	15	36.6	36.6	58.5
3	E Hospital	E01 – E13	13	31.7	31.7	90.2
4	D Hospital	D01 – D04	4	9.8	9.8	100.0
	TOTAL		**41**	**100**	**100**	

3.3. Ethics

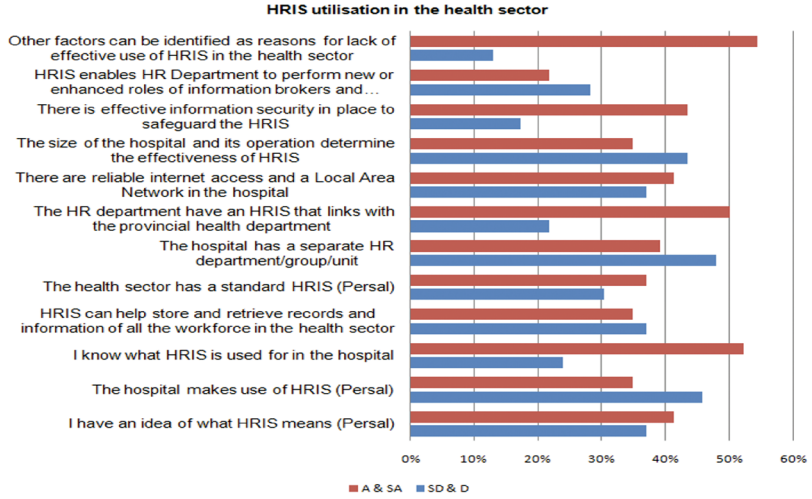
The Western Cape Provincial Department of Health and Wellness of South Africa and the research office of the Cape Peninsula University of Technology of South Africa awarded the researchers ethical clearance and study approval. According to Rubin & Babbie (2014), ethical conduct involves a mutual understanding between a researcher and the study participants on issues relating to (i) voluntary participation, (ii) no harm to the participants, (iii) anonymity, (iv) confidentiality, (v) deception,

(vi) beneficence, (vii) justice, (viii) informed consent, and (ix) right to privacy. The researchers completely adhered to the terms of the ethical agreement (Morse & Cheek, 2014; Udekwe & de la Harpe, 2017). Additionally, the questionnaire did not require participants' personal information.

4. Results and analysis

The purpose of this study was to determine the factors affecting HRIS effectiveness in the South African public health sector. Both qualitative and quantitative methodologies were used in the study to obtain the data. The quantitative analysis is shown in Figure 1, and the qualitative analysis is shown in Figure 2. The data analysis summary is shown in Figure 3. Figure 1 below is a depiction of responses from the questionnaires:

Figure 1. Quantitative analysis of HRIS usage in the health sector



4.1. Quantitative analysis

According to Figure 1 above, 41% of the quantitative participants seem to comprehend what HRIS stands for in terms of usage, while 52% are similarly knowledgeable of how HRIS may change the health sector. It was also evident that Persal, the HRIS is partially accessible at some public hospitals, and not widely used. Given that several participants (46%) mentioned that their hospital does not make use of any form of HRIS, we assert this statement. A modest proportion of participants (37%) who mentioned that Persal was their typical HRIS, once again, supports this. Persal is an outdated HRIS that is utilised in the public health sector (Zondi & Day, 2019), which is unable to satisfactorily address the demands of modern public hospitals (Mathews, 2017). Due to a heavy reliance on manual interventions, a lack of technological advancements, and a lack of support structures to advance HRIS technology in the health sector, some participants (28%) noted that the system does not allow the HR department to perform new or enhanced roles of information

dissemination in the health sector. A further 48% indicated the unavailability of an HRD in their hospitals, which is a great concern.

In terms of security concerns as a potential factor in the limited use of HRIS, difficulties with security that came up in some of the participants' responses might play a role. For instance, 37% highlighted that common mistakes and omissions in processes like payslips were grave issues that jeopardised the privacy of individuals. Although passwords are used by users to access the system, 44% of participants made it known that they are not completely confidential, suggesting that Persal may have limitations in this area since it is an antiquated system. Also, 45% disagreed with the question asked about the impact of hospital size in determining the effective use of HRIS.

Furthermore, since the surveys included open-ended questions, the majority of participants (55%) identified other factors that affect the poor use of HRIS in the public health sector of South Africa. These open-ended inquiries included themes such as the absence of self-service, access to Persal, inadequate technology infrastructures, and a lack of government assistance. These factors play a part in the health sector's improper usage of HRIS.

4.2. Qualitative analysis

The interview schedule included eight (8) questions that were asked to answer the main research question on the study issue as supported by the gaps in the literature, as well as information on the factors affecting HRIS usage. In Figure 2, which served as the analysis of the evidence from the interview guide, the questions are listed item by item. To display the replies given during the interviews, codes and cases were gathered from the objects. The coding sheet and the percentage frequency of the codes and cases derived from Atlas-ti are shown in Figure 2 below, to illustrate the study's strength and support.

Figure 2. Categories and codes on factors affecting HRIS usage in the health sector

	Count	% Codes	Cases	% Cases
HRIS knowledge across organisational levels				
Lack of HRIS knowledge	17	5.3%	14	34.1%
HRIS not used	1	0.3%	1	2.4%
Possession of HRIS knowledge	29	9.0%	26	63.4%
Awareness of HRIS use				
Inadequate awareness of HRIS	20	6.2%	17	41.5%
Aware of use of Persal, PAMIS	24	7.5%	17	41.5%
Not aware of HRIS use	20	6.2%	15	36.6%
Yes HRIS is used. ESS for leave	6	1.9%	4	9.8%
Existence of an HR unit at hospital level				
New employees not sure	1	0.3%	1	2.4%
Does not exist	14	4.4%	14	34.1%
Yes. Just an officer	3	0.9%	3	7.3%
Not well informed	7	2.2%	5	12.2%
Yes	24	7.5%	19	46.3%
Number of people using HRIS use				
Not sure	3	0.9%	3	7.3%
Hospital size and effectiveness of HRIS use				
Large staff complement lead to minimum personal interaction	29	9.0%	28	68.3%
I dont think so	4	1.2%	4	9.8%
I dont know	7	2.2%	7	17.1%
Information security and HRIS				
Yes. password	13	4.0%	12	29.3%
Not aware	13	4.0%	12	29.3%
No security	4	1.2%	4	9.8%
Thinks there is security	10	3.1%	9	22.0%
Thinks it does	4	1.2%	4	9.8%
Ehancement of HR functionality through HRIS				
Disagrees	3	0.9%	3	7.3%
Does not know	18	5.6%	18	43.9%
Agree	15	4.7%	15	36.6%
Reason for ineffective use of HRIS				
Unwillingto change from traditional paper based HRM	12	3.7%	12	29.3%
Absence of a distinct HR Unit	5	1.6%	5	12.2%
No HRIS training	10	3.1%	9	22.0%
Lack of funds	1	0.3%	1	2.4%
None that I know	4	1.2%	4	9.8%

4.2.1. Analysis of the qualitative data

a) Knowledge of HRIS among healthcare professionals

Based on the responses from the transcribed interviews in Figure 2 from the first question, knowledge of HRIS across the healthcare organisational level shows 34% of the respondents claiming a lack of knowledge about HRIS in the sector. This was linked to a lack of knowledge and comprehension of information systems used in the health sector. Although 63% of the respondents said they are knowledgeable of what HRIS is, it still does not assist in increasing effective usage in the health sector. Based on this, Interviewee R12 states that "the HRIS in use is unreliable, but they have a notion of what HRIS (i.e., Persal) signifies". "The HRIS used in South Africa's public health sector is the Persal system, however, the system is outdated", says Interviewee R04. The opinions of Interviewees R12 and R04 demonstrate that there is a misperception of information in the sector as a whole as a result of a lack of knowledge and education,

unreliability, and lack of upgrade of HRIS and how it affects the enhancement of employees' quality of service in the health sector.

b) HRIS usage awareness in hospitals

The replies in Figure 2 showed that 42% of the respondents were aware of their use of the Persal system as the HRIS. 10% of respondents also said that Persal is used to record their leave information, demonstrating their knowledge of Persal as an HRIS for leave recording and other HR-related concerns. However, 42% of the respondents stated the inadequacy of HRIS cognizance and 37% indicated their unawareness of HRIS used in the sector, which means that a total of 79% of respondents admitted to being unprepared and uninformed about how HRIS is engaged in the health sector. Could this possibly be related to a lack of education, employees' inability to use Persal, a lack of awareness regarding HRIS, and manual system support interventions? "In most public hospitals, they do not make use of HRIS, but they do have someone who does the HR duties manually and sends the paperwork to the substructure health facilities," claims Interviewee E13. According to Interviewee R02, "They do not know the HRIS in use, but they do have an idea that their leave is collected and transmitted to the substructure health facilities to capture on a system." Due to employees' limited access to HRIS (Persal), Interviewees E13 and R02 appear to indicate a lack of understanding about HRIS use. It hurts the usage of HRIS when certain HR operations are carried out manually and papers are delivered to a substructure health facility to be captured on Persal.

c) Presence of HR departments in hospitals

This important category tried to identify the causes of significant structural changes within the HR functions. It was also in line with the idea that the HR department needed to be properly structured for HRIS to be used effectively in public hospitals. In Figure 2, 34% of respondents mentioned that most of the public hospitals do not have fully fledged human resource departments (HRD) Also, 12% and 2% of respondents made it known that they are ill-informed as well as unsure if HRD even exists in public hospitals. This might imply that a lack of seriousness and subpar infrastructure development in the sector was to blame for the absence of HRD in most public hospitals in South Africa.

However, 46% and 7% of the respondents who were interviewed said that even though they do not have an HRD in their hospitals, they do have an employee that does HR tasks manually without the use of an HRIS (Persal), which is unethical in light of the effectiveness of HRIS. Interviewee E13 states that while "their hospital does not have an HRD, they do have a contract staff that compiles all pertinent HR paperwork and delivers them to the administrative office." Interviewee D02 also mention that "the absence of HRD at most public hospitals is due to bad infrastructures and poor policies in place to support the government's technological structures, which could need suitable government support." This shows that the majority of the selected public hospitals do not have an HRD and also do not make use of HRIS, but they do have someone (contract employee) who does HR tasks manually.

d) HRIS information security in the sector

From the sixth question in Figure 2, the respondents' concerns about information security are linked to challenges inherent in manual interventions and document filing in public hospitals. 29% and 10% of the respondents claimed they were ignorant and unaware of information security in public hospitals. Also, 22% and 10% of the respondents think there is security in place using HRIS, but are not completely sure of its existence. According to Interviewee E11, "People may sometimes stroll into the administrative office and grab out an individual's files, which highlights the insecurity of information and the lack of effective HRIS usage."

However, 29% of the respondents, highlighted that they can access HRIS (Persal) through a password. Thus, Interviewee M03 indicated that "Persal access is password-protected yet most HR administrative work is performed manually in most public hospitals, for instance, document filing." Can this be attributed to a lack of confidence in the "archaic" Persal? Perhaps, it may be beneficial to implement more advanced methods.

e) Improvement of HR functions through HRIS in hospitals

The adoption of HRIS was generally assumed to increase the efficiency of the HR functions throughout the study, thus it was crucial to find out if the respondents shared this belief. The seventh question in Figure 2's data, however, shows that 37% of the respondents believed that HRIS could improve HR operations much more than the manual method, which is still not as expected in the public health sector. Interviewee R13 said that "Persal is quite accurate on information about leave and pay at hand, however, there are minor HR-related information requests where the HR person would quickly log into the system and retrieve, yet they still scrape through paperwork in this regard." Thus, owing to the unfamiliarity and lack of access to HRIS by most healthcare employees, 44% of the respondents do not know and 7% disagreed with the use of HRIS (Persal) to enhance HR functions. "They do not know whether the current HRIS helps to improve HR services, but if they need information, they request from the HR in the substructure health facilities; nonetheless, it might be better," asserts Interviewee E05.

f) Size of hospital and effective HRIS usage

In the study, the participant's perceptions of the relationship between hospital size and the effective use of HRIS were investigated. However in Figure 2, a significant number of the interview responses (68%) of the respondents suggest that the size of the hospital is likely to have an impact on how well HRIS is used and that the high staff concentration may result in few human encounters, which would call for information technology advancements. According to Interviewee E04, "Hospitals with a larger staff complement do encounter many obstacles of not using HRIS effectively owing to lack of technical improvements." Also, Interviewee R09 made it known that "some public hospitals render 24-hour services with over 100 employees, yet they make use of low level of information systems in their health facility."

Interviewee D04 is also of the opinion that "the infrastructures present in their hospital do not give opportunity for effective use of information systems such as HRIS; instead, they would want an improvement in the infrastructures irrespective of the hospital size", he adds.

This suggests that large hospitals with a high staff concentration are more opportune to promote greater employee engagement, yet they still lack the effective

use of information systems such as HRIS to enhance their performance. Thus, the public health sector is still having trouble with the ineffective use of HRIS because of the lack of complexity of the infrastructure and technology.

g) Reluctance to change the outdated paper-based HR system

To determine if resistance to change was one of the factors contributing to the ineffectiveness of HRIS, 29% of the respondents did note that the health authorities and employees are resistant to embracing technological improvements in the public health sector. Another difficulty confronting an effective HRIS is the fact that most authorities still choose the manual, antiquated approach and hire others to handle their HR needs rather than doing it themselves.

h) Lack of adequate training

Training was another contentious subject. Respondents discussed the effect of training on the efficacy of HRIS use. According to 22% of respondents, skilled healthcare workers need regular training on the information systems used such as HRIS. This has not been possible due to non-fully functional systems in place. Interviewee R12 mentioned that "there aren't enough computers, no HRD, and no access to self-service of which there is no need for training on information system usage." This still shows a lack of technological infrastructure to meet the sector's training requirements, which also poses a factor that affects the effectiveness of HRIS in the health sector.

i) Lack of funds

Despite 2% of respondents affirming that lack of sufficient funds was probably partly to blame for HRIS update failures, it is crucial to note that the government's failure to spend more on information system updates can be responsible for the weak workforce management, which poses a factor that affects the effectiveness of HRIS in the public health sector.

4.3. Summary of findings

Glaser & Strauss (2017) and Kolb (2014), are of the view that researchers limit their data and iteratively extract pertinent information that addresses their research objectives through sensitivity and continuous comparison of data. The overview summary of the factors influencing HRIS effectiveness in the public health sector is shown in Figure 3 below:

Figure 3. Summary of the factors for HRIS's effectiveness in the public health sector.

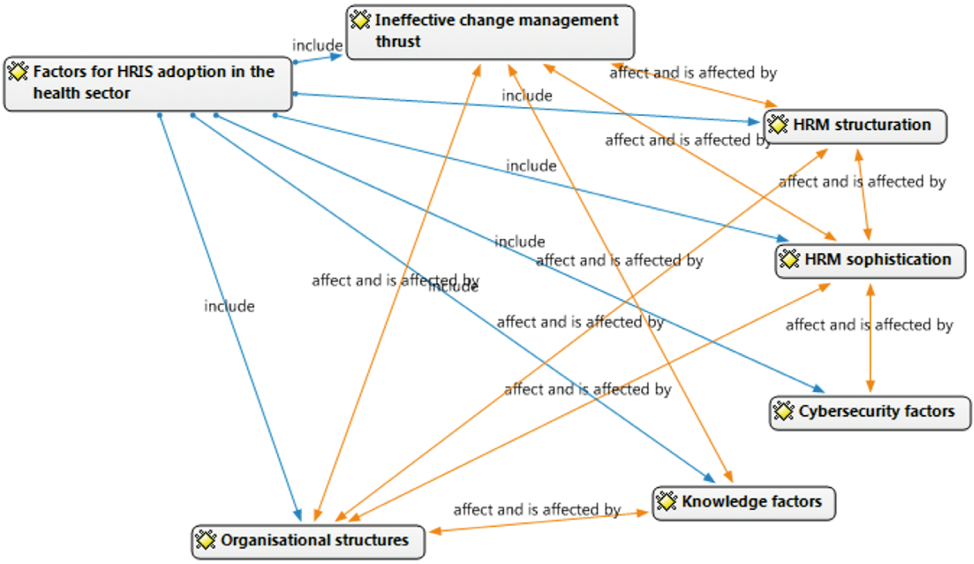


Figure 3 above depicts an overview of the findings from this study's qualitative analysis of the factors that deprive effective HRIS in the public health sector of South Africa. The findings reveal that inadequate HRM system structure, knowledge factors, HRIS complexity, insecurity factors, and a weak change management system within the public health sector are the contributing factors to the low level of effective HRIS in that sector.

Figure 3's detailed examination leads to the following suggestions:

HRIS cannot be fully effective due to poor organisational structures. These organisational structures might be compared to worn-out machinery and do not raise awareness or instruct the employees on how to utilise the HRIS. Respondents noted that the HRIS (Persal) in use was old and did not meet the modern-day needs of the public health sector workforce management.

The following are further responses that reflect both disenchantment and the outmoded character of the Persal system: "When there are more current HRIS available in the market, how can we still be using the outdated ones?" (Interviewee R09) "Nobody at this hospital will answer when you ask them about new systems implementation. There may not be. Or maybe they don't understand what you're talking about" (Interviewee E07). "I often have to manually dig through a mountain of paperwork if I am asked for the names and contact information of employees" (Interviewee R07).

5. Discussion

Some important points that hamper the effective utilization of HRIS are identified through the results. These include poor knowledge of the system, limited information security (trustworthiness), the fact that the system is old and not regularly updated, and poor funding. In some ways, one can find a common thread among them. For instance, a hospital facility would need funds to acquire and maintain infrastructure. It is important also to consider information security which, in our view, relates to funding and knowledge of the system. We argue that if users are familiar with a system, they will be able to operate the system with confidence. Kankaew (2021) argues that the use of HRIS should provide effective security of information in the process of managing workers' information within the health sector. Due to their unfamiliarity with the system and the fact that the majority of the selected hospitals for the study maintain HR documentation and files in cabinets, the system's effectiveness is in doubt. Interestingly, 39% (29% and 10%) of the interviewed respondents in Figure 2, indicated their unawareness as well as a feeling of insecurity using Persal. Maamari & Osta (2021), highlight the need for a less complicated system that allows users to familiarise themselves with it.

Operating a system goes hand in hand with some form of training on how the system should be used. Chakraborty (2015) reports that familiarity, consciousness, and awareness are commonly recognized as being involved in the steps taken to start, assess, adopt, implement, and integrate a successful information system. Dilu et al. (2017) mentioned that the lack of organisational preparation for successful HRIS could be attributed to a lack of knowledge of HRIS and the methods intended to enhance the workforce and facilitate their responsive process to system ineffectiveness. These reactions are a result of the employees' lack of familiarity with HRIS, their lack of sufficient knowledge, and their inability to access Persal as a whole. These factors also contributed to the challenge of the difficulties of the system's efficiency. Kitson (2019) noted that the health sector needs appropriate HRIS monitoring, knowledge, familiarity, and assessment measures to enable the reorganisation and enhancement of the health sector workforce opportunities to improve. Following this, steps may be taken to raise workforce understanding and familiarity with HRIS use via workshops, education, and training to ensure efficiency in the healthcare systems.

What is clear from the foregoing is that adequate HR infrastructure that supports employee wellness must be prioritised for organisational improvement (Strohmeier & Kabst, 2009; Zongjun, 2019). That way, the health sector may be strengthened in terms of data quality, information security, improved ICT infrastructure, and readily available technological software solutions (Spero et al. 2011; Udekwe, 2016). Maduagwu & Ugwu (2018) also made it known that productive HRIS may increase output, for the convenience of the workforce. Employees should therefore be familiar with the relevant knowledge and abilities connected to HRIS access through a trustworthy system. It would be more practical to implement an effective HRIS through a system that enables self-service access for employees to reduce the work of HRD. One of the interviewees (D02) made us understand that the non-existence of HRD could be blamed on the lack of effective government policies to support technological structures.

In concluding this discussion, we believe that the current HRIS can be improved not only to align with the demands of today's workplace but also to facilitate easier

working conditions where health sector workers do not feel threatened by the insecurity of the current system and are regularly updated with the knowledge of the system. For the sector to do this, it will require adequate funding, a lighter burden, access and installation of computers and other technologies, the hiring of trained personnel, and effective training to name a few.

6. Conclusion and recommendations

6.1. Conclusion

It is impossible to overstate the importance of effective HRIS in the health sector given its reputation as an important human resource management support system. The workforce's existence is just as crucial to the sustainable health sector using HRIS. The lack of HRD and access to HRIS in various public hospitals, the absence of HRIS software solutions and capacity building, human error, a lack of computers and sufficient infrastructures, and manual intervention, among other things, were some of the factors that this study identified as contributing to the ineffectiveness of HRIS in the public health sector. Additionally, the ineffective application and use of HRIS undermine its ability to help improve the public health sector.

To maintain the long-term viability of the public health sector, it is possible to significantly address the aforementioned issues by evaluating the future worth of technical advancements in infrastructure and HRIS, as well as the competitive edge that these advancements may provide. Additionally, these problems contribute to the ineffectiveness of the HRIS in the public health sector, which necessitates solutions that will help in making use of effective systems for the sustainability of the health sector. This may be accomplished by making investments in the public health sector's personnel and also making sure that the use of HRIS for effective workforce management for sustainability in the public health sector continues to have a substantial strategic bearing for both the government and the health sector in general.

6.2. Recommendations

The majority of the healthcare workers are clinical staff, and most of them are unaware of what goes on in HRD, HRIS, and how the system can assist them to improve their work performance in the sector, so knowledge, familiarity, awareness, acquaintance, and education on the existence of HRIS technology in the public health sector were not as prevalent as expected in the study (Scupola & Pullich, 2020; Prasetyo & Ariawan, 2023). Due to this circumstance, the majority of public healthcare professionals lacked the expertise and understanding of effective HRIS to support their work activities. However, some employees are familiar with the Persal system that the HRD uses to manage personnel information. There is a further indication of their unawareness that Persal is also an HRIS technology that can be utilised to assist in their job performance in different ways. Also, further effectiveness of HRIS and other technologies would assist them in performing their tasks without any form of interruption. But based on this study, it is not the case. The recommendation is that an education and awareness process on information systems should be implemented through a knowledge-based strategy, by allowing the public health sectors to educate and raise awareness of the effectiveness of HRIS among skilled healthcare workers (both permanent, locum, contract, and casual). Additionally, it is important to inform

healthcare workers of how effective HRIS will likely assist them to focus and improve their work performance in a competitive health sector environment.

The result also revealed that the majority of public hospitals and healthcare institutions in South Africa lack HRD and also do not make use of HRIS. However, they do have someone (usually casual staff) that attends to all HR-related tasks manually. This practice is not favourable and also does not assist in improving workforce sustainability in the public health sector. It was found that most public hospitals promote the use of manual processes for most HR tasks, particularly in hospitals with no HRD, which could be more expensive and difficult to operate than effective HRIS (Suryanarayana & Bhusal, 2019; Udekwe, 2022). It is recommended that the relevant government agencies set up strategic procedures to make sure that information system renovations are coordinated across all public healthcare institutions in South Africa, where skilled healthcare workers could access Persal through personal computers and other devices. Technological updates should also be coordinated through this avenue for effective systems to be put in place. This strategy would guarantee that healthcare workers would not be out of work and travel to other hospitals (substructure facilities) to have their HR-related queries resolved. Such travel could have a detrimental effect on the operations and functions of the public healthcare system as well as the service delivery in general.

The study also revealed that the current HRIS had security and information confidentiality scrutiny. Some of the respondents claimed the use of passwords to have access by only a few individuals and also a situation where some people could have access through other people's passwords, is also a security blunder. This study is consistent with those of George, Blaauw, Thompson, & Green-Thompson (2019), Menant, Gilibert, & Sauvezon (2021), and Rul & Bondarouk (2018). The study further portends the loss of faith in the system, as Menant, Gilibert, & Sauvezon (2021) and Rul & Bondarouk (2018) argue, the use of contract employees to handle skilled employees personal information does not bode well for workforce data confidentiality. The recommendation is that more permanent and competent personnel to perform the HR-related duties be hired. A further recommendation is to decrease inaccuracy and the burden of the HRD in the sector, and also have HRIS that the entirety of skilled employees can access. Thus, one of the top considerations in retaining people at work is that the confidentiality and security of their personal information are guaranteed. Makkink, Stein, & Bruijns (2021) assert that for systems to be effective, an appropriate documentation process using HRIS is required. It is further noted that a successful HRIS will help maintain information and keep track of what someone who logged into the system performed to enable knowledge transfer and allow subsequent users to follow the process and monitor records of their prior work.

Iwu & Benedict (2013) acknowledged that HRIS is more effective than the manual HR approach to filing and documentation, but the manual HR functions are an issue that has to be sorted out since the public health sector of South Africa is experiencing difficulty in changing its systems approach. The recommendation is that the government, healthcare management, and employees be prepared to accept technological changes that will enable the effectiveness of HRIS to support the changes and also eliminate manual HR systems in the South African public health sector, for effective Business Process Automation (BPA) to be in place. A further recommendation is a need for sufficient financial assistance from the government as well as effective training for skilled healthcare workers on how to operate enhanced

automated systems, such as HRIS, in the sector.

7. Limitations and implications of the study

The first lockdown implemented in reaction to an increase in COVID-19 infections had a detrimental influence on the second stage of data gathering, which included largely questionnaire collecting. Many volunteers failed to keep their promise to the study.

Confidentiality and privacy statement

The names of the hospitals and the participants were coded to protect and maintain the confidentiality of the information sources. Written consent was issued by the participants to the researchers.

Declaration of conflict of interest

The authors declare no conflict of interest.

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