CYBER SECURITY IN HEALTHCARE SYSTEM: A SYSTEMATIC APPROACH OF MODERN THREATS AND DEVELOPMENT

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Abstract - Abstract- Healthcare industry provides medical devices such as pharmaceutical. The third party vendor can also pose a risk to the organizations. Cyber security if they are not properly vetted and do not have adequate security measures in place. These will help to mitigate and other cyber security risks, healthcare organizations should implement a range of security measures. Regular security assessment in the healthcare organizations should conduct regular security assessment to identify vulnerable in their systems and network. Distributed dental or services attacks where criminal overloads the healthcare system. Health care system server with traffic, causing them to crash and preventive. Lag mate users from accessing the systems network, steal data, and cause damage to the system. Ensure that these tools are updated regularly to protect against the latest threats. Regularly check the backup data and critical data and store it in a secure locations. Monitoring network activity to detect and response to any potential security incidents conduct regularly.

Index Terms - *Cyber, Data, Security, Systematic, Healthcare, Malware*

I. INTRODUCTION

Cyber security is an increasingly important concert in healthcare system. Due to the sensitive and confidential nature of the information that is stored and transmitted within these system. Healthcare organization faces numerous modern threats to their systems and network [1]. Run somewhere attacks are type of malware that encrypts a victim's data and demands payment in exchange for the decryption key. Healthcare organization is particularly vulnerable to these attacks due to the critical nature of their data and potential impact on their patient [3]. Phishing is a social engineering attacks that tricks victim into divulging sensitive information and download malware.

Healthcare organizations are particularly vulnerable to these attack because they often deal with a large volume of emails and may be more likely to click on malicious links or attachments [4].Insider threats refers to the risk posed by employs and others. Insider who have access to sensitive information.

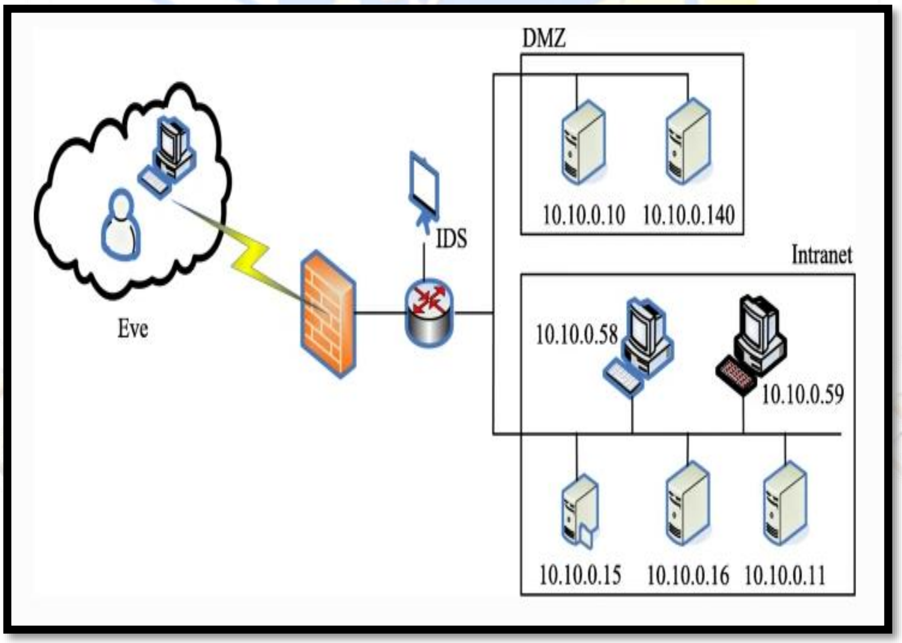


Figure 1: Modern of cyber security

(Source: 10)

These threats can range from accidental data breaches to international theft or sabotage. Third party vendor risks healthcare organizations often rely on third party vendors for a range of services. In medical industry third party vendors are used to internal networks for catch and remove the data from the systems [5]. These are a very dangerous for the medical industry to driven out there data without their permissions. In the medical industry, healthcare cyber security is tactical for the organizations and biotechnology [10].

II. OBJECTIVES

- To safe from ransomware attacks in the cyber security healthcare system
- To understand from phishing attacks in the cyber security system
- To avoid the insider threat in the cyber security attack in the healthcare system
- To explain third party vendor risks in the cyber security system
- To safe the organizations from the external and internal cyber attack
- To ensure the proper medical system and equipment is safe from the cyber security system
- To analyze the solutions for the healthcare industry from the cyber security networks

III. METHODOLOGY

In this research, researchers could not find any primary data for this is why researchers are researches for using secondary data. Researchers get information from the web site on Google scholar. Researchers know the in cyber security access control should be implement to ensure that only authorized personal have access to sensitive data[5]. In the cyber security, systems data encryption should be use to protect sensitive data from unauthorized access or theft. In the business purposes, cyber security is the crucial for the information security to the today's regular in digital age [15].

In the organization, many healthcare hospitals include the specialized information's such as E-prescribing, EHR system, system of radiology informations, and support system of medical information. IT security involving the cyber threat in healthcare for deals with endangers patient safety.

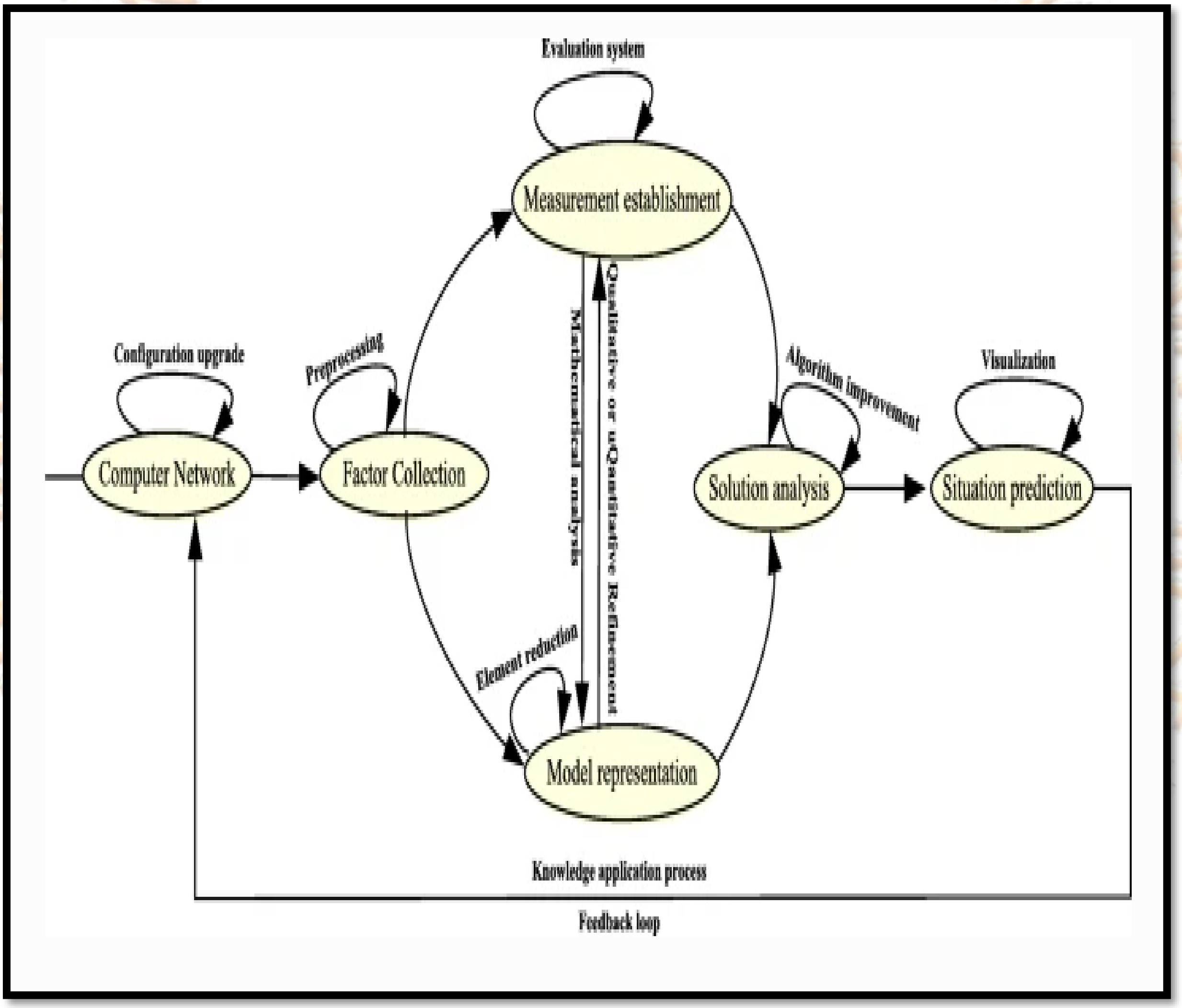


Figure 2: Cloud computing in cyber security
(Source: 7)

IV. RUNSOMEWHERE ATTACKS IN THE CYBER SECURITY HEALTH CARE SYSTEM

Run somewhere attacks are one of the best malware in the cyber security systems. Healthcare systems are attractive target for the runsoewhere system in the cyber security industry [12]. It is attractive target because they store a vast amount of sensitive and personal data, including medical records, financial information, and personal information. In the cyber attacks healthcare is the prime target that remove the sensitive information [14]. Run somewhere attacks is the cyber criminals where encrypt and healthcare system data and demand a ran some in exchange for the decryption key [10].

The numbers of data violates and increased by more than five years stated by HHS office in US civil rights.

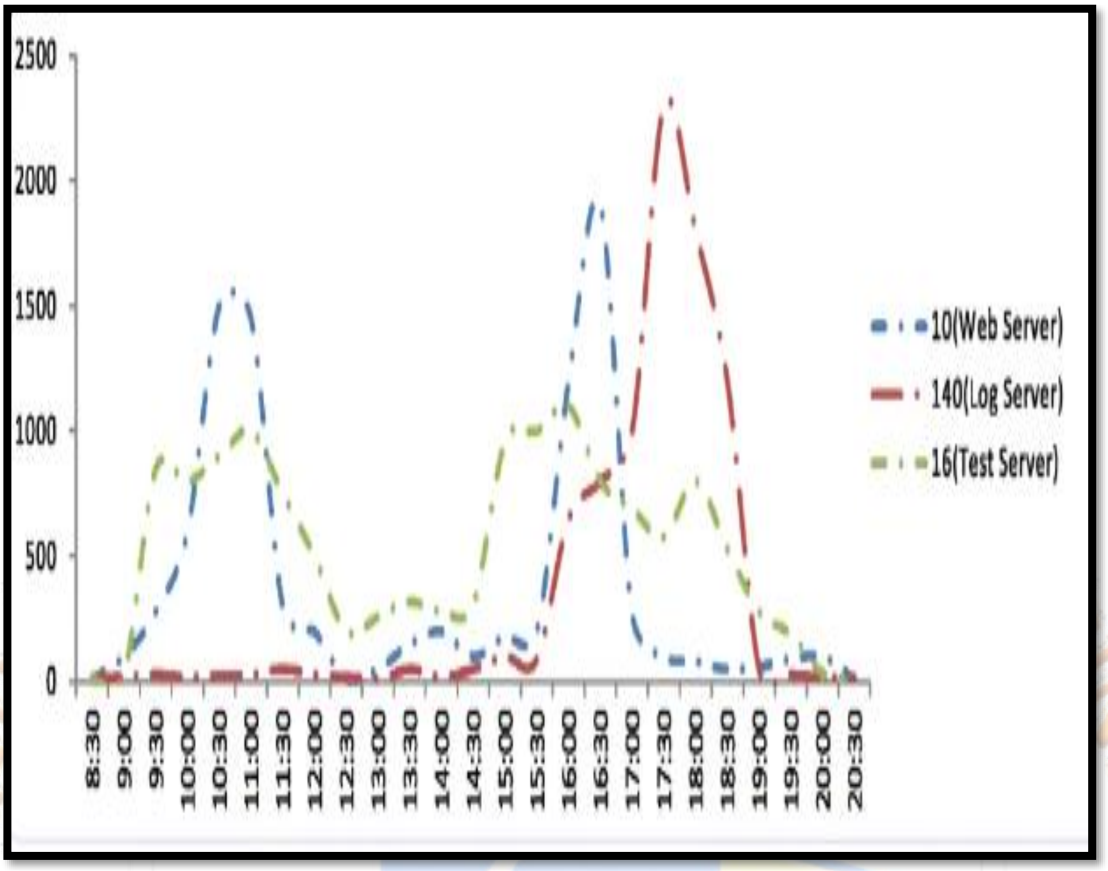


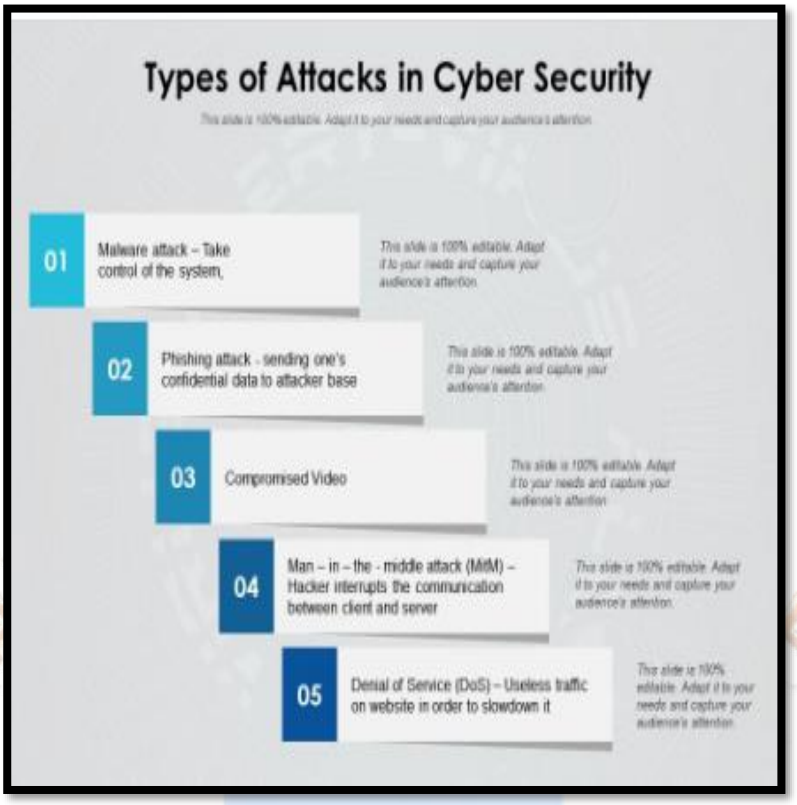
Figure 3: Cyber security increasing in health care system
(Source: 9)

Healthcare organizations enable to use the digital information by reducing complexity, risk, and cost. Cyber criminals send emails and messages that appear to be from a trusted source in order to risk healthcare system employees into receiving sensitive information and clicking on malicious link [5].

IV. INSIDER THREAT IN THE CYBER SECURITY ATTACKS

Insider threats are the legitimate to access the network for harm to the organizations. Most of the cases inside threat is detect can be difficult for this is why it is go unnoticed in the month or years [5]. Malicious insiders are individuals who intentionally use their access to steal the data and cause damage or disrupt the organizations [6]. They may be motivated by financial gain, revenge, and ideology. Careless insiders who accidentally exposed sensitive data or information [9].

It is introduced to security vulnerabilities into the organizations system. They may lack awareness of security of best practices or fail to follow established products [1].Compromise insiders those who are access credential information from taken out from the systems. Hackers may use these credentials to gain access to the organizations' systems and data [2]. Employee educations organizations should provide regular training and and awareness program to educate employee on security best for the organizations.



Types of Attacks in Cyber Security

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01 Malware attack – Take control of the system.

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02 Phishing attack - sending one's confidential data to attacker base

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03 Compromised Video

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04 Man – in – the - middle attack (MitM) – Hacker interrupts the communication between client and server

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05 Denial of Service (DoS) – Useless traffic on website in order to slowdown it

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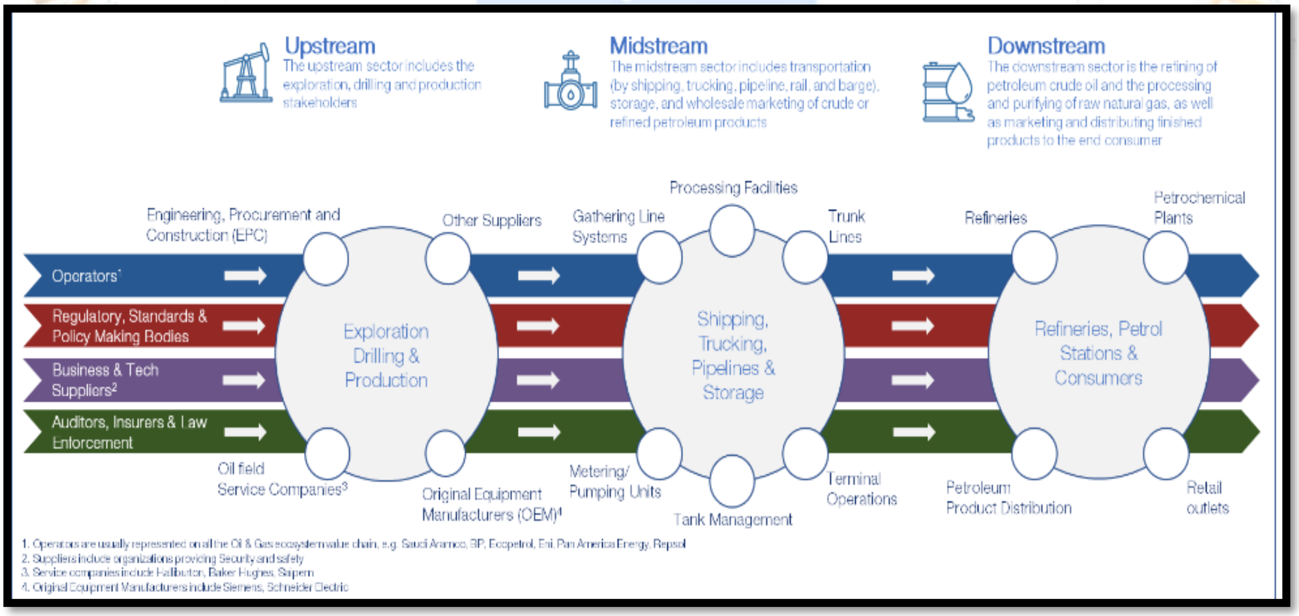
Figure 4: Types of cyber security
(Source: 14)

Access control access to sensitive data and system to be restricted to authorized personal only. Therefore, access should be granted on a need to know basis. Monitor zing and auditing organizations should implement monitoring and auditing system to detect suspicious activity and identified potential insider's threats.

VI. THIRD PARTY VENDOR RISK IN THE CYBER SECURITY SYSTEM

Third party vendor risk is a significant concern in the cyber security system. It can create vulnerabilities that can b e exploited by malicious sectors [5]. A third party vendor is any external entities that provide goods and services to organizations, such as cloud computing services, software, or hardware. Third party may have access to sensitive information, networks, and systems. This is which can b e source of risk, if a third party vendor's system is compromised[7].It can potentiality provide an entry point for cybercriminals to access an organizations. Therefore, it is an essential to manage third party vendor risks as part on overall cyber security strategy [9].

One way to manage third party vendor risk is to conduct due diligence before engaging with a vendor. This include the accessing the vendors posture.



Upstream
The upstream sector includes the exploration, drilling and production stakeholders

Midstream
The midstream sector includes transportation (by shipping, trucking, pipeline, rail, and barge), storage, and wholesale marketing of crude or refined petroleum products

Downstream
The downstream sector is the refining of petroleum crude oil and the processing and purifying of raw natural gas, as well as marketing and distributing finished products to the end consumer

Engineering, Procurement and Construction (EPC)
Other Suppliers
Gathering Line Systems
Processing Facilities
Trunk Lines
Refineries
Petrochemical Plants
Operators¹
Regulatory, Standards & Policy Making Bodies
Business & Tech Suppliers²
Auditors, Insurers & Law Enforcement
Exploration Drilling & Production
Shipping, Trucking, Pipelines & Storage
Refineries, Petrol Stations & Consumers
Oil field Service Companies³
Original Equipment Manufacturers (OEM)⁴
Metering/ Pumping Units
Tank Management
Terminal Operations
Petroleum Product Distribution
Retail outlets

1. Operators are usually represented on all the Oil & Gas ecosystem value chain, e.g. Saudi Aramco, BP, Ecopetrol, Eni, Pan America Energy, Repsol
2. Suppliers include organizations providing Security and safety
3. Service companies include Halliburton, Baker Hughes, Saipem
4. Original Equipment Manufacturers include Siemens, Schneider Electric

Figure 5: Third party vendor risk
(Source: 12)

It is as well as there record of accomplishment with order organizations [10]. It is also important to ensure that the vendor has appropriate security controls in place.

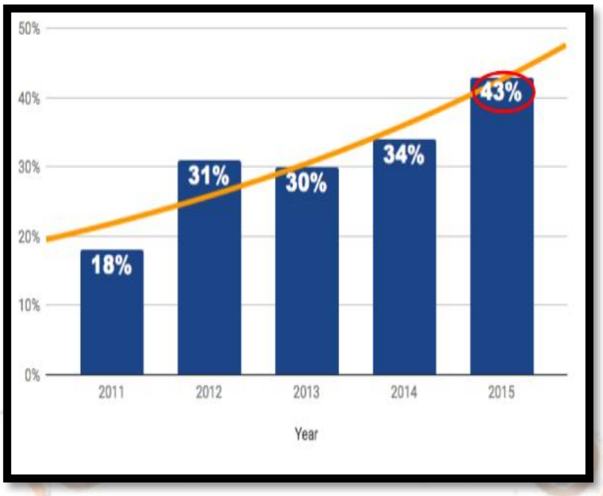


Figure 6: Third party vendor risk increasing
(Source: 11)

The place is such as multiple sectors, multifactor's authentication, and encryptions. Once a third party vendor is engaged is a crucial to monitor there activity and performance. It is ensure that they are adhering to security standards and contractual obligations [11]. Regular security assessment and audits can help identified and address any vulnerabilities or potential risk. In security managing third party vendor risk is a critical component of a robust cyber security [12]. It requires proactive due vigilance, ongoing monitoring, and effective risk mitigation strategies to ensure the third party vendors do not comprise an organizations security.

VII. SAFE THE ORGANIZATION FROM EXTERNAL AND INTERNAL CYBERS ATTACKS

Protecting organizations from internal and external cyber attacks requires a multifaceted approach. Here the some steps that can help improve the organization in cyber security posture. Conduct a cyber security risk assesses is the organizations vulnerabilities and potential impact of a cyber attack [5]. Identified the assists of that need to protect the possible attack vectors. Develop a comprehensive cyber security policy to establish a clear set of guidelines and procedures [9].The organizations employee and contractors must follow to ensure cybersecurity. This policy should include password management, remote access software installation an employee training. Implement cyber security training all employees on cyber security [12]. The cyber security is the best practices including how to identify and report suspicious activity.

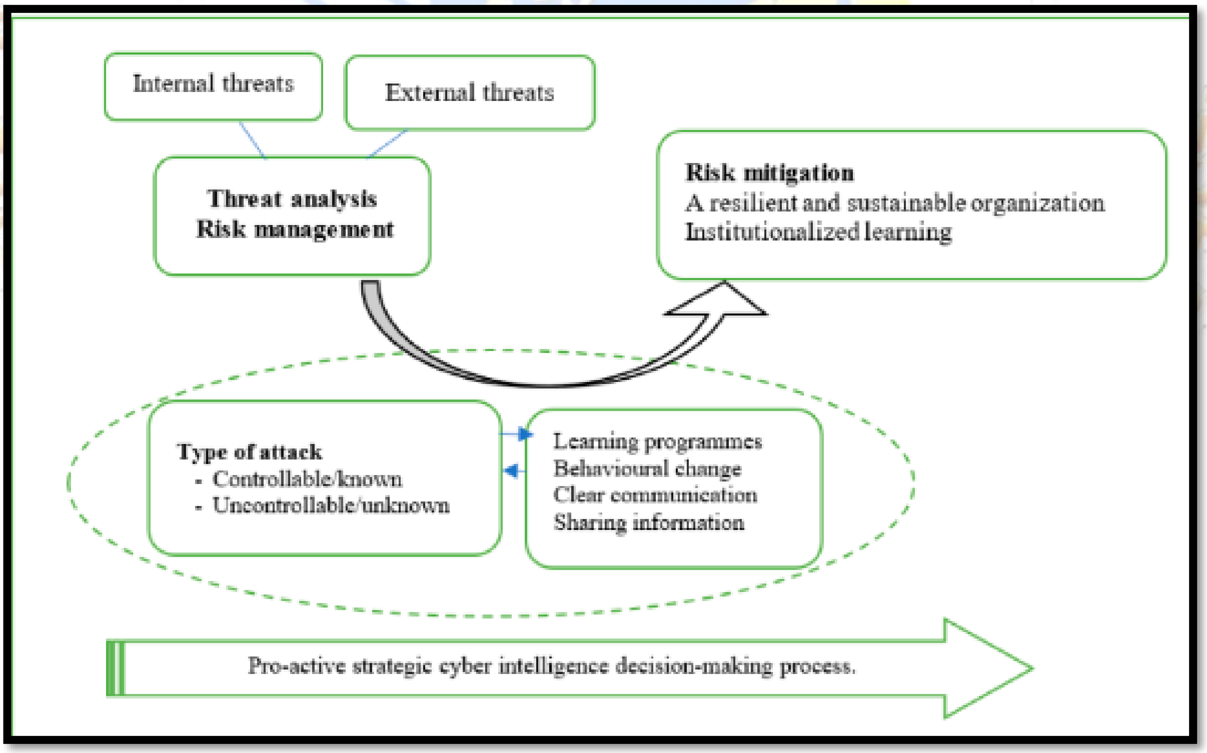


Figure 7: Internal and external cyber attack
(Source: 11)

How to use strong password and how to recognize the phishing emails and social engineering attacks. Developing cyber security such as firewalls, intrusion detention, preventive system, antivirus software, and data encryption.

VII. PROBLEM STATEMENT

The problem statement of the cyber security industry is the need to protect digital systems network. It is protect the device from unauthorized system and protect the system malware. As the world become increasingly reliant on technology [5]. It is the risk of cyber attacks has grown exponentially [9]. Cyber threats include malware, phishing attacks, and social engineering. Now day's cyber security is a big problem of many organizations. It is not too secured from the many of hackers to driven out files and information's in the organizations.

IX. CONCLUSION

Present day's cyber security is the biggest problem in the world. Cybersecurity is a constantly involving field that encompasses a wide range of technologies, practices, and politics. Cyber security aimed at protecting computer systems, networks, and data from unauthorized access. The rapid advancement of the technology and the increasing the reliance on digital services and online platforms have made for cyber security.

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