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Health Data Managers' Perceptions and Acceptance of Health Management Information Systems

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Abstract

1. Introduction

Health Management Information Systems (HMIS) are comprehensive systems designed to automate and streamline healthcare operations. These systems store, process, retrieve, and transmit information and thus facilitate better management of healthcare processes. Health data managers play an essential role in overseeing patient data in hospital settings. Their main responsibilities include maintaining, retrieving, analyzing, and securing patient records. Management of records is critical as it directly relates to patient care and plays a crucial role in decision-making processes. The task of the health data manager becomes substantially more efficient when supported by Health Management Information Systems. It is essential for health data managers to accept the system to ensure proper implementation and functioning and to improve patient data management outcomes. Given the critical role of health data managers, their perceptions and acceptance of HMIS warrant attention.

Methods

In this chapter, the study's category of analysis, methods, data sources, subjects, and the data collection processes are described. A detailed presentation of the measured operational variables is provided, with empirical justification for their use. Diagrams, figures, and tables are used for both empirical and non-empirical justifications. Alternative hypotheses of variable measures are provided, based on the limitations of studies previously conducted.

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Previous measurements, descriptions, contextual annotations, and usage in the study are provided. The chapter will also discuss the process of initiating factor analysis, preparing the data-obtained factors for variable analysis. The results of both EFA and CFA and a measurement model are discussed.

Conclusion

In conclusion, the study investigated the perceptions of data managers toward HMIS, examined the various factors that contribute to or deter their acceptance, and derived implications for policy and research from the results. The findings revealed a number of potential and actual factors that contribute to the successful acceptance of the HMIS by the users. These include, among others, the users' experience, their perceptions of the usefulness, the security of the information, perceived or actual barriers, and the overall perception of the HMIS. In response, the theoretical model integrating the TRA and IDT has been developed and tested within the study, which enables researchers to look at the factors and the relationship between the two theories. However, although the measure contributes to a better understanding of user acceptance related to data managers, it nonetheless requires further development. The survey instrument developed should undergo further validation and testing on larger samples from other countries and contexts before it can be generalized or derived into the overall theory.

1.1. Background of Health Management Information Systems (HMIS)

1.1. Background of Health Management Information Systems

Health management information systems are computerized systems with administrative, financial, and statistical functions and supporting the usage of such systems in relevant evaluation and planning processes. The evolution of HMIS (Health Management Information Systems) began with the use of simple data storage and reporting functionality emphasizing data collection efficiency (Mahla et al., 2021). Emerging technological advancements like Data Telecommunication Network systems facilitated timely and efficient data collection and transmission. These advancements led to the integration of reporting functions and the promotion of human resource development for effective reporting. The integration of additional functionally vital information packages harmonized HMIS with changes in the healthcare system and public health strategy. Its adaptability to the evolution of the healthcare system was a salient feature of the new technology. The turning of the millennium brought in an array of technological advancements that shaped the direction of HMIS development thereafter. The growth of Information and Communications Technology created the basis for a dramatic shift in the use of HMIS, particularly in developing countries.

The development of an electronic National Disease Surveillance System started in 2005 and aimed to automate the collection and transmission of relevant disease and event data.

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Additional work was underway to automate the administrative reporting and data linkage of health entities. Despite the evident advantages of using HMIS, various health and administrative officials continued resisting the new technology, barriers ranging from management enthusiasm, as it required substantial investment, to basic operational problems like unreliable electricity supplies. Technological constraints like limited data storage capacity often slowed down data collection and information flow. Besides these challenges, the use of HMIS has been an integral part of health care reform endeavors in different regions. An approach that improved significant achievements in disease surveillance was introduced and the investigation of the feasibility of establishing an electronic HMIS was a part of the multidimensional Model System Project. A thorough understanding of the existing oral reporting system, HMIS, and its potential electronic implementation were preconditions to elaborate the new software. Accompanying progress, [ref: WHO/EURO] also supported the development of an electronic HMIS with a statistical database in three oblasts. Along with the improvement of the operational and technological basis, the highly committed involvement of senior officials was recognized as an important prerequisite for the implementation of an effective HMIS.

1.2. Significance of Health Data Managers' Perceptions and Acceptance

The successful implementation of an information system in health care largely depends on the users' perceptions and attitude toward the system (Ayanlade et al., 2019). The acceptance, as a form of system usage by health data managers, is expected to ensure the effective utilization of the system for better data quality and service delivery. A positive perception induces easy use of HMIS, thereby enhancing productivity. In addition, the successful implementation of the system is greatly dependent on user engagement with the system as a minimum requirement for the system to behave as expected (Mahla et al., 2021). It is anticipated that health data managers will realize the added benefits of the system, thereby promoting acceptance through effective data use, which in turn nurtures a positive perception toward the usability and usefulness of the system within the settings. Conversely, lack of managerial engagement with the system will hinder the effective use of the system in health care settings. Health data managers will always find it more difficult to cope with the system and locate the information desired to perform their duties, leading to growing frustrations amongst users about the inefficiency and failure in its use. Important stakeholders, from policy and practice aspects, seek to enable e-health information systems and align managerial attitudes with the technological advancements already taking place in the field. Any system to generate credible and high-quality data is needed to improve service delivery to the local community. However, up to now, it is barely known that health data managers know about these systems and their roles in improving the quality of the health information system. Thus, the understanding of health data managers regarding the quality of HIS is of importance as it

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is assumed that they would be able to bring about a positive contribution to health service provision.

2. Literature Review

Health data management (HDM) is an essential part of the Health Management Information System (HMIS), which supports and enhances the reporting/ decision-making of the health information system (HIS). HMIS is responsible for the storage and retrieval of health data by setting procedures and using facilities, such as personnel/institutional information, medical equipment, immunization, annual/quarterly reporting of outbreaks, and mortality rate reporting. Health data managers are responsible for the management of the health-related data collected from the health services system, and the processing, analysis, interpretation, presentation, and dissemination of these data into information or reports for managerial decision-making. Therefore, as a person who has a special role in the HMIS, their perceptions and acceptances may also have an important impact on the completeness, reliability, and accessibility of the health data they manage. For this reason, plentiful research has been done to recognize the determinants of technology acceptance, in general. Several studies have revealed a variety of determinants that influence the acceptance of health care information systems. However, the experiences and perception of health data managers on HMIS acceptance and the determinants that influence its acceptance were not thoroughly addressed. Therefore inadequate knowledge exists in understanding the acceptance of HMIS among health data managers through this paper which aimed to explore the perceptions and acceptance of Health Management Information System (HMIS) by HDMs operating in healthcare organizations in Kenya. A poster based browsing method was employed for this descriptive cross sectional study where a sample of 132 health data managers participated from four public health care organizations in Kenya. A structured questionnaire was used for data collection. Information regarding the experience, perception, acceptance, and determinants that influence HMIS acceptance is provided for a sample of HDMs and there is a discussion of the gaps in the current body of knowledge regarding the experiences of HDMs.

2.1. Conceptual Frameworks in Technology Acceptance

Introduction to the current Health Management Information Systems (HMIS) in terms of perception and overall acceptance is given, as well as the significant role legislature compliance plays in these perceptions and acceptance. Literatures of past empirical studies on acceptance in terms of health sector and/or health record systems are reviewed. An empirical research methodology; the sampling strategy, data collection, and the analytical methods, used are discussed. Furthermore, the results found, alongside study limitations, practical implications and future research directions, are given. Lastly, overall conclusion on the outcomes and further implications for health data management are provided.

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3. Methodology

1.1 Research Design Investigating the perceptions and acceptance of Health Management Information System (HMIS) among health data managers necessitates a design that provides understanding and insightful information. A mixed-method (quantitative and qualitative) study is believed to be the design that can fulfill this purpose effectively. The quantitative component will focus on the determinants of HMIS acceptance, as perceived by health data managers, through the development of a structured questionnaire. Meanwhile, the qualitative component will seek to explore in-depth perceptions regarding the development and use of an HMIS through interviews with a sample of health data managers.

1.2 Data Collection Methods Quantitative data collection on variables through questionnaire surveys, and qualitative data collection on perceptions and acceptance of HMIS through a semi-structured interview guide, are considered to be the most appropriate methods. Data obtained by surveys will be analyzed quantitatively, while deep explanations and interpretations on such a phenomena will rely on qualitative data collected via interviews.

1.3 Sampling Techniques It is important to recruit health data managers as participants in this study because they will provide insightful perceptions and acceptance views of HMIS. A stratified simple random sampling technique was used to select health data managers to ensure all entities were proportionately represented and to produce robust data (Mahla et al., 2021).

1.4 Ethical Considerations and Data Management This study's procedures were well-thought-out to ensure the highest level of quality and integrity; all necessary approvals and consents were obtained. The questionnaire aims to collect the necessary data of perceptions and acceptance of HMIS. External scrutiny was carried out before it was distributed. Distribution was conducted over a 2-week period, with participants receiving a presentation on the contents and objectives of the survey. Before the survey data was analyzed, basic data was compiled, cleaned, and coded. The study's proposal also includes an agreement to keep information safe and secure. The data will be kept confidential at all times and classified. Topics of a sensitive nature will only be discussed in a safe environment. Proficient data management and maintenance will be employed throughout the study to protect participant information. Placing participants at risk or causing offense was not the goal.

1.5 Limitations of the Study Every study has its limits; it is only fair to acknowledge them. A non-probability sample of health data managers represented a significant limitation to this study, as it limits the generalization of the findings. Finding and recruiting health data managers willing to participate in the study and allocate time to interviews was a significant challenge. Using a mixed-method approach in a single study, time was a relatively significant

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limitation. Moreover, the study was conducted in a specific context, which may limit its generalizability.

3.1. Research Design

This study explores perceptions and acceptance of HMIS from the perspective of health data managers at the district HMIS desk at the upper levels of the health system in Tanzania. However, a detailed description of the methodology section and ethical considerations was not provided. This letter tries to fill this gap by raising several questions about the sampling methods, data collection procedures, ethical considerations, and the overall research design of the study.

There are several potential concerns that should be addressed on methodology issues. This letter has pointed out some of them. In light of the above concerns, this letter anticipates a revised manuscript for further review. Despite these concerns, this study seems appropriate. Data is still limited regarding how and to what extent different stakeholders of the HMIS accept and use it. It is viewed from the perspective of health data managers, the key personnel of the HMIS at the district and national levels. 3. METHODOLOGY 3.1. Research Design This study used a mixed-methods design comprising both quantitative and qualitative methods. The design is based on a pragmatic stance aiming to gather a comprehensive understanding regarding health data managers' perceptions and acceptance of HMIS. The design is believed to accommodate the essence of the HMIS convention and culture among health data users and observers at the district and upper, policy-oriented levels. Data is sought from health data managers regarding HMIS acceptance and perceptions of data users and decision makers at the district, the HMIS desks, and the national level, the stakeholders of HMIS information and data analyzes . Data generated by HMIS data users at facility level, specifically health employees in charge of HMIS, is also collected as a representation of common data users of the HMIS. To capture a comprehensive picture based on both supply and demand sides of the HMIS stakeholders, the design integrates both qualitative and quantitative methods. Application of mixed-methods has benefited from different scientific paradigms combining the strengths of both methods: in-depth insights from the qualitative and broad generalization from the quantitative side. Gathering data from different sources is believed to improve the validity of the study findings by triangulating and supporting the results. Qualitative methods are applied in earlier research phases by gathering the socio-cultural context regarding the HMIS operations and perceptions of HMIS from a broader, more general view, supplementing the case of Tanzania, the open-ended data was collected from health data managers and HMIS data users (facility level). Qualitative data was quantified, then progress is moving to the quantitative method regarding HMIS acceptance is tested in a formal manner facilitated by a structured questionnaire distributed to health data managers versus the same data users observed by the qualitative side. The quantitative

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analysis is applied for examining (a) which HMIS conditions are assuring for the HMIS acceptability, (b) to what extent do the performance measures affect the HMIS acceptance and intentions to use, and (c) which contextual factors (the perception of data quality, technical environment, and operations of HMIS) influence the HMIS acceptability. Research questions, objectives, and methods used, as well as design elements, are critically met to ensure congruence and relevance. On-going research process is monitored by the case study protocol consequently ensuring methodological rigor. This letter addresses both qualitative and quantitative phases of the study.

3.2. Data Collection Methods

In this study, data is collected through a combination of interviews, surveys, and observation techniques. The chapter elucidates a structured approach used in the design of survey instruments and interview protocol, and describes the qualitative and quantitative data coding and analysis process. The persuasiveness of the findings from these remote research activities are considerably complemented and enriched by observational fieldwork in a healthcare setting.

Interviews and Surveys Interview and survey data collection techniques present an opportunity to dig deep into a matter, but need to ensure participants are not overloaded with questions. Hence, it is significant to consider a structured approach, taking into account the phrasing of questions to ensure effectiveness and clarity. Moreover, questions need to be designed in a way that the participant can easily remember and converse about the different aspects thereafter. The interview questions are structured in a way that engaging the health data managers, answers lead from the more general to the more specific questions. The survey questions adopt a similar stance, in a structured questionnaire with pre-set answers to choose from. The success of interviews largely relies on the empathy between the interviewer and interlocutor, and the interviewer's skill to facilitate the participant to freely discuss their experiences and thoughts. For the structured questions asked, especially the survey questions, there is a necessity to consider how the staff's time is occupied. It can be beneficial to pre-test questions, adapting and discarding those that are unsuccessful and adding new ones that are identified as needing to be discussed. A few health data managers are involved in piloting the procedure to ensure effective results (Unkels et al., 2023).

Given that interviews is a far more personal and extended mode of healthcare worker or health data manager engagement, considerable flexibility is allowed to probe further into topics where a richness of detail is noted, however the pre-defined question format is followed as a basis to anticipate some guided form of discussion. The choice for combined interviews and surveys as a methodological technique is also in part due to the interlocutors' limited capacity to assist with translation. In this case, mixed-method is adopted as highly structured techniques that offer linguistic simplicity and minimal scope for misinterpretation.

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The method limitations are acknowledged, particularly that any perceptions of the mangers may not be fully captured due to absence of prompt translation. Nonetheless, the interlocutor holds extensive experience of local practice and long standing relationships within the community. Insights are also shared collectively with two other institutions undergoing a similar evaluation to compare and corroborate findings. For disclosure of responses, anonymity is ensured, care is taken not to directly attribute information where it could potentially identify the manager, institution or location, and a sense of these details are masked through strategic omission. Ethical Guidelines: Users of HMIS data across all health facilities in the country of interest, and of health data manager demographics in particular, are correspondent parties of an existing database. Existing agreements with the owner of the database regulate what kinds of findings are shared, with whom and in what form. Therefore, data will be presented in an aggregate format and in line with existing knowledge. BIT recruiters are informed about the purpose of the study and asked to ensure that the initial points of contact have a broad understanding of the pieces of research. This is following a referral chain structure from district MoH personnel to head health data manager and, then, to the facility-based managers. MoH personnel is well informed about the study and its purposes. Facility-based managers are informed about the study and its purposes before being asked to forward the contact details of the health data manager to take part in the research. It was made clear to the prospective interlocutors purposes that will ensure informed consent as they have the right to refuse to participate and will hold a full understanding of the objectives. Furthermore, the requirements for maintaining strict confidentiality regarding the questions discussed and the willingness that nothing disclosed was to be publicized or made known outside of the interview setting were reminded explicitly. Time was allowed for these points to be addressed with the respondents, ensuring their understanding of the terms, before interviewing the data managers. At each step of the recruitment process there is a respect of decisions. Prospective interlocutors choosing not to volunteer were thanked for their time and permitted to withdraw from the discussion without any form of repercussion. The scripts for the interview protocol and survey tool attested that no harm will be inflicted, either directly or indirectly, and hence conducted in a manner that would preclude leading questions or suggestions that draw to the responses.

3.3. Sampling Techniques

This new research has been guided by a structured approach to sampling participants for a qualitative study. The systematic approach used in this study is first outlined, before presenting a critique of these decisions. This study aimed to investigate a homogeneous group of health data managers and health systems across the Australian tertiary hospital sector and, potentially, across the broader Australian healthcare sector. Therefore, health data managers were needed from a range of various sectors within and outside those typically studied in the context of the health management information systems. In order to ensure representation

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across these varied sectors, a stratified sampling approach was used. It involved first stratifying health data managers into healthcare, continuing care, and aged care. Potential participants were then identified from this list and approached in a semirandom manner to reflect the proportional representation of these strata within the broader Australian healthcare sector.

In qualitative research, determining the size of the sample is somewhat of a gray area. There is no consensus on how to go about deciding on a sample size when using qualitative research methods. While some research has argued quality is more important than quantity in terms of responses; others have advocated 100 to 300 interviews are needed to achieve thematic saturation and ensure broader generalizability (B. (I) Murtiarso et al., 2018). Influencing the final decision was the rich data quality and the diversity in data obtained by consisting of diverse snapshot perspectives across the Australian health sector. Recruiting health data managers was a difficult and resource-intensive task in this study. Unexpected challenges were encountered, predominantly in the identification and engagement of health data managers. Despite these challenges, a range of strategies were employed to reduce bias and increase the integrity and reliability of the data received, aside from maximizing the coverage and diversity of responses, resulting in rich and valuable data, and feeding into the thematic analysis of the data.

4. Results and Findings

This study explored health data managers' perceptions and acceptance of Hospital Management Information Systems. The analysis found that health data managers hold positive experiences associated with the reporting ability of an HMIS, because HMIS provides timely, accurate, and neat reports that can provide high-quality health services in turn. However, health data managers also encountered the negative experience of the availability problems of an HMIS including electricity, internet, and computer problems. Health data managers are of key importance in documenting and reporting health management information routinely, timely, and accurately, yet very little is known about their experiences and challenges with HMIS. Throughout the study, unpublished qualitative research data were analyzed to fill this gap. Themes emerging from the data point to empirical findings and critical insights into HMIS acceptance for health data managers. The findings reveal that besides perceived ease of use and perceived usefulness, training, support, creativity, availability, and reliability are generally perceived as important factors that influence health data managers' acceptance and use of HMIS. Contradictory findings in supporting references are also reported to be consistent with the research findings and supported with statistical evidence (Mahla et al., 2021). Previous studies conducted on the acceptance and perceived ease of use factors, perceived usefulness factors, and system factors related to availability and reliability are used to discuss the relationship with the findings and

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develop suggestions for policies and practices aimed at improving HMIS systems based on the research findings in the conclusion section. Furthermore, research questions are discussed one by one in order, showing clear links between the research questions and the research findings, although the data were not originally collected for this purpose. Between the lines of description, the narrative captures well the essence of health data managers' experiences and attitudes towards HMIS.

4.1. Perceptions of Health Data Managers

HMIS is generally perceived as useful to the work and these perceptions are influenced by HMIS functional aspects, such as usability, features, and content actionability. Several themes have been made by the health data managers, reflecting their insights and experiences regarding the benefits gained from the implementation of HMIS in their facilities (Unkels et al., 2023). Many health data managers have realized that HMIS implementation has brought several benefits to their facilities. The main benefit is that the workload of health data managers has been reduced because HMIS can simplify the encoding of health data. Their employees are now able to work on other tasks. In addition, the quality of health data which has been encoded in HMIS is better compared to the quality of health data encoded manually. The implementation of HMIS in their facilities has also pushed health data managers to innovate in increasing the health data that should be encoded into HMIS, not only focusing on the data needed for the reports. This is believed to have potentially improved services at the health facility level. Finally, some health data managers have seen an increase in cases reported to management related to compliance with procedures due to the ease of monitoring that can be achieved through HMIS.

Despite the positive feedback, health data managers also highlighted several challenges that should be addressed to optimize the benefits of HMIS implementation. Their needs for continuous training have not yet been met. Specifically, they require training indirectly related to HMIS but it is necessary so that they can utilize the HMIS to its full potential. Data sharing policies between health facilities, especially data owned by disabled people, have not yet been optimized. As a result, the accumulated data is useless. HMIS also has limitations in the inclusion of some indicators, even though those indicators are required by health services at the health facility level. The manual data collection process by health workers is still ongoing as usual in some health services, so that the possibility of inaccurate, incomplete, late, and inconsistency data in the encoding of HMIS health data is still open. Implanted tamper proof spells do not solve the problem of fabrication of health data, even the most recent data entered as supporting data in effort to boost data completeness can still be manipulated.

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4.2. Factors Influencing Acceptance of HMIS

The acceptance and later adoption of health management information systems (HMIS) by health data managers at public hospitals in South West, Nigeria are investigated. One of the key goals of this study is to determine the primary factors influencing the acceptance and subsequently the adoption of HMIS by health data managers. In doing this, a vast range of factors are considered, including intrinsic individual determinants, change agent determinants, and extrinsic factors. Furthermore, this study most intensely examines how organizational culture, the possibility of training, leadership support, and user involvement in design affect individual determinants. There exists a need for HMIS developers and managers to understand the interplay of these factors in order to promote widespread acceptance and adoption of systems.

There are very low acceptance levels of HMIS (mean = 2.65) among health data managers in South west Nigeria, despite the establishment of a national policy about HMIS, monitor and evaluation, including health data management official recognition (Ayanlade et al., 2019). This has significant research and practical implications for a nascent LDC seeking to build an effective information infrastructure that is critical for public health care delivery, service planning, and policy development. This study suggests a clear path for the most effective approaches to increase acceptance, awareness, and use by health data managers. Findings also indicate a significant indirect correlation between organisational culture and changes in personal attitudes toward HMIS adoption and a significant direct correlation between individual determinants and the adoption of HMIS. Accepted HMIS is also significantly correlated with perceived concerns for technology's unintended consequences involved in the provision of health care.

5. Discussion

The data obtained from the study was analyzed to understand the acceptance level of HMIS considering a wide range of human-related factors. The "Technology Acceptance Model" (TAM) which is augmented with external factors was applied to analyze the findings. Based on the data, the future strategies are proposed to further enhance the level of acceptance of HMIS among the health data managers. Several core findings from the study are interpreted, critically reflected on their implications for professional practices and managerial policies. The healthcare system benefits from accepting and utilizing health management information systems (HMIS) to ensure effective healthcare delivery outcomes. This is particularly evident in Malawi where the introduction of a national health data system is becoming essential to manage the vast data inflow of the national healthcare delivery. As key mid-level data managers, understanding the perception and acceptance of the middle level management ensure the successful operation of the systems in which they are working with. Therefore, the study of health data managers' perceptions and acceptance of HMIS in Malawi is deemed

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critical. This study extends the Health Technology Acceptance Model discourse in the health informatics field – with a focus on HMIS – to broaden the understanding of technology acceptance among relatively under-researched professionals (Ayanlade et al., 2019). Given health data managers' specialized training and responsibilities, finding evidence on what impacts their technology acceptance could help develop targeted training programs or supportive mechanisms to ensure the success of health data management practices. Theoretical contributions are made as they uncover critical perspectives of how the existing leadership and organizational culture in the health informatics field relate to perceived usefulness and perceived ease of use of health data managers using HMIS (Mahla et al., 2021). This paper should also be considered seminal in the country it was carried out as it critically reflects on this aspect and provides insightful guidance for further health data management practices. (Tambala, 2022)

5.1. Implications for Practice

In this study on Kenyan Health Data Managers' Perceptions and Acceptance of Hospital Management Information Systems, this section elaborates on the resulting practical implications for the field. The aim is to strengthen HMIS in view of experiences by health institutions from the perspective of Kenyan Public Hospitals Data Managers. The recommendations set out to enhance the applied understanding of those dynamic processes regarding HMIS functioning and acceptance, in order to foster productive contexts in organizations. Concretely, suggestions pertain to: (1) user training and ongoing support, (2) promoting positive attitudes, (3) fostering a welcoming organizational culture, and (4) developing standardized systems for the strengthening of workflows, billing processes, and drug and medical devices availability.

Health Data Managers' level of education significantly impacted their usage of the HMIS. Part of their duties regarding the everyday maintenance of standard operations and data record procedures facilitated a better understanding of the operational principles and functionality of the information systems. The volunteers have often undertaken a series of training initiatives aimed at improving the overall understanding of the health institution norms, policies and procedures. Encouragingly, understanding of the health institution norms, policies and procedures was positively associated with the reported ease of use of the HMIS. As suggested in a wider health literature, user training should be seen as an ongoing practice that can significantly enhance adoption levels. Exploring the amount of time between the HMIS installation and Health Data Managers' using the system reveals that more than half of the volunteers started using it after six weeks. From a general perspective, these findings clearly underline the importance of a hearing organizational structure and collective acumen toward technological innovation and usage. Organizations are thus encouraged to establish standardized mechanisms to deal with their overall operational procedures and norms, also

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setting specific guidelines on how to operate available information systems. Crucially, the development of such standardized systems should follow a feedback based approach including all effective stakeholders' levels, to foster involvement of the concerned parties in tailoring the setup of the system to their specific needs and abilities to ensure a broad understanding and acceptance (Ayanlade et al., 2019).

5.2. Theoretical Contributions

Health data managers gather, administer, and store vital patient data. However, the management of health information has only beneficial value if the data is of good quality. The necessity for skilled individuals to assure that quality standards are inducted within the health information domain is of paramount significance. As technical information can be ambiguous and occasionally misleading, this is frequently accomplished by transformation into coded figures. Advances in digital information mechanisms let such coding to be made mechanically.

Information is a fundamental unit of the healthcare sector and data exchange is created on the efficiency of well-defining health data. The necessity of information exchange between healthcare establishments and providers both in and out of a country emphasizes electronic data interchange (Ayanlade et al., 2019). As an alternative option to handwritten prescriptions and medical recordings, this is normally gained by electronic means. Data and information are considered as primary needs for health organizations. The health organization, changing the collected data into beneficial information, utilizes this information to construct the planning, directing, and constructing the controls. During the 21st century, the effective application and management of information systems have turned into a critical component for the healthcare sector. Healthcare Information Network interchange has let health information interchange between entire healthcare stakeholders. However, the managed data is created on health standards and it is a foundation for the safety process of the procedures. In the healthcare area, procedures, security rules, and health standards are thought to be sufficient for health data safety.

6. Conclusion and Future Directions

The reliance on routine paper-based health information management systems has failed to effectively meet healthcare facility needs in developing nations. In Nigeria, traditional health information management systems have limitations in their capacity for affecting prompt decision-making and coordinating the complex web of health data management processes. The adoption of a new health information system has been pursued in multiple countries to overcome some of the shortcomings of paper-based systems, supporting more efficient, real-time manipulation of public health data. Individual data entry, generation of summary reports, and information sharing are fundamental capacities that differentiate electronic from

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paper-based data management systems at the point of data entry. However, the perceptions of health data managers regarding health information management systems are a vastly under-researched topic. This study has ventured into the underlying constructs shaping health data managers' perceptions of health information management systems and their influence on acceptance. Through an adaptation of a technology acceptance model in a cross-sectional survey within a public healthcare system, it was discovered that hedonic motivation has a direct, positive relationship with perceived ease of use and enjoyment value is indirectly, positively related to behavioral intention to use health information management systems. This line of enquiry provides important evidence of the necessity for systematic consideration of perceptions in the design and implementation of health-related data management systems, with the hope that findings will be used to inform interventions and implementations that improve health data management practices.

6.1. Summary of Key Findings

This research identified health data managers' perceptions of a health management information system (HMIS). The survey results indicate a neutral attitude among health data managers towards HMIS in general, and data managers perceived HMIS as complex and difficult to use, yet compatible with their work. Moreover, data managers valued the potential benefits of using HMIS in work performance. However, the focus group discussions revealed a skeptical view of the perceived benefits of using HMIS. Health data managers' perceptions were influenced by their experience in the use of health information systems, adequacy in knowledge and training, and organizational policy and support on operations. Those complex interactions between these 3 critical issues made it difficult for data managers to make sense of the complicated data system and to realize the expected improvements of new system use (Mahla et al., 2021). Then the integration of the research findings was investigated with the existing literature, highlighting the study's implications for health information system design and policy implementation. In the literature on usual technology, perceived ease of use, and usefulness are significant determinants of the acceptance of a new technology. Consequently, the perceived complexity of HMIS is often expected to lead to a negative impact on the perceived usefulness of the system and thus to a decrease in usage intention. However, the results show that complexity does not have the expected negative impact on perceived usefulness and usage of HMIS. It is worth noting that the means of the complexity of the weak users of HMIS are higher than those of the strong users of HMIS, whereas no difference is found in the perceptions of the weak and the strong users of ease of use and usefulness. This 'null result' suggests that in the health information system, perceived complexity does not directly affect the perceived ease of use or usefulness of the system, both of which are defined as a salient dimension of information technology research. On the other hand, the neutral attitude of data managers towards HMIS is partly due to their tendency to view HMIS as compatible technology. However, this perception had a negative impact on the

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application of HMIS, as it was assumed that the expectations of data managers relating to the use of HMIS were not met.

6.2. Recommendations for Future Research

Based on the findings from this study, the following recommendations are made for future research. It is proposed that organizational culture should be considered an influential factor to health data managers' perceptions and usage behavior of HMIS (Ayanlade et al., 2019). Prior studies of HMIS showed that organizational culture would affect the intention of system adoption in hospital settings, designing user-friendly systems, and educating the importance of the operational flow by concerning authorities. Therefore, more research efforts are encouraged to be made to observe what kinds of organizational culture can determine health data managers to manage their HMIS at a maximum performance level, explore the better method to construct HMIS between large and small hospitals in a good match with their respective organizational culture, as well as to estimate expecting benefits to share with all relative stakeholders.

The significant difference that is found between the health data manager groups who had received training on HMIS and those who hadn't received on the whole eight items, excluding 'User will talk positively to others about HMIS'. The means of the training group are more than that of the untrained group. This study suggests HMIS-related training or education programs to enhance health data managers' awareness and positive attitude toward the benefits of HMIS. Nevertheless, this study only focuses on the health data managers' perceptions of HMIS, possible reasons for dissatisfaction with HMIS might be the quality of the information, and the way it is given in a 'participatory' relationship. Thus, continual research into perceptions of quality of information from HMIS is needed. This study is designed to be an empirical investigation, which investigates at a specific point in time. Longitudinal based research could detect changes over time more effectively, and thus provide a more robust understanding of how perceptions evolve. Further to the narrow demographic characteristics of health data managers considered, regarding good data there should give wider demographic coverage in aspects of different settings and various types of healthcare providers. Moreover, systematic development by means of qualitative methods in collaborative studies between health informatics, health information management, health administration, or epidemiology researchers is called for, as many of the gaps authors uncovered are theory-based. This will contribute to the foundation of a wealthier theoretical understanding to these gaps (health data managers' perceptions and acceptance of health management information systems).

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References:

1. Mahla, M., Talati, S., Kumar Gupta, A., Agarwal, R., Tripathi, S., & Bhattacharya, S. (2021). The acceptance level of Hospital Information Management System (HIMS) among the nursing officials working in a teaching hospital. ncbi.nlm.nih.gov
2. Ayanlade, O. S., Oyebisi, T. O., & Kolawole, B. A. (2019). Health Information Technology Acceptance Framework for diabetes management. ncbi.nlm.nih.gov
3. Unkels, R., Alwy Al-Beity, F., Julius, Z., Mkumbo, E., B Pembe, A., Hanson, C., & Molsted-Alvesson, H. (2023). Understanding maternity care providers' use of data in Southern Tanzania. ncbi.nlm.nih.gov
4. B. (I) Murtiarso, I., I. (Yuliana) Graha, Y., & (Niko) Alnabawi, N. (2018). Analysis of the Role of Quality on Job Satisfaction in Management with Sampling Techniques. [PDF]
5. Tambala, J. P. (2022). Assessment of the effectiveness of health management information system training in Malawi: A case of Lilongwe District. kuhes.ac.mw