

The Use Of Health Information Technology

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Executive Summary

The enterprise electronic structure consists of a centralized database that is linked to other sections. They include integrated and dependent systems. The two sub-categories have their own usefulness to the system. Their relationship also varies due to their relative importance and need for data.

The integrated systems include the palliative care sections and the national registrar system that has information on the births and deaths of patients. On the other hand, the dependent sections consist of other departments that provide healthcare information. An important component is social media, which helps to collect the views of patients' data regarding the healthcare system's efficiency.

The paper also identifies the challenges that face the use of management information systems. The main ones are hacking, privacy, and misstatement issues. The research supports the hypothesis that health is beneficial to the healthcare system. It recommends all institutions create and integrate their information system. It also recommends that healthcare regulators impose fines on healthcare practitioners who fail to use electronic systems.

1.0 Introduction

With the growth of the use of electronic devices, there are new opportunities to improve the healthcare sector (Elmir et al. 2011). Most institutions that implement electronic healthcare systems are able to track down client data in addition to information regarding developments in the healthcare industry.

The purpose of the paper is to design and evaluate enterprise information architecture, discuss the challenges and solutions to the use of healthcare management information systems, and give recommendations. The research hypothesizes that the electronic healthcare system is beneficial to both healthcare centers and the healthcare industry.

2.0 Enterprise Information Architecture Reference Architecture

2.1 An Enterprise Information Architecture for eHealth

The health enterprise information system is an electronic structure whose sole purpose is to collect, store and relay clients' data. It consists of a central integrated system as the main entity. The other entities with an equally important function in the framework are the dependent systems (Mudaly et al., 2013).

Diagram 1: Enterprise Information Architecture for eHealth



The integrated system is an interconnection of the entities that are at the heart of the structure. They include the national registration system and the palliative care systems. The national registration system provides data such as the date of birth and death. Palliative care provides data for their clients (Mudaly et al. 2013).

Dependent systems consist of a linkage of other non-core entities that are important to the success of the whole system. Their role is to provide information surrounding health issues. They include research centers and pharmaceutical firms, which act as logistical centers. Others are physicians and mobile support systems.

2.2 Identification of Components

The EIA system facilitates the success of health care as all stakeholders rely on it to provide the necessary support. The uses include an understanding of the existing prediction drugs and the preventive care that has been provided to the clients. The system also outlines the current procedures employed in treatment (Bond et al., 2013).

The palliative care portion of the system consists of all the health centers that provide medical care to a particular patient. The main information that they provide is the method that was used to prevent and treat a given ailment. Availability of the information helps to determine the best treatment to give a client.

The system also helps to identify the institutions that prescribe drugs. The main entities are doctors and pharmacists. Through this system, it is possible to identify the drugs that are working and those that produce no effects. In the event that a given drug does not work, then healthcare experts can identify it.

In addition, the system uses sources such as the internet to collect data from various online platforms. For instance, it evaluates the domains through which people discuss their health issues. From the information collected, a linkage can be made with the sites to obtain data seamlessly.

The other importance of the system is to identify the tests that are being conducted on patients. The

most important entities are laboratories located in various health centers. Another component that is developed is the research centers. The linkage helps to retrieve information pertaining to the best practices in doing tests (Bond et al., 2013).

Finally, the system is beneficial to the design of frameworks and procedures to use in the healthcare industry. The process includes the evaluation of the current policies. The data about successful treatment is correlated to success in treatment. As a result, poor policies can be eliminated when designing a new electronic health system.

2.3 Existing Referrals and Tracking Them

The design of an electronic healthcare system aims at improving the processes and the efficiency of the healthcare system. Referrals play a huge part in determining the systems that are not working and those that do not meet the minimum requirements for giving treatments (Mwanyika et al., 2011).

The main entities for the promotion of this practice are the referral hospitals and the patients who have been referred to other healthcare centers. The information that is collected is the condition of a patient and the timelines for referral with regards to the period that they took to get well (Mwanyika et al. 2011).

The other information that is important is the health care centers to which they are referred. Centers that are able to cure a certain ailment are noted. On the other hand, the correlation between referrals and positive response to treatment is noted. As a result, important data is identified to help in the design of an electronic healthcare system.

Finally, the system helps to track down the referrals. As there is a linkage of data, it is easy to identify the institution and the healthcare experts that gave a certain referral. From this information, guidelines will be set to control the levels of referrals.

2.4 Data Base design and maintenance

A database is the heart of an electronic healthcare system. It stores data that has been collected from the different components. The main point of concern is the ease of access to the databases. In addition, cross-verification, correction of data, and updating information are a part of database design.

As databases are large, there is a risk that an electronic healthcare system might encounter difficulties accessing data. This might lead to the failure of the system as it might take a long to understand the needs of a given patient and the unpredictability in obtaining relevant information.

However, the system breaks down the important parties from which data is collected. The classification is based on their relevant information needs and the urgency of accessing the

information. As a result, an electronic system that has varying degrees of flatness and hierarchies can be designed (Winter et al. 2010).

Another development that arises in the design of electronic systems is the ability to minimize errors in data. Data entry errors emanate from different sources. The main one is the use of wrong procedures in data collection. The other is the double entry of data due to malfunctioning of a database.

However, the EIA provides a way to reverse the wrong entry of data. As it interlinks entities such as patients, doctors, nurses, healthcare institutions, and the information they give, it is possible to identify a wrong entry. The evaluation relies on a pattern of wrong entries that is inferred. From this knowledge, the mistake will be corrected in developing a new electronic health care system.

Finally, the parties to the system provide new information to a central system. The information is recorded from which analysis is conducted. The success of the system shows that existing healthcare systems are functioning well. However, if the opposite is true, then updates of the electronic health systems can be made with ease (Winter et. al. 2010).

3.0 Information Management and Integration

The integrated management information system refers to the interconnection between different sections of healthcare institutions that guarantee the success of the healthcare system. The availability of information is at the heart of decision-making. Data required for decision-making is available from sources such as the finance department and other sections that facilitate the treatment of patients (Thong 2009).

Figure 2: Integrated hospital information management system



The finance and administrative system is closely linked with the database of the information system. This department provides information regarding inventory and also the general financial management system. It is important as it ensures that there are no fluctuations in stock.

The other department is the clinical and nursing departments. This section provides data regarding the tests that are conducted on employees (Thong 2009). It also includes the pharmacy system, which provides information about the medicines that have been distributed.

The other set of components is the staff roster and dietary system. This department contains information about the workers that serve a given set of patients. It also shows the services that they provide to them.

3.1 Challenges

There are certain issues that face the aforementioned entities in fulfilling their functions. When the management of a firm plans to attain certain healthcare objectives, there are variances that emanate. This part of the paper discusses the negative variances and challenges that face the management information system.

The first is the privacy issues that affect the different entities. The idea here is to protect the data that is provided by patients (Haag 2008). There are different handlers of the same information. For instance, the staff member working at the registry has information about a client. In addition, other healthcare providers understand the conditions. One of the parties might be tempted to release the data to other people.

The other challenge of the system is the threat of hacking. The extent to which a system is exposed depends on the security features that it puts in place. When weak passwords are used, then it is easy to access data. On the other hand, when strong passwords are used, then the data is hard to access.

The other challenge is the complexity of unstructured data. The database contains all the relevant data regarding a client (Haag 2008). Different aspects of an ailment and client condition are entered. Some do not fall under a predefined entry field. As a result, analysis of the data becomes problematic as more information is collected.

3.2 Strategies to solve them

The challenges have an effect on the success of the whole system. A problem in one area amplifies the decisions that are made in other parts. In the process, a challenge, such as a weak password, may lead to data change, which may lead to the wrong analysis and design of the electronic health system. This part of the paper discusses the strategies that can be used to solve the challenges affecting the system.

First, regulations can be used to protect the privacy of data. These rules are set by the institution, and they define the type of data to be collected. Employees are forbidden from collecting data that is not important to the treatment of a given ailment. Similarly, they are not allowed to share the data with third parties (Haag 2008).

Second, a strong password ought to be assigned to designated people. Hacking occurs when weak passwords are used. Therefore, one that cannot be guessed will prevent hackers from collecting patient data. In addition, the people who use the password will be documented to ascertain the reason why a password has been hacked.

Thirdly, the issues with unstructured data can be solved through classification. It is important to keep on designing new classes of information. This can be achieved through business re-engineering. It

involves the change of processes that are used to collect and analyze data.

4.0 Conclusion

The research sought to evaluate and design an electronic healthcare system. It also discusses the challenges and solutions that can help change the practices. The research shows that the use of management information systems is prone to hacking, privacy issues, and errors in information entry. The paper, however, shows that the problems can be eliminated by creating strong passwords, designing regulations to guide information use, and identifying a pattern of errors in institutional and industry-wide information systems. The study, therefore, supports the research hypothesis that the electronic healthcare system is beneficial to both healthcare centers and the healthcare industry.

5.0 Recommendations

The research recommends healthcare institutions set up an information system for the collection and recording of data. There are some organizations that might fail to observe these requirements. As a result, it is highly recommended that healthcare regulators impose strong fines on those who fail to use electronic systems in the healthcare industry.

Bibliography

Bond, A., Hacking, A., Milosevic, Z. and Zander, A., 2013. Specifying and building interoperable eHealth systems: ODP benefits and lessons learned. *Computer Standards & Interfaces*, 35(3), pp.313-328.

Elmir, B., Alrajeh, N. and Bounabat, B., 2011, April. Interoperability Monitoring for Egovernment Service Delivery Based on Enterprise Architecture. In *Proceedings of the European Conference on Information Management & Evaluation* (pp. 169-180).

Haag, S., Cummings, M. and Dawkins, J., 2008. Management information systems. *Multimedia systems*, 279, pp.280-297.

Littlejohns, P., Wyatt, J.C. and Garvican, L., 2003. Evaluating computerised health information systems: hard lessons still to be learnt. *Bmj*, 326(7394), pp.860-863.

Mudaly, T., Moodley, D., Pillay, A. and Seebregts, C.J., 2013, November. Architectural frameworks for developing national health information systems in low and middle income countries. In *Enterprise Systems Conference (ES)*, 2013 (pp. 1-9). IEEE.

Mwanyika, H., Lubinski, D., Anderson, R., Chester, K., Makame, M., Steele, M. and de Savigny, D., 2011. Rational systems design for health information systems in low-income countries: An enterprise

architecture approach. *Journal of Enterprise Architecture*, 7(4), pp.60-69.

Rusu, M., Saplacan, G., Sebestyen, G., Todor, N., Krucz, L. and Lelutiu, C., 2010. eHealth: towards a healthcare service-oriented boundary-less infrastructure. *Applied Medical Informatics*, 27(3), p.1.

Thong, J.Y., 2009. An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, 15(4), pp.187-214.

Winter, A., Haux, R., Ammenwerth, E., Brigl, B., Hellrung, N. and Jahn, F., 2010. Health information systems. In *Health Information Systems* (pp. 33-42). Springer, London.