

Leveraging IT and Telecommunication Network in the Health Care Industry in Oman

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Abstract: Health care facilities have developed and integrated ways of including telecommunication networks and leveraging IT systems within the operations. The use of IT and telecommunication networks are all facilitated and aided by the availability of the internet connection that contributes towards the achievement and meeting of set objectives. The research was set to help understand the needs for leveraging IT and telecommunication network within the health care facilities. The healthcare industry in Oman is aiming for a competitive edge in the survival, growth, prosperity, and growth in offering globalized competitive services [3].

Various hospitals and other healthcare facilities have come up with new ways of communication and data storage. However, the leverage of healthcare facilities has experienced the use of loans and other financial aid from financial institutions that are aiming to improve services delivery to patients and other organizations that receive treatment from the available hospitals and other healthcare facilities. Health care facilities do handle huge volumes of data that cannot be maintained to be served from the hard copy files. The created systems through technology can help in solving the challenge faced by a majority if the health care's facilities.

Keywords-Information Technology (IT), Telecommunication Network, Health Care.

I. INTRODUCTION

Almost all of the devices used by the medical facilities have a bit of technology that needs to be embraced and applied. The use of technology is one way of ensuring that communication takes place as required. A majority

of the health care practitioners have the ability of handling and taking into consideration the aspect of applying technology in ways of passing information from one department to another [1]. For example, a patient has been admitted to an emergency ward and suffers from a severe accident. Instead of wasting time to hand over results of tests to the patient,

The information can be communicated to the next available doctor who will take action based on the given details. The details can be emailed or stored into the health care facility database where retrieval can be done by anyone handling the case. The use of a reference number or code for getting the details helps in making the work easier and accurate [4].

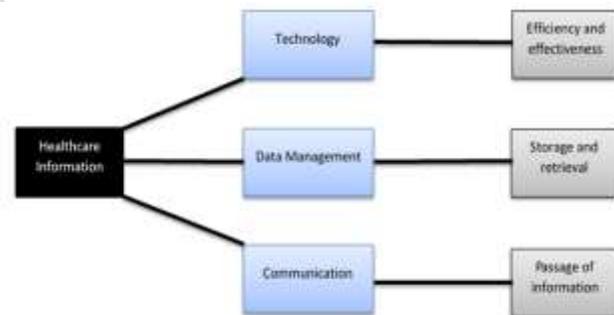


Figure 1: IT and Telecommunication Network Concept

I. REASON FOR RESEARCHING ON THE TOPIC

1) Focusing on the safety of patients

The most pressing and demanding aspect for the inclusion of leveraged communication and IT services in the health care facilities is the enhancement of patient safety. Experiencing an inadequate

communication patterns or lack of enough technologies to help in the determination and processing of data into the generation of desired results, the patients under “In a retrospective review of 14,000 in-hospital deaths, communication errors were found to be the lead cause, twice as frequent as errors due to inadequate clinical skill,” [2]. Passing or producing wrong information from one department to another can cause deaths of patients due to the issue of wrong prescription or the treatment of a disease or symptoms that do not exist. However, under a well-structured communication and IT system, such deaths can be prevented and managed to avoid more patients from being under the risk of facing deaths due to lacking enough facilities. Telecommunication can help in sourcing for information or consulting as an operation is underway to ensure every step has been done in accordance to the laid down procedures [5].

1) Interhospital Communication

Health facilities have different categories and there is information flow between the various institutions or from multiple sites. The information need to be shared under a well-structured form of communication under the recent IT infrastructure and telecommunication network. The data or information transmission is solely owned by the sender and can be restricted on the extent to which such information can be presented to the other institutions. Due to lack of enough facilities in certain health care institutions, referrals can be made and the already collected information about such referred patients transmitted to the respective health care center where the patients will receive future treatment. The transfer of moving patients from one facility to another requires the initial doctor to send the report about the patient’s case to the referred facility for assistance and treatment.

2) Intrahospital Communication

Information can be shared within a single health care facility but face challenges from department to another, coordination rooms, scheduling of tasks and shifts, performance of tests, or booking of appointments. The communication occurs between patients, doctors, and staff that have to share information to help one another in the accomplishment of the assigned tasks [6]. Upon the completion of tests from the laboratory, the tests results may delay from getting into the prescription room where the patient might be waiting for a test result

that came out long time but the staff responsible forgot or has issues with the next person supposed to undertake the responsibility. Due to such kind of cases, the presence of delays in communication can occur because staff members do not want to meet face-to-face with their colleagues. Under such, a leveraged IT and telecommunication network can help where the results are posted and anyone within the health care facility can gain access to the results [1]. The technology and telecommunication has the benefit of solving internal conflicts and reducing workplace politics.

3) Common Communication Methods

Staff and administration within any form of health care system has a way of communicating. The communication might be inefficient due to lacking the required technological space or the presence of other cases that lead to the failure of the delivery of information. Communication methods chosen to be used within any health care center require approval from the communication authority because privacy and confidentiality must be upheld at all costs [4]. Making of phone calls and emails can take a much longer time while the latest apps of communication such as viewing the ongoing process from a remote site can help to understand what has been done and what to do next upon getting into such a situation. The details that need to be transferred to the next practitioner must be shared in a proper manner.

4) Patient data Transmission

Both the interhospital and intrahospital services require the transmission of patient data to help in cases where more details are required. The patients who might be dealing with one health care facility may at one point in life be transferred to another where the information or records about the patient health history can be requested. Such requested will need to be undertaken within a highly secure state of communication and data transfer to avoid leaking or exposing the details about a patient’s illness. Such details about patients are requested and sent to the respective places to help avoid errors and other mistakes that can occur due to lack of the initial details about the concerned case [3].

5) Sharing of Research Findings

Health is a state of humans that requires to be fed well in terms of nutrition and the protection against diseases by ensuring the recommended measures have been undertaken during the conduct of the routine activities.

When the IT systems are leveraged, retrieval of such information by professional nurses or doctors can be easier because once they are practitioners, they can have access to the national database where any patient's data can be retrieved by the registered nurse or doctor for assistance in the present cases [5]. The various research findings that scholars in the field of medicine keep performing and updating on the databases must be set open to practitioners where it can be of help to the handling of emerging symptoms among patients. Sharing is a way of enhancing and developing the health care department by the equipment of the latest skills of handling symptoms and the current trending topics that need attention. "For health care techniques to evolve, providers must implement communication systems that allow researchers to quickly and easily collaborate, both within the same organization and across multiple organizations," [2].

6) Collaboration among Colleagues

Health care facilities have different categories of individuals that help in offering treatment and care to patients. There are patients, doctors, nurses, lab technicians, and other staff where collaboration is a key concept towards the achieving of set goals to the facility. Collaboration between colleagues can be facilitated by the creation of group chats or mass emails that can be sent to everyone for making updates, announcements, or notices to the staff for an effective service delivery. The mode of communication must be supported by the use of the network telecommunications under the use of connected internet services. "Inter-colleague collaboration also includes entering information accurately into databases, especially shared ones. Inaccurate communication between departments can lead to errors in database entry, which, in turn, can potentially risk patient safety," [1]

II. PURPOSE OF STUDYING THE CASE

Enabling health care facilities to be equipped with the latest technology tools in communication and sharing of information is the sole purpose of the research. A majority of the technological advancements are aimed at making the system used in hospitals better and efficient by the application of technology. The research will purposely be conducted to help detect the areas where IT and telecommunication network systems are needed. The healthcare facilities strongly need to share information and ideas concerning the ever arising cases

of new disease symptoms that can be shared and solutions found. The power of influencing Omanis in making use of IT skills and telecommunication networks in matters dealing with health will offer solutions to the current challenges facing health practitioners [3].

Due to the increasing number of innovations in terms of machines and skills, more knowledge is needed in the process of acquiring the knowledge of implementing IT skills to the processes of treating and handling health cases. The leveraging of IT and telecommunication network will only promote the increased use of already implemented IT solutions in healthcare but most of its present innovations and updates must be examined before set to use. The government of Oman has enabled technology in most of its activities where the internet has almost everything that was previously done manually.

For example, getting a booking ticket for consultation with a doctor can be done by the system where time can be set on various patients with a doctor [5]. The same way the customer service machines operate in the banking industry can be implemented in healthcare facilities.

III. IMPORTANCE OF THE STUDY

Everything the world is changing and making use of technology skills and telecommunication services., the use of technology leads to the application of the latest trends in business that require to be resolved and enhanced for better services delivery. Health care facilities have the greatest challenge in implementing technology as they do not have enough time to perform orientation and training because the assigned duties are as per the staff within a health care facility [3]. Getting time for training can be a challenge but upon the use of technology, doctors and other health practitioners can have the best tools for engaging and offering services to patients at secure and accurate rates. The shared information through the internet about various research findings and recommended solutions can be immediately applied to the current cases because of the faster telecommunication network within the health care industry.

A majority of the referral hospitals and major healthcare facilities in Oman have not implemented a fully technology system that can guarantee a continuous flow of information and communication channels for the people. The study is of significant both to the healthcare facilities and the public. The benefits enjoyed by the public will be reciprocated on the facilities and institutions because it will make work easier and reduce the long waiting hours a patient could spend waiting for results. It will be of significance to bring into the system a balanced mode of performing duty and receiving care where IT systems and telecommunication network has a well-established forum in determining solutions. Currently, unlike a few decades ago when internet usage was limited to few individuals and great organizations, the present time has offered access to everyone with a Smartphone or Android device that are assumed to be owned by the low income individuals. Through the sensitization of the idea, a majority of the public within Oman can have a chance of installing a medical app that can guide on therapies and medical prescription to the better ways of ensuring that the healthcare industry has gained its ability to conduct activities online.

IV. RECOMMENDATIONS

1) Information Technology (IT) Safety:

- Information technology is vulnerable to attacks by cyber criminals who hack the systems and fraud the financial status of well-established health care facilities.
- Perform regular automatic backups that can help reduce the chances of losing data in case of such attacks.
- Total much of information technology makes the work of communication easier.
- Preventing data loss can create confidence among patients and other users of the health care facility from maintaining their privacy.

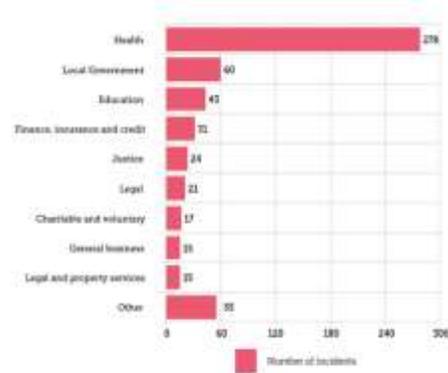


Figure 1. Data security breaches by sector¹⁶

Figure 2: Cybercrime Threats in Health

1) Telecommunication Network

- The telecommunication industry is facing pressure from the regulatory bodies.
- Global economies considered as the key risks towards the implementation of a telecommunication network.
- Ever emerging digital technologies render the already implemented or installed technologies.
- The majority of the measures set forth on the regulation and control of communication rests on the laws governing the various jurisdictions.

V. CONCLUSION

Due to the increased trend in the use of information technology (IT) services and improved telecommunication networks, the leverage of the same within the health care facilities can be a great boost towards the achievement of better health and protection to society from diseases. The faster and efficient communications can bleed to more lives being saved. Health care has various sections that do not need to have a physical contact with the provider for help. Patients seeking for psychological help can be engaged through better communication channels where they can share the situations and be offered the best advice and precautions to undertake. Such services can be outsourced from overseas upon gaining the trust of the providers and approving the credibility of the assistance offered. However, a majority of the consultation services can be discovered to take place online using technological tools and facilities such as the internet. Considering the majority of the positive aspects of IT

and telecommunication networks, the leverage can be supported by the findings and the conclusion made that Oman should ensure that all the health care facilities have implemented technology within their places of offering service to patients and other stakeholders.

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