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The Scrutiny of Hospital Information System

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Abstract: Hospital Information System (HIS) was introduced with the cause to enhance Medical Outcomes, Quality of Life, Quality of Care, and simultaneously reduce Operations, Morbidity, Medical Errors, and Cost. over all it was developed to help hospital speed up their process. Hospital Management System is a computer system that helps manage the information related to health care and aids in the job completion of health care providers effectively.
Keywords: Hospital Information System (HIS), digitizing, Hospital Information Management System (HIMS), MIS Reporting, evaluation in HealthCare, Current Procedural Terminology (CPT), security.

I. INTRODUCTION

Hospital information systems provides common source of information about a patient's health status, and doctors schedule timing. These days all medical services are being setup with HIS's given an upper-hand to the healthcare professionals by providing Patients health information and visit history of the place and time whenever needed. Laboratory test information of the patient's visual results like X-Ray can be easily made accessible for the reference of healthcare professionals. Hospital Information Management System simplifies the workflow pattern of hospitals by digitizing the complete operations of the Hospital. Generally, Hospital management information systems have the function of patient are and hospital management [1]. These functions include: keeping information about the patients, generating bill, maintenance schedule of equipment's in the hospital, recording information related to diagnosis given to patients, keeping record of the immunization provided to patient, keeping information about various diseases and drugs available to treat them etc. [2][3][4]. Previously, all these different functions are done by operational cadre and doctors manually on paper [4]. With the increase of demands on health care services because of increasing in population paired with increasing attention over patients' safety and the way to treat them, it became so hard to do all these works manually [5][6]. Beside of these factors the rapid and various advances in Information and Communication Technology (ICT) which occupying the leading position and represent the main factor for shift from manual to electronic system, the existence of electronic HMIS became essential to automate all these operations [7][8][9].

Hospital Information Systems (HIS) play a crucial role in managing patient data, improving clinical processes, and enhancing healthcare delivery. This survey paper aims to scrutinize the key aspects and challenges associated with HIS implementation, usage, and evaluation in healthcare settings. By examining relevant literature, we explore the functionalities, benefits, and limitations of HIS, as well as the factors influencing successful implementation. We also discuss the impact of HIS on-patient care, privacy, security, and data interoperability. Furthermore, we highlight the importance of user training, system customization, and ongoing support in optimizing HIS utilization. Finally, we present future directions and potential research areas to address the evolving needs and advancements in HIS [6][8]. Despite these benefits, the trip of transforming to this perfect system is mixed with challenges. These challenges start from problems appear from the very nature of healthcare information, ending with the problems related to complexity healthcare information technology, and its user [13]. Many researchers' studies have been done on HMIS in different directions and various attentions.[2] Proposed HMIS development by using Structure Query Language (SQL) for keeping the records in the database and uses JAVA as the front-end software which has connectivity with My SQL, the back-end software. While in [4] service-oriented architecture (SOA) was employed to design an integration HIS. The authors in [4] and [5] have used intelligent agent technology. These agents used to provide correct information that helped in diagnosis and treatment. This research was proposed to give a comprehensive picture for HMIS. This research explains the main component of HIS and its functions. Describe the architecture design style of HMIS. Identify the criteria quality of structures for HMIS, and 4-list the main factors that contribute in successful HMIS

II. HOSPITAL MANAGEMENT INFORMATION SYSTEM (HMIS)

Healthcare management points to a procedure wherein the health risk elements threatening individuals and groups are managed in a complete and integrated method. This system manages the data related to all departments of health facilities such as, clinical, laboratory, financial, admitted patient, patient discharged, nursing, pharmaceutical, radiology, pathology etc.

Since healthcare information systems and health information systems have almost the same concepts, a lot of composition has been used through the development cycle of such systems. Although there is no obvious agreement by all in literature till lately, the term health information systems are like multiple previous forms of this concept like hospital information systems. In the same way, terms like Computerized patient records, electronic medical records, in addition to the currently electronic health records that have come to be popularly used almost interchangeably [1]. The hospital emergency nursing information system should support the hospital administrative management and transaction processing business, reduce the labor intensity of the transaction, and improve the auxiliary hospital management and the work efficiency of the hospital [2].

The Management Information System is also known as the concept of maturity of information systems. With the new and latest technologies such as MIS reporting, that is, Management Information System. This system generally collects information automatically from various sources. By producing daily events and entries to send it to organizations. But most of the MIS systems are generated on demand to change the data according to data management and verification [2]. Now recently updated configuration can be even changed at run-time by relocating negotiators from one machine to another one, as and when required [3].

The main evolutionary developments of hospital information systems from the early stages to the health information systems currently known as HIS have been discussed by [4][5] the evaluation of HIS is drastic and big with every now and then improvement of health information system and that is a good sign of development. From Paper-Based Systems to Computer-Based Systems: through the past decades health data and information have been created and stored primarily on paper, there has been an obvious shifting from paper to computer-based systems. This capability refers to that much data could be processed and stored using modern information technologies to produce better knowledge. The future of healthcare information systems aims to be nearly no paper era [2][5].

From Local to Global Information Systems: however, the early healthcare information system was specific to departments unit (e.g., radiology, or laboratory) or just through a healthcare practice system (e.g., hospital or clinic) contemporary healthcare systems aim to be regional, national, and a across globe [5]. From Healthcare Professionals to Patients and Consumers: in the original, health care information systems were developed to be used by mainly physicians in addition to administrative staff but after that it was passed on to be used by nurses. Since then, the direction has shifted to encompasses more patient input. From Using Data of Patient Care to Research: additional change has been done in using data. Through the last years, patient data has been used specially for patient care management. Currently extend the possibility of using data, firstly used for patient care, as well as for healthcare planning and above all these things for research and education. From Technical to Strategic Information Management Orientation: according to [4][5][9] it has been noted that while computer supported information systems from the 1960sto the 1990s focused on troubles resulting from the technical issues of the systems, concerns about the organizational problems, social issues and change management issues became more relevant at the turn of the millennium. From Numeric(simple) Data to complicated type of Data: this is not limited on technology that support health information systems advanced in technological complexity, it also implies the data that has been received and processed has become complex too. Changing from numeric data through alphanumeric data to imaging and even molecular data [4].

III. BENEFITS OF HOSPITAL INFORMATION SYSTEM(HIS)

1) Functionalities and Benefits of HIS [6]

Patient data management and electronic health records. Clinical decision support systems. Workflow automation and process optimization. Improved communication and coordination

2) Challenges in HIS Implementation [8]

Cost and resource constraints. Resistance to change and user adoption. Integration with existing systems. Interoperability and data exchange challenges

3) Impact on Patient Care [5]

Enhanced accuracy and accessibility of medical records. Improved care coordination and continuity. Streamlined medication management and error reduction

4) Privacy, Security, and Data Protection [1][3][4][5]

Safeguarding patient information. Compliance with regulations (e.g., HIPAA). Mitigating risks of data breaches and unauthorized access

5) Training, Customization, and Support [7][9]

User training and education programs. Customization of HIS to meet specific needs. Ongoing technical support and system maintenance

6) Future Directions and Research Areas [3][10]

Advancements in HIS technology (e.g., AI, machine learning). Data interoperability and integration challenges. User experience and usability enhancements. Mobile and remote access to HIS

Through the conference[14] theme "To Err is System" contrasted three of the perspectives first is the pervasive view that technological failures are due to technological system issues like only if we could have the latest version, higher bandwidth and a better system; second the sociotechnical perception that health informatics is fraught with difficulties due to a lack of awareness and understanding of the sociocultural environment in which such applications are implemented; and lastly the systems view that health care is produced through interaction of the people, technologies, and processes of care, and that changes in one of these elements produce further, sometimes unexpected, changes in the other elements or in their interactions. Information technologies have been hailed as a solution to reduce errors in health care, but there is also evidence that they can be part of the problem [10]

IV. CHALLENGES FOR RESEARCH

The intervention successfully increased identification of the managing medical oncologist and treatment reporting. During implementation, however, unexpected external challenges including hospital acquisitions of community practices and practices' responses to government incentives to purchase electronic medical record systems led to unanticipated changes and associated threats to implementation. We present a revised conceptual model that incorporates the sources of these unanticipated challenges.[8] Even though our findings are based on the implementation of the big registry reporting ways with one operator. The experiences of this one physician may be unique, and our findings may not be generalizable to other populations. This becomes a draw back and, makes research challenging. Patients produce a huge volume of data that is not easy to capture with traditional EHR format, as it is knotty and not easily manageable. It is too difficult to handle big data especially when it comes without a perfect data organization to the healthcare providers. A need to codify all the clinically relevant information surfaced for the purpose of claims, billing purposes, and clinical analytics. Therefore, medical coding systems like Current Procedural Terminology (CPT) and International Classification of Diseases (ICD) code sets were developed to represent the core clinical concepts. However, these code sets have their own limitations.[9][12]

V. CONCLUSION

The main objective of Intelligent Emergency Application is to save as much time as possible for the patient in need. Starting from the booking of the ambulance through our application, we alert the traffic offices to clear out the traffic for better experience. After reaching the hospital, the QR code will help us maintain an easy access and management to our own details. The doctors would the modify the same details after diagnosis and send the prescription to the pharmacy. The unique QR code will help the pharmacy to avoid confusion and error. This system would save a lot of precious time and would make the hospital experience much more pleasing and comfortable.

REFERENCES

[1] Zhihong Liu, "Design and Implementation of Hospital Emergency Nursing Information Management System" 2016, in International Conference on Smart City and Systems Engineering (ICSCSE), 10.1109
[2] Hariyati Rr Tutik Sri, Delimayanti Mera Kartika, Widyatuti T., Developing prototype of the nursing management information system in Puskesmas and hospital, Depok Indonesia, African Journal of Business Management, 2011, 5(22): 9051-9058
[3] Mohamed Khalifa, Osama Alswailem, "Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital" in International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH 2015) 10.1016/j.procs.2015.08.334
[4] Sharmila S. Gaikwad, "Mobile Agents in Heterogeneous Database Environment for Emergency Healthcare System" Conference: IEEE, 2008, 10.1109/ITNG.2008.20, Pages: 1220-1221
[5] Álvaro Rocha, "Evolution of Information Systems and Technologies Maturity in Healthcare" International Journal Of Healthcare Information Systems And Informatics, 10.4018/jhisi.2011040103, Pages: 28-36
[6] Ross M. Mullner, Kyusuk Chung "Current Issues in Health Care Informatics" J Med Sys (2006), doi:10.1007/s10916-006-7390-3
[7] Aniza Ismail, Ahmad Taufik Jamil, Ahmad Fareed A Rahman, Jannatul Madihah Abu Bakar, Natrah Mohd Saad, Hussain Saadi, "The implementation of hospital information system (his) in tertiary hospitals in Malaysia: a qualitative study" 2010 Malaysian Journal of Public Health Medicine Vol. 10(2) Pages:16-24

[8] Zahra Ebnehoseini,1 Hamed Tabesh,2 Kolsoum Deldar,3 Sayyed Mostafa Mostafavi,4 and Mahmood Tara5, "Determining the Hospital Information System (HIS) Success Rate: Development of a New Instrument and Case Study" 2019, Open Access Maced J Med Sci, 10.3889/oamjms.2019.294

[9] Ann Scheck McAlearney, Daniel M Walker, Jennifer Livaudais-Toman, Michael Parides, Nina A Bickell, "Challenges of implementation and implementation research: Learning from an intervention study designed to improve tumor registry reporting" 2016, SAGE Open Med 10.1177/2050312116666215

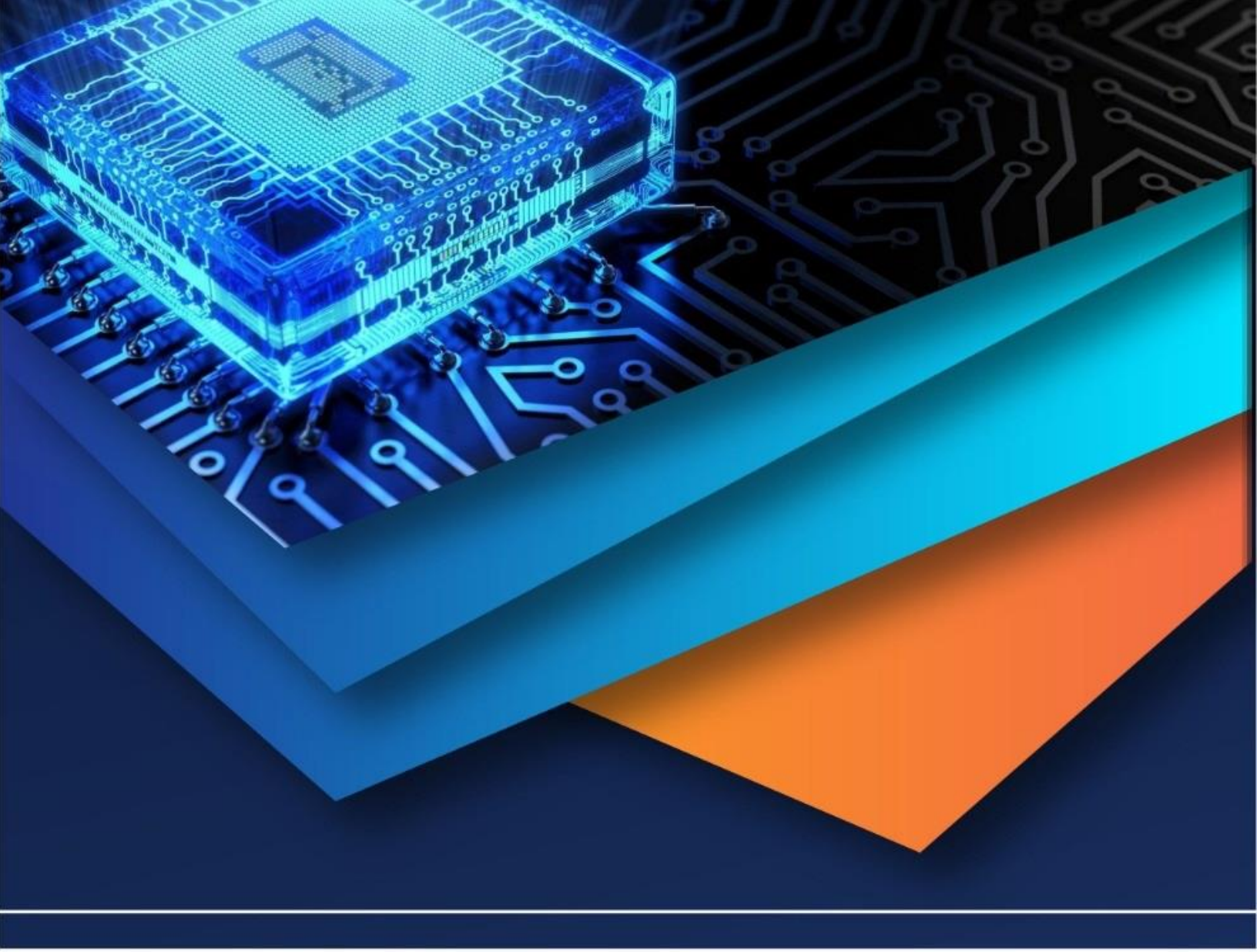
[10] Sima Ajami, Zohreh Mohammadi-Bertiani, "Training and its Impact on Hospital Information System (HIS) Success" 2012, Journal of Information Technology & Software Engineering, 10.4172/2165-7866.1000112

[11] Ebnehoseini Z, Tara M, Meraji M, Deldar K, Khoshronezhad F, Khoshronezhad S. "Usability Evaluation of an Admission, Discharge, and Transfer Information System: A Heuristic Evaluation" Open access Macedonian journal of medical sciences, 2018, 10.3889/oamjms.2018.392, Pages: 41–45

[12] Sabyasachi Dash, Sushil Kumar Shakyawar, Mohit Sharma, Sandeep Kaushik "Big data in healthcare: management, analysis, and future prospects" 2019, Journal of Big Data, 10.1186/s40537-019-0217-0

[13] Wu Q., Wu, M., "Design and Implement of An Information Management System for Radiation Workers in a Hospital, Medical Physics" 2015 American Association of Physicists in Medicine 42(6): 3388-3388

[14] Jos Aarts, Paul Gorman, "IT in Health Care: Sociotechnical Approaches "To Err is System"" international journal of medical informatics, 2007; https://doi.org/10.1016/S1386-5056(07)00078-0, Pages: 297-301



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