Critical Success Factors In E-health Application A Case Study Of Kathmandu During Covid-19

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ABSTRACT

The purpose of this study is to investigate the adoption of information technology into the health-care system reflects this to better organize patient data, improve care coordination, and increase communication. It was to find strategies that would improve EMR use in primary care settings. When compared to controls, treatments that focused on the usage of EMR functionalities were five times more likely to exhibit gains in EMR use. When compared to controls, data quality interventions were five and a half times more likely to exhibit gains in EMR use. Individuals in primary health care settings who want to enhance their EMR use might benefit from initiatives such as EMR feature add-ons, teaching materials, or financial incentives aimed at boosting EMR function utilization and data quality. EMRs are electronic medical records that store a portion of a patient's health information and are maintained by the health care provider. EMRs, as the name implies, store all information pertaining to a patient's medical appointments, including diagnostic, treatment, and pharmaceutical prescription information.

Keywords: Electronic Health Records, health care system, Electronic medical records

1. INTRODUCTION

It is impossible to overestimate the value of HIS and their use in helping the healthcare sector. Nepal has taken its time to deploy e-health, which is said to be as the application and use of e-commerce technology within the care sector, in compared to other countries. Despite the fact that adoption barriers have been well-documented, many health officials feel they are complicated to defeat. These characteristics include a diverse group of stakeholders with varying goals, a risk-averse environment because to the crucial importance of patient care, and feelings of overwhelm due to the scope of the information and communication technology transformation project. (al. L. H., 2021)Given the difficulties of addressing fundamental challenges in the healthcare business, focusing on significant system objectives or critical success criteria appears to be a viable option. In a project environment, the core premise of a crucial success factors technique is that if an important a fraction of the development's features is completed or adequately handled, the system as a whole has a far greater chance of being implemented properly and overall success.

We propose in this work that EMS should not be disregarded, and that simplistic data value procedures to be avoided. Believe better awareness of the importance of data value concerns enhances the quality of decision-making and, as a result, improves patient result. EHRs are a critical tool, if not a competitive weapon, for arranging medical treatment in a cost-effective and efficient way, which includes the safe interchange of patient data among numerous healthcare providers. Today, judicious application of appropriate health ICTs, such as an EHR system, can help to improve patient safety and care quality. A basic difficulty that drives the current study is removing those major factors that may have an impact on the successful implementation of EHR systems in a certain work environment. (Seda SÖGÜT E. C., 2022) According to the key gatekeepers, we'd like to know which CSFs are most important for reaping the advantages of EHR implementation in Nepal hospitals and having a good impact. (i.e., practicing physicians). The literature study covers health systems, e-health, and electronic medical records. Lack of

access to digital services or technology, as well as antagonism to or rejection of them, was all cited as reasons for not using them. (al. L. H., 2021)

1.1. Problem statement

Healthcare workers throughout the world are facing increased problems as a result of the epidemic. However, in many underdeveloped nations, like Kathmandu, there is a scarcity of knowledge concerning these issues. Before COVID-19, Nepal had a deficit of medical physicians, nurses, and paramedics due to its population of 28.087 million people. Kathmandu face more challenges in on condition that health care services than more rich countries. Poverty, illiteracy, a lack of resources, a deficiency of health-care people, attitude toward doctors, security concerns among doctors, health-care insurance policies, geographic distribution, culture, governmental policies, and physical restriction all affect the quality of HC services provided in Kathmandu. Face difficulties front on and make changes across the board, from operations to supply chain to consumer interaction. They will lose money and their patients if they do not reform. For healthcare executives and organizations, health equity is a top goal. Digital transformation will revolutionize the healthcare sector, according to the global healthcare outlook.

- Implementation should take place within the context of current care protocols and in coordination with relevant stakeholders. (A. Kotevski, 2021)
- Technology solutions for 24-hour home health care should be simple, trustworthy, with patients and be concerned routines. (Karim, 2020)
- Support and training for patients and professionals may be required to adjust when activities change. (Karim, 2020)
- Both patients and professionals demand clarification and clarity, as well as a shared understanding of each other's new duties. (Kim H. &., 2017)

Patient assessments, professional evaluations, and home health monitoring program monitoring are all necessary. (Wangberg S A. H., 2010)

1.2. Objectives of the research

- To find out the relationship between internet use and adaptation of e-health system.
- To find out the relationship between use of electronic device or application and adaptation of e-health system.
- To find out the relationship between health care reminder system and adaptation of e-health system.
- To find out the relationship between medical information storing electronically and adaptation of e-health system.

1.3. Research questions

The following are the questions that this research is trying to answer:

a) How to reach the people, who are infected with Covid-19?
b) How to fight with pandemic with lack of health equipment's, resources?
c) How to stop spreading of infections to healthy peoples?

1.4. Scope of the research

The goal of this analysis is to identify the most significant digital resource delivery tasks in hospitals in the country, notably federal and non-governmental and commercial Health Systems. The purpose of this research is to uncover the problems of adopting health policies in the current health systems, as well as potential answers. The benefits of EHA would be explained to either health institutes or patients in this research. Several advantages of innovation and subsequent impact on the health systems will be abundantly identified in our study. The purpose of this research is to demonstrate how introducing EHA

in Nepalese health systems would help to streamline operational procedures. The purpose of this research is to demonstrate whether the EHA and good health policies in the health services. The following are some research's limitations:

i) It is focused only on hospitals.

Limited papers are taken for research.

1.5. Significance of the research

Study might be useful to a variety of parties in the following ways:

- This study will attempt to uncover makes health care in rural regions more accessible from established urban centers that offer specialist treatment
- This study will analyze e-health has benefits and transports medical care to places where it might otherwise be inaccessible

This study will offer a conceptual framework that might help e-health consultations, where the treating physician may analyze and observe the patient's condition.

2. LITERATURE REVIEW

Home health monitoring is a complex issue with a patchy body of research to back it up. However, the research reveals that a lot of crucial success factors are comparable, such as evaluating operation within the context of current be concerned. The best resources are those that are easy to use, dependable, and integrate with patients and care operations, and should be developed in collaboration with key partners. Patients and experts can seek help, training, and information and support as they transition to new roles, responsibilities, and activities, and patients and experts should evaluate home health monitoring at the conclusion. (Yuce, 2021)There are a number of crucial success factors Should think about while putting in place home care monitors according to a study of the literature. The bulk of the studies included appeared to be of excellent quality, indicating that the findings are trustworthy enough to be used in early planning for large-scale implementation.

E-health monitoring has grown in prominence over the last thirty years as a result of developments in DIT, lower communication costs, increased accessibility to technology, and real-time data transfer. (Kamila Adellund Holt A. K., 2019)Every year, technical advances improve the efficacy of existing telemedicine services, and telecommunications services are projected to become more economical in the future, making telemedicine a more practical choice for standard medical care. The fundamental advantage of e-health monitoring is that it expands access to health care in rural areas to established urban centers with specialized treatment. Access to health-care services has become more accessible because to technological advancements. (Zheng M. J., 2018)The distance travelled as well as the difficulty of the journey Access to more specialized hospitals has continually been a reason affecting the health of people living in rural locations vs. those living in city areas. (C. Maspero, 2020)

2.1 TELEHELATH AND PUBLIC HEALTH PROTECTION

Despite the difficulties, the COVID-19 situation might represent a significant opportunity for technology that crosses distance and space. A number of online self-tests offer triage options, minimizing physician burden.

2.2 PUBLIC HEALTH PROTECTION

The importance of well-developed behavioral public health, as well as publicly available data, is highlighted. Finally, we must correct present shortcomings in the development of novel treatments. Antibiotics, for example, are a worldwide health issue. Pharma firms should be given significantly more incentives to meet these needs.

2.3 MORE TREATMENT OR LOW CARE SHOULD BE AVIOD

Present focus of healthcare professionals is on boosting capacity for and treating critically sick patients. As a result, diagnostics and elective care are put off.

2.4 FAILURES IN CARE COORDINATION AND PRICING

It also helps to reduce organizational intricacy by putting a price on it: Payers should be charged more for treatment reimbursement related to high but reduced administrative activities.

3. RESEARCH METHODOLOGY

Determine patients' EHL abilities and investigate the relationships and trends between EHL skills and other characteristics like as demographics, search tactics, and HI sources, as well as their impact on E-Health in the COVID-19 pandemic.

- Location of study
- Participants
- Questionnaire development

Statistical analysis SPSS

3.1 RESEARCH DESIGN

Patients and their families should have access to information technology education and training so that they may participate in decision-making and gain authority. The purpose of this study was to determine which variables are associated with greater E-Health, describe Internet access for particular health-care requirements, describe the factors associated with E-Health usage, describe EHL, and describe the factors associated with higher E-Health.

3.2 RESEARCH APPROACH

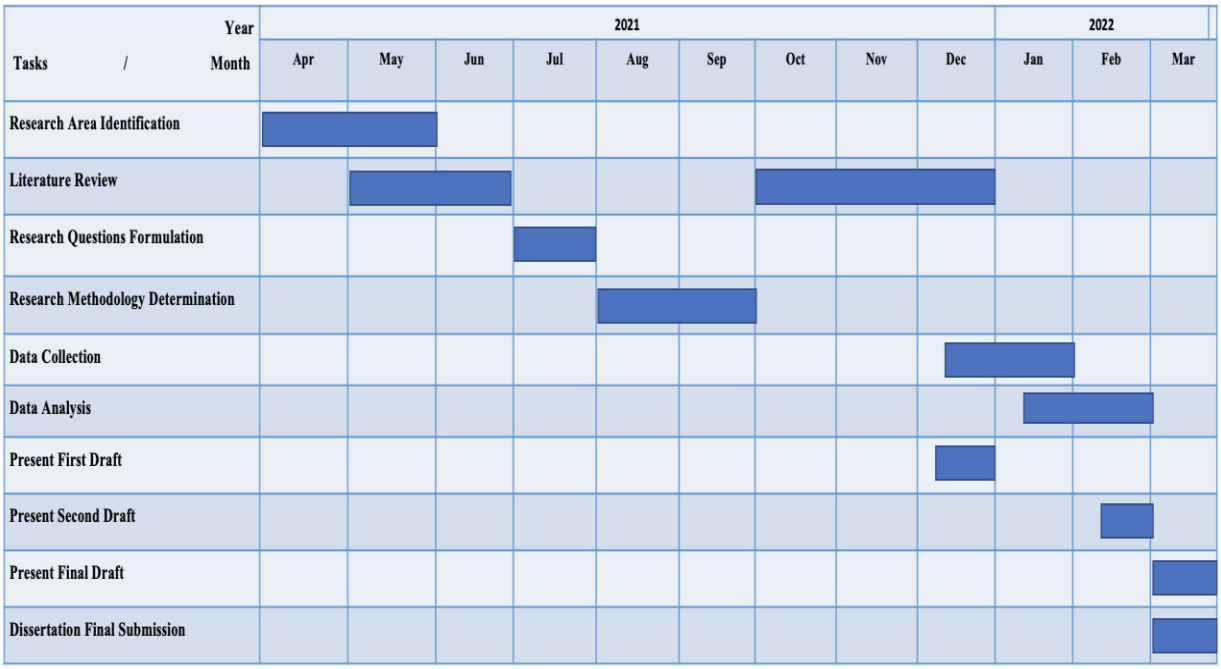
Describe Internet access and use surrounded by people in Kathmandu with health care needs, determine which kid and household characteristics have been associated to Internet usage, and how they are related helpful and how E-Health has made it easier for people to take medical supervision. EHL among Internet users, and figure out factors were linked to greater EHL.

3.3 DATA COLLECTION

The study included a questionnaire and employed a quantitative technique. A total of 308 people replied to the survey, with the two most often used hospitals receiving the most responses. The most powerful link between EHL and independent factors was investigated using the analysis approach. The study explores the value of health information and the impact of digital literacy.

3.4 SAMPLING METHODS AND SAMPLE DESIGN

Because the District of Kathmandu is so big, regions of research were chosen using a multi-stage sampling approach. Because institutional characteristics play such a large role in determining community responses, research regions were chosen using the administrative ladder of division, location, and sub location. The size and frequency of the health system were chosen based on meteorological data and the amount of public interest.



4. DATA ANALYSIS

4.1MODE OF ANALYSIS

The data from 308 samples subjected to computer analysis with the aid of a statistician, and then turned into percentages and produced in the form of tables, graphs, and fig to make the data presentation clear. The information examined utilizing research questions presented at first in the study. As descriptive statistics, we calculated frequencies, percentages, averages, and standard deviations. Frequency, percentage, mean, and standard deviation were used to report the demographic and distance education data.

4.2 OVERVIEW ANALYSIS OF QUESTIONNAIRE RESULTS

This section investigates the gender distribution and occupation of the research population. People with modest incomes who have specific HC needs have access to, use the Internet to learn about their health. Some people, on the other hand, can't tell the difference between good and bad content and are wary of using Internet. This understanding is critical because, as the desire for using the Internet to empower patient, consumer and share information develops, issues about access and inequity to be addressed.

Patients who were under the age less, had weak cognitive abilities, or could not comprehend were excluded from the study. The nurses at the outpatient clinic distributed the questionnaire incorporating the two hospitals Chirayu and Ishan, as well as determining if the responder possessed adequate cognitive capacity to take part. In certain circumstances, the nurses decided that the patients should be excused from participating in the trial for reasons that were not indicated in the protocol. The questionnaire was either filled out completed in the waiting room or at home or returned in a pre-paid envelope The patients were not issued reminders.

4.2.1QUESTIONNAIRE DURATION

It took one month to collect 200+ samples in Kathmandu. People on the survey were from Kathmandu. They include manager, health associates, patients and normal users. To prepare question for the survey it took 2 weeks for research and finalizing the questionnaire then continue with collecting data.

4.2.2PROFILE OF PARTICIPANTS

Looking on the collected data there was 35% patients, 20% employees, 10% doctors, 45% normal user.

4.2.3 NUMBER OF PARTICIPANTS

There were 308 people who participated in the survey including male and female

4.2.4 ANALYSIS AND INTERPRETENTION

Figure 1 displays the benefits of internet for decision making in health. Out of total subjects around 165 subjects feels neutral towards the use of internet for health decision making. There are more responds to not useful rather than useful. Only few subjects feel that the internet is not useful at all.

We went through a procedure that started with confirming the constructions' reliabilities and validity. This analysis of reliability revealed that the cronbach's as for all of the variables is 0.780 in Table 1

Correlations

		internet use	reminders	medical information
internet use	Pearson Correlation	1	.651**	-.403**
	Sig. (2-tailed)		.000	.000
	N	308	308	308
reminders	Pearson Correlation	.651**	1	-.322**
	Sig. (2-tailed)	.000		.000
	N	308	308	308
medical informations	Pearson Correlation	-.403**	-.322**	1
	Sig. (2-tailed)	.000	.000	
	N	308	308	308

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1 Descriptive statistics

The table 2 is shown in the output. Correlation coefficients are used to assess the strength of a linear relationship between two variables. A positive link is shown by a correlation coefficient more than zero, as we have three values in the reminder, which is E-health adaption, but a negative relationship is indicated by a number less than zero, as in medical information and sharing it.

Reliability Statistics

Cronbach's Alpha	N of Items
.780	27

Figure 1 Reliability statistics

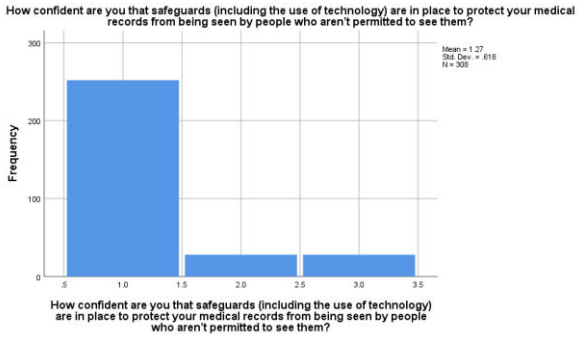


Figure 2 Histogram for confident to protect medical records

A value of 0 indicates that there is no link between the two variables being compared. Negative correlation, also known as inverse correlation, is a key notion in constructing well-diversified and portfolio volatility.

In Figure 1: we have the chart showing much people use internet to make decision for their health. Less than 15 has said it is not useful whereas more than 150 people were neutral and 50-70 people said it is useful. We can know that how confident are people to permitted see their health record.
There is mean 1.27 and std. deviation .618 with 308 surveys. With a mean of 1.81, St. Deviation in Figure 3, we can observe that more individuals are using websites to get health information. With 308 samples, the total number of people is 429. We can see more 200+ have more impact on communication with patient and doctor.

Frequencies

Table 2: Frequency table internet use, medical information and E-Health adaptations

Statistics

		internet use	reminders	medical information's
N	Valid	308	308	308
	Missing	0	0	0
Mean		3.0871	3.2627	1.6360
Median		3.1100	3.4400	1.6700
Mode		3.22	3.67	1.67
Std. Deviation		.30568	.61099	.38266
Percentiles	25	2.8900	2.8075	1.6700
	50	3.1100	3.4400	1.6700
	75	3.3300	3.6700	1.6700

In Figure 3 we can see in total 308 sample having internet use and device vs. medical information vs. reminder i.e., adaptation of e-health we get mean from 3.0871 to 1.6360. Percentage is more than 2.89 and median is more than 3.11. It has impact on adaption of e-health in positive way

Regression

Table 3: Regression model summary

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.051	2	24.525	114.107	.000[b]
	Residual	65.555	305	.215		
	Total	114.605	307			

a. Dependent Variable: reminders

b. Predictors: (Constant), medical information, internet use

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.393	.361		-1.088	.277
	internet use	1.244	.095	.622	13.155	.000
	medical information	-.113	.076	-.071	-1.498	.135

a. Dependent Variable: reminders

Table 4: Coefficients

Summaries for these research purpose comparison of alternative reliability measures is done with cronbach's alpha to find out the e-Health risk tolerance scale. Cronbach's alpha is a statistic that is used to assess the internal consistency, or reliability, of a set of scale or test items. In other words, the consistency with which a measurement measures a concept determines its reliability, and Cronbach's alpha is one technique of assessing the degree of that consistency.

The number of observations for this research is 308 as you can see in the descriptive statistics stated as N = 308. Various variables are defined for this statistics report like gender, education, health condition and so on. A survey questionnaire was prepared for the descriptive statistics where various question were asked for the research purpose. 106 males and ninety-eight females responded to the survey. 4.4 percent out of the total observations have completed their school, 51 percent have completed their bachelor, 42.2 percent have completed have completed their master degree and 2.5 percent have completed their high school. Figure 1 displays the benefits of internet for decision making in health. Out of total subjects around 165 subjects feels neutral towards the use of internet for health decision

making. There are more responds to not useful rather than useful. Only few subjects feel that the internet is not useful at all.

4.3 OVERVIEW ANALYSIS OF INTERVIEW RESULTS

- Internet access
- Use of technology for health
- Perception of using technology for health monitoring

4.3.1 INTERVIEW DURATION

There was one meeting with Miss Aasara Shrestha. She was asking about how her checkup process has been changed as it is digitalizing? She said "For me, patient facing apps has made my hospital visits and clinic visits much easier. I can easily book my appointments through e-Appointments app in ESewa, which has helped reduce my waiting time in the hospitals. In the present context in few hospitals, I even see some of the doctors using medical recording application. When I asked them what this is all about, I got to learn that our medical records are digitally stored and can be later on used for research purposes. I guess even the Government is working on data repository concept, and if that happens our data can be shared with various hospitals to various doctors. I guess that will bring a radical change in the overall health system, if things like such can be worked on. Also, one thing that has been simplified in my life is probably getting online lab reports. This has saved my time as I don't need to visit the hospital again just to pick up my reports.

5. CONCLUSIONS AND RECOMMENDATIONS

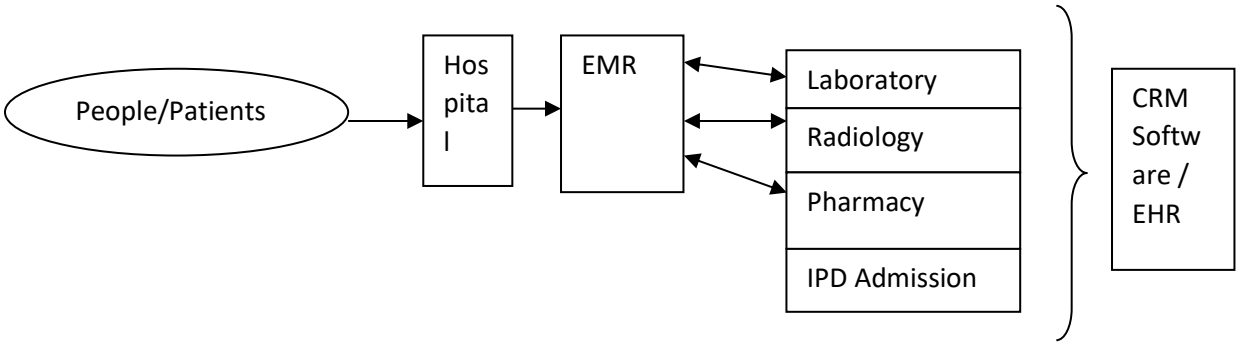
5.1 Findings and discussion

Based on the statistical analysis, the results show when health care practitioners and patients are not in direct touch and their interaction is mediated by electronic means, e-Health provides health care through contemporary EMR and communication technologies. The rapid spread of the Internet has changed many aspects of society and various industries by enabling widespread information sharing and the formation of new business relationships, as well as allowing direct interaction with customers rather than working through traditional communication channels. However, given that it spans continents and connects billions of people globally almost quickly, the Internet is used as a highly functional yet cost-effective communication medium. This is about to change, as the steady use of technology is altering the old paradigm between doctors and patients, as well as the delivery of healthcare at the patient level. Based on the fig 2 the result clearly shows monitoring and delivery of healthcare services, mobile phones are becoming increasingly vital. Because of their superior computing functions, expanded preferences, and diversified capabilities, they are frequently referred to as pocket computers. Both patients and healthcare providers have praised the user-friendliness, convenience, and effectiveness of these systems. E-health technology combines advanced concepts and techniques from a variety of domains, including electrical engineering, computer science, biomedical engineering, and medicine, to enhance healthcare system advancements. It was discovered that mobile-based applications have been increasingly popular in recent years, with healthcare professionals and patients adopting them at an increasing rate. Despite the benefits of cell phones in patient monitoring, teaching, and management, there are certain significant difficulties and obstacles to be addressed, including data security and privacy, acceptance, reliability, and cost.

Based on the statistical analysis, the results revealed that manual reminders are easier to deploy, they are now more popular than computer reminders; yet, computer reminders may be more successful. This study compares the effects of computer and manual health care reminder system on compliance as a result of the e-health system's adaptability.

The investigation's findings EHR are capable of much more than merely collecting and storing patient data. These recordings are increasingly computing and sharing data, leading in insights that might

influence treatment decisions. For example, data exchanged via an EHR can help doctors choose the right medicine for an allergic patient or provide history on an unresponsive patient when they arrive at an emergency hospital.



- Using [EMRs], improving quality, safety, efficiency, and lowering health disparities.
- Computerized patient records, EMR, computerized HR, or simply e- records are available in addition to longitudinal health records.
- To keep everyone secure, telemedicine appointments became commonplace.
- A benefit of health templates is the use of these EMR features for the interchange of PHC.
- It is feasible to control the flow of laboratory, diagnostic imaging, and prescription patient information by allowing electronic communication between health care practitioners.
- EMRs also provide options for creating alerts and reminders to help with the management of prescriptions and the evaluation of screening, laboratory, and diagnostic tests.
- EMRs can be outfitted with extra features to help them perform better.
- With the support of targeted feedback, these features can result in full and secure documentation of patient information, which can lead to enhanced, timely, and unrestricted access; greater coordination of care; decreased mistakes; more engaged patients; and smoother administrative operations.
- More than sociodemographic data or self-rated health, information on patients' E-Health may help physicians understand why they aren't accessing digital health services.

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