Impact of Human Resource Information System Performance for Sustainable Health Sector in South Africa

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Abstract: The search for significance in the constantly changing health sector environment has led many organisations/sectors to consider numerous strategies, such as the introduction of information systems in human resource management. Thus, the utilisation of human resource information systems (HRIS) for sustainable healthcare workforce performance to realise substantial study interest without proportionate consideration of how HRIS can impact the healthcare sector for sustainable development growth in South Africa (SA). A mixed-method research design was employed; four public hospitals were selected in the Western Cape Provincial Department of Health and Wellness (WCPDHW) of SA. A pragmatic paradigm with an abductive approach was initiated. Psychometric properties testing was carried out to assess the reliability and validity of the data instrument. The participants were selected purposively from the four hospitals. Forty-six questionnaires and forty-one interviews were collated for the study. It was realised that the lack of effective HRIS does not bode well for healthcare workforce performance management due to reasons such as insufficient computers and information systems, lack of teamwork and staff participation, lack of sophisticated systems, lack of confidentiality of information, continuous use of manual HR processes, lack of government support and commitment. These reasons do not support sectors such as healthcare that should add to the country's growth and sustainable strategy. The respondents argue that the effectiveness of information systems is sustained if a suitable intervention of how it can be improved to achieve better healthcare performance in the sector is introduced. It was found that the lack of upgrades to the system in use does create negativity among healthcare workers regarding the impact of HRIS on their performance in the healthcare sector. The study recommends sustainable technological structures and the elimination of manual HR processes. It further recommends effective guidelines for effective HRIS utilisation to sustain workforce performance in SA's health sector. Future research directions are signalled in the study.

Keywords: Human resource information system, HRIS, Sustainable healthcare, Workforce performance, Service delivery

1. Introduction

The adoption of the resolve to achieve an end to poverty, safeguard the earth, and ensure that by 2030 all people experience peace and prosperity has been documented in the United Nations Sustainable Development Goals (SDG). SDGs specifically address health and well-being for people of all ages. The drive to realise good health and well-being for any nation relies also on the effective functioning of the accessible public healthcare sector. For some time now, the public healthcare sector in developing nations has yet to live up to its promises of good healthcare services. For example, Lema (2018) and Mabaso (2020) decried the state of public hospitals in South Africa (SA) and Ethiopia. Equally, Grobler, Wärnich and Mokobane (2018) and Matimbwa and Masue (2019) mentioned the lack of qualified personnel to manage public healthcare facilities. Reports that suggest the gross state of disrepair of government hospitals have made the rounds and a need to identify the impact of HRIS in the healthcare sector for sustainable development in SA (Sireesha and Ganapavarapu, 2015; Randle, Coleman and Kekwaletswe, 2017).

HRIS is a "systematic procedure for maintaining, collecting, storing, retrieving, and validating information belonging to an organisation. Such information can relate to the organisations' HR, personnel activities, and organisational characteristics" (Kovach and Cathcart, 1999. p.276). It is also considered a "system that is used to acquire, store, manipulate, analyse, retrieve, and distribute human resource information" (Kavanagh, Gueutal and Tannenbaum, 1990. p.13). Nonetheless, the use of IS in managing HR to improve performance lies in their capacity to reduce its intricacies because, on its own, managing workers can be a perplexing task (Hanif et al., 2014; Valcik, Sabharwal and Benavides, 2021). The use of HRIS by organisations in healthcare to support performance can, therefore, be a momentous exercise in an emergent economy. The need for such IS to be in

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place could strengthen the delivery of reliable healthcare services (Dilu, Gebreslassie and Kebede, 2017; Dey and Saha, 2020).

The healthcare sector is deemed one of the most important sectors in any country due to its prominence in the sustenance of human lives and the improvement in the health and well-being of society (Iwu, 2013; Rispel et al., 2019). Some authors (such as Erdem and Lucey, 2021; Bianchi, Tuzovic and Kuppelwieser, 2022) have argued that it is also regarded as a sector that advances economic progress and development through the prioritization of human lives in its growth strategy. An effective HRIS can be used by the healthcare sector to take actions relating to the standing of the healthcare workers in a country, which signifies the relevance of HRIS in the healthcare sector of a sustaining economy (Dida, 2021; Menant, Gilbert and Sauvezon, 2021; Sikira and Misheal, 2024). Appropriate incentives and financial support in the use of HRIS should be viewed as an imperative factor in the consciousness of an efficient and effective health workforce in general (Udekwe, Iwu, de la Harpe and Daramola, 2021b; Arakelian et al., 2022). Perhaps the healthcare sector is a substantial provider of the socio-economic enhancement and well-being of a nation, and the deployment of HRIS in the healthcare sector will help do away with the obsolete approach to managing healthcare workers and improve the health and well-being of the country's population.

The need to conduct a study on how the healthcare sector can apply HRIS to identify capable talent performance and to restructure HR is essential for social and environmental sustainability (Maruru, 2014; Rahman, Islam and Qi, 2017; Masum, Beh, Azad and Hoque, 2018). This will assist in determining the effect of healthcare workforce management and resource allocation in the sector. Maruru (2014) and Lema (2018) are of the opinion that there has been minor research on the impact of HRIS on workforce performance for a sustainable healthcare sector. This will require further investigation to identify ways to improve healthcare performance through HRIS for social and environmental sustainability in the sector.

According to Alam, Masum, Beh and Hong (2016), more research is necessary to identify additional factors that constrain the successful use of HRIS and its influence on the healthcare industry. This, according to Chakraborty and Khan (2019) as well as Mohammed (2021), may assist in determining the potential of HRIS towards contributing to the SDG of realising healthy lives and the promotion of well-being for people of the world. The study sought to explore the impact of HRIS on the performance of healthcare employees in SA. In doing this, four public hospitals in the Western Cape Provincial Department of Health and Wellness (WCPDHW) of SA were involved in the study. The objective of the study is to identify the impact of HRIS on the performance of workers for healthcare sustainability in SA.

2. Literature Review

Numerous research has been conducted concerning the impact of HRIS on the performance of workers in the healthcare sector (Al Shikhy et al., 2019; Arakelian et al., 2022; Sikira and Mishael, 2024). However, a review of selected African research showed the trend and the established results. Mansour et al. (2022) recognised a reduction in healthcare workers due to a lack of effective systems to regulate, maintain and monitor how HR functions are performed in a sustainable economy, then proposed suitable policies and regulations for effective HRIS to support good health and well-being of a nation. Conversely, Rameshbabu (2018), as well as Rees, Quispe and Scotter (2021), highlighted the lack of suitable ISs to assist in tracking and identifying competent talents, identifying skill gaps, and engaging people in the right discipline for sustainable health systems in place. Udekwe (2022) emphasised the importance of guardianship of accurate, confidential, and secured information about healthcare workers in a single platform database is essential for the easy identification of competent and sustainable workers. Essentially, Qadir and Agrawal (2016) seemed to contend that, for an effective policy to be in place in assisting to identify capable talents to be placed in the right position in the healthcare sector, the system must be contained by management and government support for workforce performance and also in capturing, recording and retrieval of healthcare workers details for sustainable and dependable healthcare delivery.

Studies conducted by Das and Barman (2018), as well as Mabaso (2020) on ways to introduce an HRIS that has fully assimilated HR mechanisms that can be used in the effectiveness of organisations' performance, are essential. This perhaps could deprive some organisations not able to make use of ISs such as HRIS to ascertain workers that are due for incentives for their additional effort be rewarded accordingly. Perhaps there is a need for an HRIS that assists in regulating the healthcare sector in developing, planning, and managing the workforce and rewards for their effort in the organisation. Furthermore, Manya, Sahay, Braa and Shisia (2018), Gichuki (2021), and Hassan (2021) highlighted the effect of a devolved health system in Africa and the negative effect of flagging the lack of effective ISs by the authorities which results in a lack of management support. There is

contention regarding the lack of prioritising spending on the upgrade of ISs such as HRIS for an effective health system. This argument seemed to fit the narrative which according to Matimbwa, Shillingi and Masue (2021), who found that the enthusiasm for the effective usage of HRIS is very low owing to several challenges such as insufficient funds, incapable healthcare workers, and deprived dedication by the authorities to support HRIS usage for a sustainable healthcare sector. Interestingly, these challenges are part of the major reasons why HRIS has not been able to prove its efficiency in the performance of the healthcare sector (Maruru, 2014; Lema, 2018; Singh and Bakshi, 2018; Ali, Sharhan and Alsaedi, 2021; Udekwe et al., 2021b).

Effective HRIS is critical in the performance of healthcare workers, which is one of the identified reasons crippling the healthcare system of countries such as SA. Moussa (2014), David, Shukla and Gupta (2015), and Grobler, Wärnich and Mokobane (2018) also revealed that due to ineffective ISs, such as HRIS for accurate recording and retrieving of healthcare workers' details, contribute to a shortage of healthcare personnel, which creates a circumstance where inexperienced medical practitioners are taking over the healthcare functions. Perhaps there is a need to conduct studies on the impact of unqualified healthcare workers and HRIS usage as it impacts negatively on the sustainability of healthcare delivery services. Thus, ascertaining how HRIS can assist in identifying the capable workers to be employed and do away with the unskilled workers (Malindadi, 2016; Dilu, Gebreslassie and Kebede, 2017; Dlamini, Zogli and Muzanenhamo, 2021; Salah et al., 2022). The lack of effective HRIS in identifying and employing capable workers against unskilled workers could position the health and well-being of the country's population in a perilous situation.

Scott, Dinginto and Xapile (2015) and Salah et al. (2022) believe that there are several reasons why the impact of HRIS on organisational performance has not been substantiated enough, such as i), low level of efficiency to heighten competitive advantage, ii), poor HR planning, iii), poor HR-related data collection, iv), poor HR monitoring activities, v), ineffective promotion decisions, vi), defective employee performance results, vii), defective employee remunerations, and viii), rewards structures. However, Alam et al. (2016) believe that effective HRIS could assist in better organisational performance through effective policies and programmes and enabling decisions to support employees' sustenance for healthcare delivery**.** Jayabalan, Makhbul, Selvanathan and Subramaniam (2020) and Okolo and Iruo (2021) consider that effective HRIS could assist the Human Resource Department (HRD) in covering various undertakings which include reward practices and incentives at the workplace to achieve sustainable development strategy.

Hosain, Arefin and Hossin (2020), emphasise the need for suitable communication structures to be supported by effective HRIS to improve teamwork, and passion in organisations. Jarrar (2022) also believes that HRIS strategies need to be achieved through performance autonomy, engagement, teamwork, and compensation to assist in placing competent and motivated personnel. Thus, the absence of appropriate collaboration and staff involvement among HRIS users does have an undesirable impact on the expected benefits of the system usage (Sireesha and Ganapavarapu, 2015; Udekwe, Iwu, de la Harpe and Daramola, 2021a). Valcik, Sabharwal and Benavides (2021) are also of the opinion that effective HRIS can result in improved efficiency and morale; a dedicated worker will be able to perform effectively which warrants the need for a self-service system to enhance teamwork, and job performance in an organisation.

HRIS privacy and safety is a pertinent area of concern in organisations. With the increase in demand for effective HRIS implementation, the safety of workforce details is critically important; they need to be conscious of managing workers' details (Zafar, 2013; Udekwe, Iwu and de la Harpe, 2023). Davarpanah and Mohamed (2020) think that employees are more pleased with the HRIS when assured that it has satisfactory precautions to keep their performance records confidential. Thus, confidentiality ensures that the workers' information is kept in a safe environment from unauthorised individuals. However, HRIS integrity will be required to ensure that systems and services are secured in a system through a complex healthcare environment. Perhaps there is a need to develop and document procedures to protect data privacy and integrity through HRIS (Mavuso, 2016; Sarma and Barua, 2018).

3. Methodology

The investigators conducted the study using a mixed method through the inclusion of both quantitative and qualitative methods of data collection (Saunders, Lewis and Thornhill, 2019). The mixed method allows for better data triangulation and interpretation (Gibson, 2017). An abductive approach with a pragmatic paradigm was portrayed (Saunders et al., 2019; Hayton, Botma and Heyns, 2021). The data were collated from four (4) selected public hospitals in Cape Town, SA, using questionnaires and interviews. The data were analysed using Atlas-ti (qualitative) and SPSS (quantitative), respectively (Quesada, 2010; Smit, 2021).

Descriptive and exploratory research design was followed to support the methodology selected, which corresponds with Ruparel and Modi (2016), and Lekgela (2017). This was concerning HRIS-related research in various disciplines/organisations (Masum, 2015; Muhammad, Shah and Azhar, 2021; Al-Saidi and Matar, 2022; Sikira and Mishael, 2024). The descriptive and exploratory research design assisted in gaining new insight into the sensation of HRIS usage to assist in workforce performance in the South African healthcare sector. Multiple cases and survey research strategies were followed. Forty-six questionnaires and forty-one interviews were collated, totalling, eighty-seven people who participated in the study. Both methods were used to gain much insight into the impact of ineffective HRIS on the performance of the healthcare sector.

A pilot study was conducted, using four (4) senior staff of each hospital to complete the questionnaires for pre-testing to accommodate all the participants' thoughts (Leedy and Ormrod 2010). Psychometric properties testing was carried out to assess the reliability and validity and to ensure that the survey instruments scale is authenticated (Golafshani, 2003). This process was initiated by testing the questionnaire and applying a similar procedure repeatedly to confirm the similarity of the result (Babbie, 2014).

3.1 Description of the Selected Hospitals

The SA public hospitals are categorised into; Regional, District, Teaching, Specialist, Community, and Primary Healthcare (Udekwe, 2022. p.62). Hospital 'E' is a district hospital, with an average of over 250 workers, has an HRD, and technologically advanced. Hospitals F, G, and H are community hospitals with an average of 100 workers, do not have an HRD, and not as technologically advanced as the district hospital.

3.2 Reason for Selecting the Hospitals

The investigators anticipated the participation of 10 hospitals, unfortunately, only four hospitals indicated their interest to participate in the study. The hospitals' enthusiasm, and readiness to participate, influenced their selection. In that regard, the selected hospitals became the unit of analysis for the study. Furthermore, participation may have been limited by the timing of the study, which was during the COVID-19 epidemic.

3.3 Reason for Adopting Mixed Model Research Methods

In the beginning, 230 questionnaires were distributed among the four hospitals, and only 46 were completed and returned. This made the investigators initiate a second process through interviews to make up for the questionnaire's low response and to have sufficient data to analyse the study. The interview was also significant to assist in clarifying rigorous research problem areas that require attention (Rubin and Babbie 2014). Essentially, the mixed model research supplemented/supported the study process (Tashakkori and Teddlie, 2003) considering that the qualitative method extended the inquiry that made use of the quantitative approach.

A triangulation method is used in mixed model research for multiple sources of data collection either serially or concurrently for the accuracy of results and to capture wider and more detailed information (Tashakkori and Teddlie, 2003; Gibson, 2017). This study adopted the triangulation method by simultaneously combining the data and information from both methods in the discussion section to yield quality and trusted results of the analysis.

3.4 Reason for Selected Questions

Terre Blanche, Durrheim and Painter (2009) highlighted that the reason for developing questions is to collect data to capture sensible and quality information that can be interpreted into credible answers to research questions. The questionnaire and interview questions were selected to identify the impact of HRIS usage on the sustenance of skilled workers and their performance in the sector. However, several research papers (such as Beadles II, Lowery and Johns, 2005; Malindadi, 2016; Mavuso, 2016; Udekwe, 2016; Kolatshi, 2017; Jayabalan et al., 2020; Ali, Sharhan and Alsaedi, 2021) focusing on the impact of HRIS and E-HRM in various sectors were reviewed. The investigators had to identify the questions from the gaps in the literature, to select a comprehensive list of questions that relate to the impact on HRIS performance in the healthcare sector. Table 1 below shows the categories of the participants, and Table 2 shows the code's identification of the interviewed participants and their hospitals:

Table 1: Study participants

S/N	Category of participants	Interview response	Questionnaire response	Cumulative total
1	Hospital Administrators	2	2	4
2	IT/HR/ADMIN staff	8	5	13
3	Doctors	5	6	11
4	Nurses	15	14	29
5	Pharmacists	4	10	14
6	Radiographers	3	2	5
7	Other healthcare staff	4	7	11
	TOTAL	41	46	87

Table 1 shows that nurses were the most participants in the study (29), followed by pharmacists (14). Next is IT/HR/ADMIN (13), followed by doctors and other healthcare workers (11) respectively. The next is radiographers (5) and the last is hospital administrators (4).

Table 2: Codes representation of the interviewed participants and hospitals

S/N	Designated hospitals	Participants codes	Frequency	Percentage	Cumulative percentage
1	Hospital E	E01 – E09	9	22.0	22.0
2	Hospital F	F01 – F15	15	36.6	58.5
3	Hospital G	G01 – G13	13	31.7	90.2
4	Hospital H	H01 – H04	4	9.8	100.0
	TOTAL		41	100	

Table 2 illustrates the four hospitals that indicated their interest to participate in the study with the codes representing the interviewed participants in the various hospitals. Hospital F has the highest number of interviewed participants (15), followed by Hospital G (13). The next is Hospital E (9), and the last is Hospital H (4).

3.5 Ethics

Zikmund, Babin, Carr and Griffin (2010) acknowledge that ethics is a communal arrangement between investigators and the participants on issues concerning harm to the participants, informed consent, right to privacy, voluntary participation, confidentiality, beneficence, deception, justice, and anonymity. The investigators were optimistic that the above ethical considerations were strictly observed (Boatright, 2000; Udekwe and de la Harpe, 2017). Ethical clearance and study approvals were granted to the investigators by the Cape Peninsula University of Technology and the WCPDHW of SA. The information collection processes were undesirably affected by the COVID-19 pandemic infections lockdown. Most of the purposively selected participants declined their participation.

4. Findings

The study aimed to identify the impact of HRIS on workforce performance and sustainability in the South African healthcare sector. From below, Figure 1 offers the quantitative data analysis in percentages; Figure 2 provides the qualitative data collated in frequency codes, while Figure 3 presents the qualitative data summary in themes.

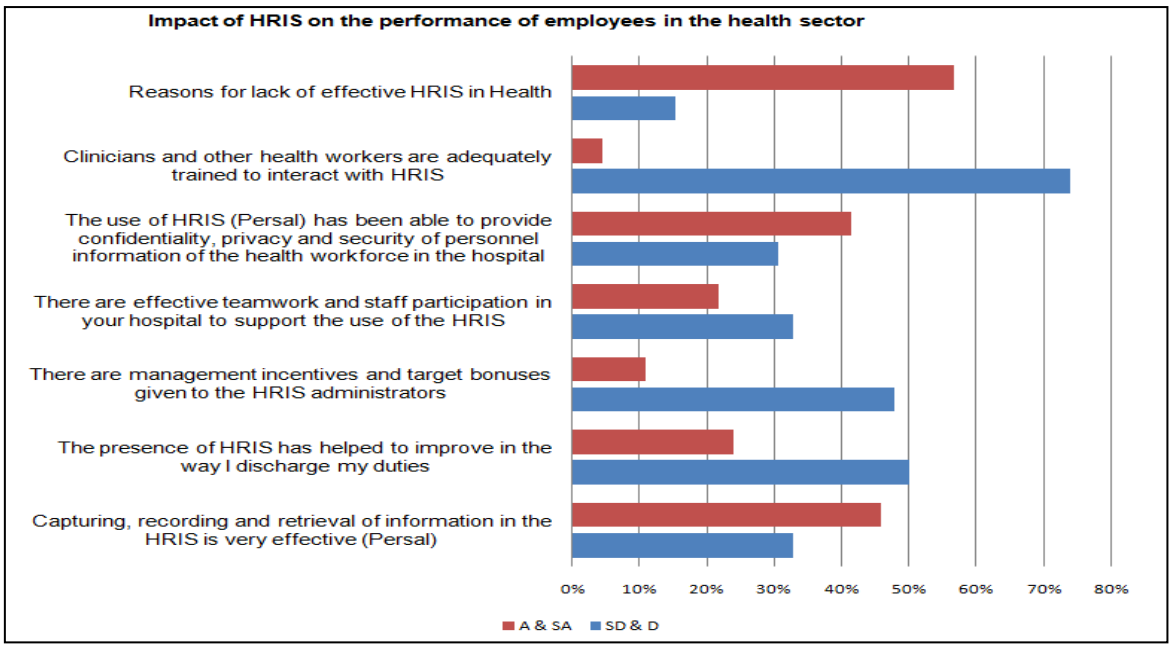

Figure 1: Quantitative findings on the impact of HRIS on the performance and sustainability in the healthcare sector

Abbreviations: A & SA = Agree & Strongly Agree, SD & D = Strongly Disagree & Disagree

4.1 Quantitative Analysis

In Figure 1, there is a significant margin of 74% of respondents disagreeing with the availability of training for healthcare workers on how to interact with HRIS. Also, 48% responded negatively to the availability of management incentives for HRIS usage. These negative responses could be attributed to the lack of support structures on how HRIS can assist in improving healthcare workers' performance. Thus, an average perception of 50% responded that HRIS does not contribute to the enhancement of healthcare workforce performance. This could also be attributed to the lack of improvement in the current HRIS to assist healthcare workers in improving their work performance and less worried about HR-related problems. Although a small number (24%) agreed that HRIS assists in improving the way healthcare workers perform their duties, this group of people might not be familiar with the system and could not identify how HRIS could impact their work performance.

However, concerning teamwork to support the usage of HRIS in the health sector, 33% responded that there is no teamwork and staff participation to support effective HRIS usage in the healthcare sector. The unfamiliarity could also be a reason that most workers are not concerned about HRIS and indicated that they do not have any reason to team up on the sustenance of effective HRIS in the sector.

Surprisingly, 46% responded positively that the current HRIS is effective in capturing, recording, and retrieving healthcare workers' details. 41% also specified that the HRIS used provides privacy, security, and confidentiality of healthcare workers' information. These positive responses could be a result of an existing system being better than the manual HR system and the fact that they never had cyber-attacks on the system. However, 33% and 30% disagreed with capturing, recording, and retrieving, as well as privacy, security, and confidentiality of workers' details in the system. This disagreement signifies the outdatedness of HRIS does not support improvement in the system for effective capturing and accessing of healthcare workers' performance improvement in the sector.

However, 57% gave a positive response that the South African healthcare sector is still lagging in the effectiveness of HRIS to compete with developing nations, and a need to upgrade the system is pertinent for the effective performance of the sector. In summary, it arises from the observations that despite responses signifying that HRIS has information security, confidentiality, and capturing, recording, and retrieving workforce details, there were issues of HRIS not assisting in improving healthcare workers' performance. Also, the lack of training on how to interact with HRIS and the lack of adequate incentives to motivate access were problems that needed some attention for effective workforce performance in a sustainable healthcare sector.

	Count	% Codes	Cases	% Cases	Nb Words	% Words
Capturing, recording and retrieval of information in HRIS						
Effective capturing and recording	21	8.8%	21	51.2%	304	0.3%
Use of computers not comfortable	2	0.8%	2	4.9%	26	0.0%
Poor computer skills leading to ineffective capturing and recording of data	6	2.5%	6	14.6%	156	0.2%
Ineffective capturing and recording	6	2.5%	6	14.6%	140	0.2%
Lacks knowledge of capturing , recording and retrieval of data using HRIS	8	3.3%	8	19.5%	153	0.2%
Improving performance						
Ineffective - errors and mistakes delay performance	8	3.3%	8	19.5%	141	0.2%
Effective in improving performance than paper	19	7.9%	19	46.3%	317	0.4%
Indifferent	12	5.0%	12	29.3%	143	0.2%
Incentives for HRIS use						
No knowledge of HRIS use incentives	36	15.1%	35	85.4%	176	0.2%
Beliefs there is some HRIS use incentives	5	2.1%	5	12.2%	78	0.1%
Team work and staff participation in HRIS use						
No effective team work and staff participation in HRIS use	10	4.2%	10	24.4%	99	0.1%
There is a team to facilitate HRIS	12	5.0%	12	29.3%	90	0.1%
Not aware of any team	16	6.7%	16	39.0%	127	0.1%
Confidentiality and security in HRIS use						
Passwords ensure security	5	2.1%	5	12.2%	30	0.0%
It seems there is security	29	12.1%	29	70.7%	202	0.2%
There is no security	6	2.5%	6	14.6%	159	0.2%
Reasonse depriving HRIS use in the Health sector						
Negative attitudes towards computer use	18	7.5%	17	41.5%	283	0.3%
Ineffective training	6	2.5%	6	14.6%	81	0.1%
Poor HRIS structuration	9	3.8%	9	22.0%	241	0.3%
Auditing its effectiveness	1	0.4%	1	2.4%	40	0.0%
Government is not committed to HRIS use	2	0.8%	2	4.9%	60	0.1%
Data insecurities	2	0.8%	2	4.9%	68	0.1%

Figure 2: The impact of HRIS code frequency chart output for qualitative data analysis

4.2 Qualitative Analysis

4.2.1 Capture, record, and retrieve information

In Figure 2, capturing, recording, and retrieving of information in HRIS were identified, with 20% of the respondents indicating their lack of knowledge of capture, record, and retrieval of data in the HRIS. This was endorsed by their unfamiliarity with what exists in HRIS. Thus, 5% responded to not being comfortable with the use of computers for non-medical functions. This is in accordance with 15% responding to the ineffectiveness of capturing and recording as well as poor computer knowledge leading to an infective system in place. On this basis, **Respondent F11** mentioned that "the current HRIS is not effective, and most health workers are not comfortable using computers at work." Surprisingly, 51% responded positively that capturing, recording, and retrieving information in HRIS is effective; the lack of upgrades is the problem. **Respondent H04** thinks that "HRIS effectiveness would be in the training of people on how to access the system to capture their HR-related information." **Respondent E04** is also of the opinion that "capturing and recording might not be a problem, but when there are too many people logged into the system at the same time can slow down the network connections and other ISs processes, which is a major problem." The opinions of respondents F11, H04, and E04 show that the capturing and recording in HRIS can be effective, but the lack of upgrades to the latest technology and the fact that some healthcare workers might not be comfortable making use of computers for HR-related work, due to extra workload is a problem.

4.2.2 Improve performance

The usage of HRIS to measure performance improvement in the healthcare sector was in Figure 2, dominated by 46% responding that the current HRIS is better than the manual/paper-based HR system. However, 29% indicated an insignificant difference between manual and current HRIS because most South African healthcare sectors are dependent on manual HR systems. **Respondent G12** made it known that "they do not make use of HRIS in their hospital and do not have access to computers. HR functions are performed manually in their hospital." 20% also responded that the current HRIS is defective due to frequent errors, mistakes, and delays in responding to HR queries. On this basis, **Respondent F10** believes that "the manual HR process creates an avenue of inconvenience where people had to travel to HRD in substructure to resolve their HR-related problems." **Respondent G08** also expressed their frustration on "how they submit HR documents manually, and it gets lost on the way to the substructure or not received and captured at the right time, affects their work plans." Respondents F10, G08, and G12 seem to advocate that due to a lack of computers, most government hospitals in SA perform HR functions manually and send the documents to the substructure for capturing. This warrants that documents that could be misplaced or not captured on the system are frustrating and could influence the performance of healthcare personnel and the sector.

4.2.3 Incentives

This category was critical in finding out if there are incentives for HRIS usage in the healthcare sector. In Figure 2, 12% of the respondents believed that there could be an incentive bonus given to HRIS users but did not attest to it. However, 85% responded that they do not know about such incentives existing in the South African healthcare sector. Could this be a result of a lack of awareness of HRIS among healthcare workers? Thus, **respondent G06** contemplates that "they do not have an idea of specific incentives for HRIS access; they only have general incentives for everyone, yet such incentives are not reliable." **Respondent G02** also contends that "the annual incentives are supposedly for everyone, but only a few people get the incentives." Respondents G02 and G06 appear to propose that most people do not have an idea of special incentives for HRIS access, but they do have incentives for the entire workers, which is also not effective. Not everyone gets the incentives in the South African healthcare sector.

4.2.4 Teamwork and staff participation

Teamwork and staff participation have raised eyebrows on how they impact the use of HRIS in the health sector. In Figure 2, 29% responded to the existence of teamwork in the use of HRIS among the users, where they assist one another in navigating through the system. However, 39% responded that they are not aware of any form of teamwork in the use of HRIS because they are not familiar with the system and how it works. According to **respondent E03,** "In the substructure, someone does the capturing and someone else does the approval of what is captured in HRIS, but in terms of teamwork, I don't know if it exists." Remarkably, 24% responded that there is no effective teamwork present in the use of HRIS because not all the workers have access, and the system is still outdated. Thus, **respondent F15** made it known that "HRIS is centralised and does not empower healthcare workers to have access to capture their HR information themselves, which does not inspire teamwork." **Respondent F09** also mentioned that "in their hospital, HR functions are manually conducted by one, a mostly inexperienced person who might not guarantee teamwork." Respondents F09 and F15 believe that the healthcare sector makes use of outdated HRIS and does not allow healthcare workers access, also making use of manual HR processes to support HRIS. This defeats the reason for defective systems in place. It is also characterised by the fact that most health workers are not aware of what goes on in HRIS.

4.2.5 Confidential and secured

In Figure 2, 71% responded positively to the existence of security of HR information using HRIS, and 12% also supported the use of passwords to access the system. On this basis, **respondent E04** is of the view that "everyone in the HRD did sign a confidentiality clause not to disclose any HR information without authorisation." **Respondent F03** also mentioned that "they have a secured HRIS system where no one can access without a password." However, 15% disagreed with the existence of security in the use of current HRIS due to frequent payroll omissions caused by human error and manual HR processes. Thus, **respondent F01** indicates that "in their hospital, HR functions are still done manually, and the fact that they submit their leave and other HR-related documents by hand, and it gets sent to the substructure is a confidential bridge to people's details." Based on the responses, they highlighted the presence of confidentiality, privacy, and security of information in HRIS. However, the use of manual HR processes in most government hospitals in SA is because of the absence of advanced systems; confidential documents could easily be accessed by anyone or misplaced in the process.

4.2.6 Other reasons for ineffective system

Reasons that deprive the effective use of HRIS were considered critical in the performance of the healthcare workers and the sector. In Figure 2, 42% responded with a negative attitude towards the use of computers due to resistance to change by the healthcare workers. Coincidentally, 22% and 15% pointed out that poor HRIS saturation, as well as ineffective training to equip the users, were part of the reasons that deprived the effective performance of HRIS usage in the healthcare sector of SA. Thus, a fraction (5%) of the respondents mentioned that the government is not committed to supporting the effective use of HRIS to improve performance in the healthcare sector due to a lack of sufficient budget allocation for IS acquisition/upgrades. Also, 5% and 2% pointed to data insecurity as well as lack of HRIS audit as other reasons that deprive the effective performance of HRIS in the South African healthcare sector.

4.3 Summary of the Findings

Figure 3 below shows a summary of the qualitative outputs from the data.

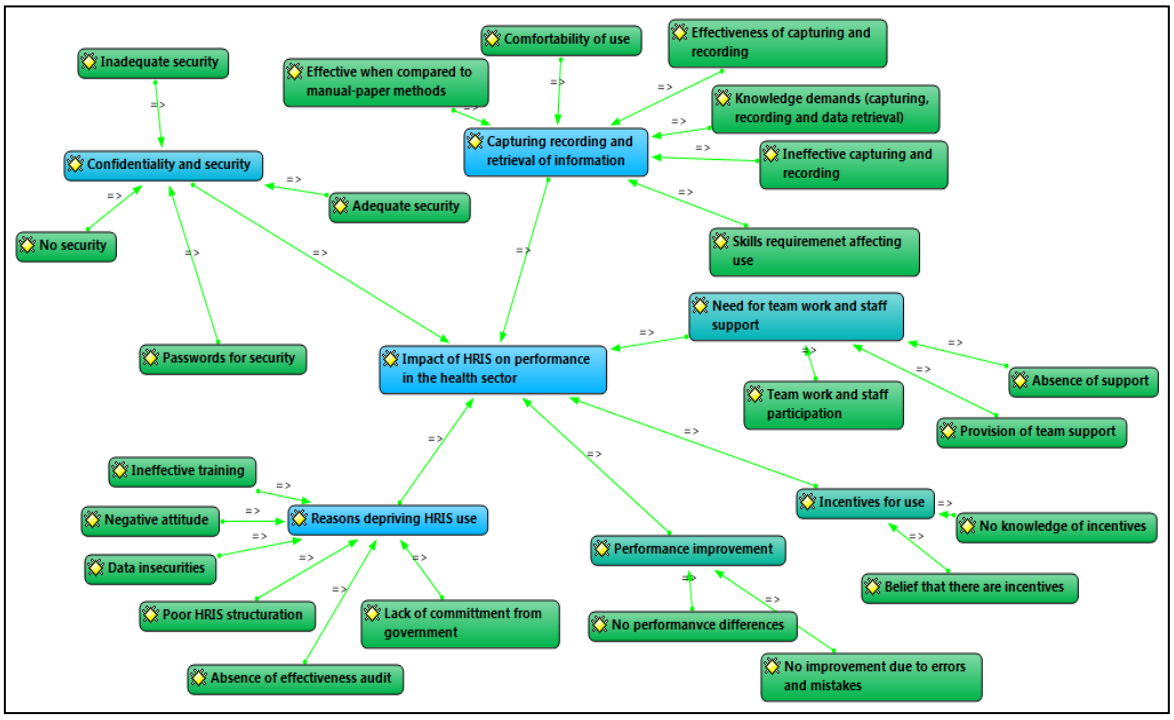

Figure 3: Summary of HRIS impact on the performance of the health sector

Figure 3 shows a summary of the qualitative data analysed above, which indicates that several reasons impact negatively on the use of HRIS to assist in the performance of the healthcare sector, which include ineffective training, data insecurity, lack of teamwork, absence of an effective audit, lack of incentives, capturing and recording issues, lack of effective skills, lack of government commitment, absence of support system, and poor HRIS saturation.

5. Discussion

On the issue relating to HRIS in the capture, record, and retrieval of workforce information in the healthcare sector. In Figure 2, 51%, as well as 46% in Figure 1, of the respondents indicated effective capturing and recording in HRIS. These agreements are due to IS usage being more effective than manual system usage. However, in Figure 2, most of the respondents 55% (5%, 15%, 15%, and 20%) gave several undesirable responses to the effective capturing, recording, and retrieving of information in HRIS due to reasons such as poor computer expertise, people not comfortable with using computers at work, and lack of acquaintance of data captured in HRIS to name a few. This also corresponds with the response of 33% disagreement in Figure 1. These disagreements are embraced by the lack of system sophistication. This argument corresponds with David et al. (2015. p.116), who indicated that effective performance of HRIS can assist organisations in recording and storing employees' documents and information, such as employee personal and qualification documents, for accuracy of data and information that can be easily accessed whenever they are needed. For effective HRIS performance,

the accuracy and confidence in HRIS information need to be singled out to measure the benefits to be accomplished.

The improvement in healthcare workers' performance through HRIS usage was pointed out. In Figure 2, 46% agreed the use of the current HRIS is much better than the manual HR system; however, most government hospitals in SA still conduct manual HR-related processes, which is still a challenge. Perhaps, HRIS is still not as efficient to improve their work performance due to its outdatedness. Coincidentally, in Figure 2, 29% and 20% of the respondents specified insignificant as well as ineffective differences between the current HRIS and manual HR systems because the South African healthcare sector is highly dependent on manual HR functions to support HRIS. Also in Figure 1, 50% of the respondents opposed the effectiveness of HRIS in the improvement of work performance in the sector due to a substantial rate of manual HR dependence. This warrants frequent errors, mistakes, and misplacement of documents sent to the substructure. This study corresponds with Scott et al. (2015), who mentioned that in some organisations, the leave and other HR information retrieved from HRIS are sometimes not updated, and that makes the HR information furnished to the management unreliable and untrustworthy. Inaccurate record-keeping caused by ineffective ISs such as HRIS can lead to service failure and poor performance, which can be attributed to a high level of paper-based, no proper filing system, poor HR planning, poor HR supervision and lack of experienced workers (Marutha, 2011).

Special incentives to access HRIS were also brought up in the study. In Figure 2, 85%, as well as 48% in Figure 1, responded that they do not know as well as disagreed with the existence of special incentives to access HRIS. The lack of incentives could be unfavourable and demoralising to healthcare workers, which could be attributed to resistance to change and lack of interest in accessing the system. Coincidently in Figures 1, 11% and Figure 2, 12%, both believe that they do have incentives that are supposedly given to entire healthcare workers for doing their job and not to access HRIS. Unfortunately, only certain selected people are given such incentives, which also adds to the grievance among healthcare workers' performance. This supports the argument of Phahlane (2017) and Okolo and Iruo (2021), signifying that the conditions of service in the use of HRIS need to be improved through special incentives to inspire access to the system. Also, healthcare workers need to be given incentives as a motivation to improve their performance at work (Kumler, Verhoogen and Frías, 2013).

Teamwork and staff participation to support the usage of HRIS was portrayed in this study. In Figure 1, 22%, and Figure 2, 29% signalled the possibility of teamwork among HRIS users because only certain HR staff have access. Also in Figure 2, 39% indicated their unawareness of teamwork that exists in HRIS usage due to their unfamiliarity with the system. Subsequently, in Figure 1, 33% and 24% in Figure 2 gave an undesirable response to the existence of teamwork in the use of HRIS. These undesirable and unfamiliar responses were due to ignorance of HRIS in most of the government hospitals in SA. Also, the fact that those hospitals are operated in a centralised system, yet the high rate of ignorance of HR processes discourages teamwork in the sector. According to Udekwe et al. (2021b), the absence of effective teamwork and staff participation to access HRIS creates an undesirable impact on the expected achievements from using the system. Perhaps effective teamwork will assist in creating a conducive and cooperative work environment. This is in line with Valcik, Sabharwal and Benavides (2021) study; they mentioned that an effective HRIS could promote good morale and efficiency in an organisation. Ideally, a dedicated worker will be able to meet organisational objectives, which would warrant the need for a self-service system to enhance teamwork, job performance, and sufficient human capital in an organisation. Proper communication that is supported by HRIS can increase teamwork and motivation for effective performance and sustainable delivery service (Hosain, Arefin and Hossin, 2020).

Confidentiality, privacy, and security of healthcare workers' information in HRIS were also pointed out in this study. In Figure 1, 41%, and Figure 2, 71% of the respondents gave an affirmative remark that the current HRIS supports the confidentiality of their details. Also, 12% in Figure 1 supports confidentiality to the use of passwords to access HRIS as security features. The support of confidentiality is because the respondents have never had any complaints of security blunders of workers' data using the current HRIS. However, in Figure 1, 30% and Figure 2, 15% both disagreed with the security of workers' HR details because most government hospitals do not make use of HRIS and do not have HRD; they submit and send their HR documents manually to the substructure which might not be confidential and secured. The South African healthcare sectors need to provide HRIS that can be accessed by the entire healthcare workers and do away with manual HR submissions. Mugo (2017) made it known that the lack of integration of HRIS with other ISs to a single database can create confidentiality and privacy blunders in an organisation. The lack of reliable information from HRIS may lead to security-related consequences. This study corresponds with Zafar (2013), who mentioned that HRIS security is a pertinent area of concern; with the increase in the number of access, security and confidentiality of workers'

data should be of importance, and organisations should be cautious in managing workers' data. Perhaps, the security of workers' information should be an important subject of concern in modern today HR systems.

The issue of audit on HRIS was also highlighted in the study. In Figure 2, a fraction (2%) of the respondents emphasised the non-availability of system audits on HRIS, and the investigators had to identify the importance of system audits on HRIS as critical. The respondents highlighted the audit is only conducted on the reports and documents generated from HRIS and not on the system itself to identify the impact of the performance in the sector. This study is in line with Saleem and Akbar (2015), who mentioned the need to improve HR performance through the alliance of compliance and legal review with strong audits on ISs in organisations. Esanga et al. (2017) also emphasised the necessity of having an effective HRIS audit for workers' records and salaries to be accurate for assistance in characterising the healthcare workforce control in countries/continents.

The investigators observed some other reasons identified as crucial to the study. In Figure 1, 57% agreed that there are other reasons that also deprive the effective usage of HRIS on the performance in the healthcare sector. This observation was supported by 5% of respondents shown in Figure 2; they mentioned that lack of governmental support for the effective usage of HRIS was a reason. Also in Figure 2, 5% and 15% mentioned data insecurity as well as ineffective training for users as other reasons that deprive the effectiveness of HRIS. 22% in Figure 2 also pointed out that poor HRIS saturation was a reason for the lack of upgrades to the system. These observations made the current HRIS not enticing to the users and the healthcare workers. Furthermore, in Figure 2, 42% also specified that they do not need to perform additional functions outside their primary healthcare functions by accessing the HRIS through a system. They believe that accessing HRIS will create an additional workload to their existing workloads, which is another reason that deprives the usage of HRIS for effective performance in the healthcare sector. This study corresponds with Gray (2019. p.21), who indicated that unhappiness among health workers is a practice caused by poor working conditions, extreme workloads, and discrimination in the workplace. Antony and Balu (2018. p.122) are also of the opinion that workload is a crucial factor that creates an unsuitable working environment, which is caused by the complexity and complication of IS usage in the health sector. Perhaps, an effective HRIS for workforce access is needed for simplicity and workforce convenience for sustainable healthcare delivery.

6. Conclusion and Recommendations

6.1 Conclusion

The healthcare sectors are of the impression that the positive impact of HRIS could be an enabler for the adequate performance of healthcare workers for a sustainable health sector. This process will require a development plan to assist in aligning healthcare workers and the health sector's strategic performance using HRIS for data capturing, recording, and retrieving for judgements relating to healthcare workforce sustenance. The fact remains that the usage of ISs such as HRIS is much better than the manual HR functions, but due to lack of upgrades on HRIS to the latest technology, lack of HRIS supervision, lack of special incentives to motivate HRIS access, unreliable and inaccurate reports caused by the paper-based system, warrants a sophisticated HRIS to achieve quality healthcare performance.

Evidence from the study shows that HRIS does not assist the healthcare workers and the sector to improve their performance due to a lack of government commitment to support the maintenance of the system, data insecurity, lack of sufficient computers and other technological infrastructures, ineffective training, lack of HRIS audit, and poor HRIS saturation. For these reasons, the healthcare sector could not achieve the expected workforce performance for a sustainable sector. Furthermore, the lack of effective HRIS could be broadly observed by assessing the impending value of the system performance and how such performance could provide confidentiality, privacy, and security of healthcare workforce details, including teamwork and staff participation, to support an effective health sector. For an efficient healthcare sector in place, they need an upgraded HRIS that will assist in improving the way HR functions are conducted in hospitals for effective workforce performance for sustainable healthcare delivery in SA.

6.2 Recommendations

Capturing, recording, and retrieving healthcare workers' details were offered as key features of how to measure the impact of HRIS usage on worker productivity. Interestingly, some respondents indicated that the system's lack of current and insufficient access to ISs such as HRIS created the problem of ineffective recording and retrieval of workers' information in the sector. This was also attributed to data insecurity and a lack of government commitment to support the system (Mawaddah and Retnowardhani, 2023). The recommendation is that there should be support systems for acquaintance, availability of sufficient funds, computers, and other

technological infrastructures, upgrade of the system, and training on accessing ISs such as HRIS to the healthcare workers. All these will not be achieved without government and management support and commitment. This will also assist in eradicating ineffectiveness in the capture, record, and retrieval of healthcare workforce information and improve the performance of the sector.

It was also observed from the findings that the current HRIS used in the South African healthcare sector does pose reasonable confidentiality, privacy, and security of workers' details through passwords to have access. Also, the users sign a confidentiality agreement not to disclose HR information without authorisation. However, some respondents do not trust the system due to numerous errors, misplacements, and the manual process used to support HRIS. Also, a situation where inexperienced staff is employed to handle workers' HR documents is not confidential (Kagehi, 2015; Iwu, Bayari and Jaiyeola, 2019). The recommendation is that the healthcare sector should employ qualified and trained workers to handle the HR functions and allow healthcare workers access to HRIS to eliminate manual HR processes and reduce the workload in HR-related tasks. Confidentiality, privacy, and security of healthcare workers' information are priorities that can support and improve the performance of healthcare workers and promote social and environmental sustainability in the sector in general.

The findings also highlighted the need for knowledge of existing teamwork and staff participation in HRIS usage. This was attributed to the fact that most of the respondents are clinical workers who do not have access to HRIS and need to know what goes on in the HRD. However, some respondents mentioned that somehow, the users might be engaging among themselves through teamwork. The fact that the system is not accessible to the entire healthcare workers does not bode well for effective teamwork in the sector. The recommendation is that there should be equitable access to HRIS in the healthcare sector and that teamwork and staff participation should be encouraged for workforce performance.

Public health facilities serve the vast majority of the country's population (Udekwe, Iwu, Daramola and de la Harpe, 2023). This arguably results in a burdensome workload for the workers. A motivation strategy to include HRIS access in the health sector's work function is recommended (Smaldone, 2017; Papac, Pejanović-Škobić and Bošnjak, 2020). The general incentives should be across the board to give the healthcare workers motivation to remain at work and also improve their performance in the workplace (Abuya et al., 2021; Grabner and Martin, 2021; Okereke et al., 2021; Young, 2022). When people do not receive special incentives for their extra efforts, it can drive them towards looking for other job opportunities.

The analysis also highlighted that the South African healthcare sector does not conduct system audits on HRIS. Some respondents emphasised that audits are only conducted on the reports generated from HRIS, which is inappropriate. Malpractices might be evident in the HRIS technology, which might not be easily noticed in the reports generated (Marutha, 2011; Mong'eri, 2014; Fashoto et al., 2018; Koech, 2022). Such technological malpractices may only be identified in the long term which might be too late to act upon. Furthermore, such technological malpractices might not be easily identified and might go on for an extended period. These malpractices can include ghost workers' salaries, double salary payments, allowances, leave, and wrong records of availability of leave days, amongst others. Sometimes, it can be an error, and sometimes it can be an intentional act by the system users (Kumler, Verhoogen and Frías, 2013; Matimbwa and Masue, 2019). The recommendation is that there should be periodic system audits on HRIS to ensure that such malpractices and mistakes are identified before the reports are generated and sent to the authorities for decisions.

Conflict of interest: The investigators declare no potential conflict of interest concerning the publication of this work. In addition, the investigators have completely witnessed ethical issues which include plagiarism, misconduct, informed consent, data fabrication and, or falsification, double publication and, or submission, and redundancy.

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