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Everyone's Smart University

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Project Risk Management

Risk Analysis: Effective implementation of Electronic Health Records (EHRs) in healthcare

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INTRODUCTION

In the contemporary society, human being has become heavily reliant in technology. This a phenomenon that has been observed in various economic sectors including health industry, where adoption of Electronic Health Record has taken center stage. Electronic Health Record (EHR) refers to a data-based system meant to collect patient's medical records and store them as digital documents (Ajami and Arab-Chadegani, 2013).. Notably, patients records can be accessed anytime, from anywhere by authorized users of the EHR. Effectiveness achieved by EHR in terms of data retrieval and improved communication increases significantly the level of treatment effectiveness offered by healthcare (Sittig, 2013). These key benefits notwithstanding, adoption and implementation of EHR in various health organizations has been marred by various risks (Minal and Davis, 2006), which requires sustainable response strategies.

TYPE OF RISK

Effective implementation of EHR software in various institution can be affected by numerous risks (O'Connor,2017). According to Projectmanagement.com (2021), **risks** can be categorized in Human resources, method/process, machine, materials and environment. Consequently, applying these categories, it is possible to get specific risks under each category related to HER software implementation (Table 1) (Ajami and Arab-Chadegani, 2013; Sittig, 2013; Minal and Davis, 2006).

Table 1: Important HER Risks

Human resources.

- Lack of Usability due to insufficient training
- Too much data generated.
- Poor communication between healthcare and IT personnel
- High turnover
- Low job satisfaction

Method/process.

- Data breaches
- Inaccurate patient data
- Interoperability/ Data migration
- Lack of Proper Planning in terms of design
- Reduces workflow among employees by creating disruption

Machine.

- Maintenance
- Mishandling by employees
- EHRs applications are not standardized

Materials

- Software cost
- Hardware cost
- Poor quality materials/design-software and hardware

Environment

- Power shortages
- Internet Fluctuation/downtime

Risk Matrix

The matrix table below will inspire risk management department into developing a strong risk strategy depending on the stipulated risk types, the likelihood of the risks happening and the severity of the risks (Admin, 2018).

Table 2: Risk Level

		Severity				
		1	2	3	4	5
Likelihood	1	High	High	Extreme	Extreme	Extreme
	2	Medium	High	High	Extreme	Extreme
	3	Low	Medium	High	Extreme	Extreme
	4	Low	Low	Medium	High	Extreme
	5	Low	Low	Medium	High	High

Risk analysis

Based on various secondary sources such as books and peer reviewed articles, it is possible to perform a risk analysis that can be used to determine appropriate risk level. This can be determined by multiplying probability/likelihood of occurrence by impact of the risk (Table 2) (Conomyak, 2015). Using a probability of occurrence scale of 1-5 (where 1 is the least probable and 10 highly probable) and Impact scale of scale of 1-5 (1 is the least impact and 10 most severe impact), it is possible to determine importance of all risks.

Table 3: Risk analysis

No:	categories	Risks	Likelihood	severity (1-10)	Analysis (P*I)
1.	<i>Human resources.</i>	Lack of Usability due to insufficient training	2	5	10
		Too much data generated.	3	3	9
		Poor communication between healthcare and IT personnel	1	1	1
		High turnover	2	2	4
		Low job satisfaction	3	2	6
2.	<i>Method/process.</i>	Data breaches	2	5	10
		Inaccurate patient data	3	4	12
		Interoperability/ Data migration	1	2	2

		Lack of Proper Planning in terms of design	1	1	1
		Reduces workflow among employees by creating disruption	2	2	4
3.	<i>Machine.</i>	Maintenance	3	5	15
		Mishandling by employees	3	3	9
		EHRs applications are not standardized	1	1	1
4.	<i>Materials</i>	Software cost	1	1	1
		Hardware cost	1	1	1
		Poor quality materials/design-software and hardware	2	2	2
5.	<i>Environment</i>	Power shortages	2	3	6
		Internet Fluctuation/downtime	3	2	6

RISK TRIGGERS AND RESPONSE

From table 3, it is possible to determine the most severe risk (>9 on Risk analysis) (Table 3). And hence, the project manager can dedicate more time into understanding their key triggers and intervention strategies.

Risk Triggers

Risk triggers refer to the events that precede a certain predicted risk (Sittig, 2013). These can be used to foretell the occurrence of a risk being speculated against before it happens and enable risk managers work on relevant risk management strategies.

Table 4: Risk triggers

Risk Event	Risk Triggers
Too much data generated.	Lack of a data search and sort feature on the system
Lack of Usability	Lack of experienced user interface design developers
Mishandling by employees	Ignorance in employees
Inaccurate patient data	Tired system users
Data breaches	Weak system data security measures
Maintenance	Disturbances from lousy weather

Risk Responses

Risk response refers to the measures taken to either prevent or control impact of occurrence of a speculated risk. These risk responses all fall under four main categories (Fackler, 2021) of risk responses: risk avoidance, risk transfer, risk mitigation and risk transfer. The following are risk responses for individual risk triggers as has been discussed.

Table 5: Risk response

Risk Triggers	Risk Response
Lack of a data search and sort feature on the system	Implement a data search and sort function on the system
Lack of experienced user interface design developers	Hire experienced user interface design developers
Ignorance by employees	Conduct awareness and employee trainings
Tired system users	Hire dedicated data entry specialists to interact with the system at data entry
Weak system data security measures	Implement strict and hard to crack system security measures
Disturbances from lousy weather	Implement artificial climate control measures in server rooms

EXPECTED MONETARY VALUE (EMV)

This is a statistical technique used to calculate the monetary impact of a future risk occurrence. It is important as it enables risk managers to allocate resources in preparation for future occurrence of risks brought about by implementation of the Electronic Health Records (Gump, 2001, 01). The EMV is calculated by the following formula:

$$EMV = P * I$$

Where:

EMV is expected monetary value

P is the probability of occurrence and

I is the Impact in monetary terms.

Table 5 Expected Monetary Value of EHR Risks

No:	categories	Risks	Probability (1-10)	Impact (\$)	EMV (P*I)
1.	<i>Human resources.</i>	Lack of Usability due to insufficient training	2	\$150	\$300
		Too much data generated.	2	\$200	\$400
		Poor communication between healthcare and IT personnel	1	\$150	\$150
		High turnover	2	\$300	\$600
		Low job satisfaction	3	\$350	\$1050
2.	<i>Method/process</i>	Data breaches	2	\$2000	\$4000
		Inaccurate patient data	3	\$1250	\$3750
		Interoperability/ Data migration	1	\$100	\$100
		Lack of Proper Planning in terms of design	1	\$100	\$100
		Reduces workflow among employees by creating disruption	2	\$400	\$800
3.	<i>Machine.</i>	Maintenance	3	\$2500	\$7500
		Mishandling by employees	3	\$950	\$2850
		EHRs applications are not standardized	1	\$150	\$150
4.	<i>Materials</i>	Software cost	1	\$100	\$100
		Hardware cost	1	\$150	\$150
		Poor quality materials/design-software and hardware	2	\$350	\$700
5.	<i>Environment</i>	Power shortages	2	\$600	\$120
		Internet Fluctuation/downtime	3	\$300	\$900

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