



تقييم متطلبات الامن السيبراني للانظمة المحاسبية في الوحدات الاقتصادية دراسة استقصائية في شركات الاتصال في البيئة المحلية

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الملخص:

يعد تأمين المعلومات المالية امرأ ضرورياً في العالم الرقمي , وفي ظل التحديات التي تواجهها
الوحدات الاقتصادية المتمثلة بخطر التهديدات السيبرانية المتطورة التي تطال أنظمتها المحاسبية
وتتسبب بسرقة وأتلاف بياناتها او تدمير بنيتها التحتية, مما يجعلها امام ضرورة تعزيز امن أنظمتها
من خلال تفعيل مجال الامن السيبراني بكافة متطلباته لمواجهة او الحد من خطر هذه التهديدات
وضمن استمرارية العمل .

لذا هدفت الدراسة الحالية لفهم ممارسات الامن السيبراني وتقييم متطلبات تحقيقه, وخطورة تهديدات
هذا المجال على انظمة المعلومات المحاسبية في الوحدات الاقتصادية , ولتحقيق اهداف البحث قامت
الباحثان باستخدام المنهج الاستنباطي لتأطير الجانب النظري وذلك بالاستعانة بالمراجع العربية
والأجنبية والدوريات والانترنت , والمنهج الاستقرائي لتأطير الجانب العملي للبحث من خلال تقييم
متطلبات الامن السيبراني على انظمة المعلومات المحاسبية للوحدات الاقتصادية في البيئة المحلية ,
وبالاعتماد على استقراء البيانات والمعلومات التي تم الحصول عليها وفق استبانة تضمنت عدة أسئلة
في ثلاث محاور لعينة البحث , المتمثلة بأصحاب الخبرة في مجال الامن السيبراني ونظم المعلومات
المحاسبية في الوحدات الاقتصادية , وتم تحليل البيانات التي تم جمعها للكشف عن نقاط ضعف النظام
وتأثير ذلك على امن البيانات باستخدام التقنيات والأساليب الإحصائية , وظهرت نتائج الدراسة الى
وجود قيمة إيجابية بين الأمن السيبراني ونظم المعلومات المحاسبية , مما يؤكد على أهمية توجيه
الاهتمام لتعزيز الأمان السيبراني في الوحدات الاقتصادية , حيث تشير النتائج الإحصائية إلى أن



الأمن السيبراني يؤثر بشكل مباشر على نظم المعلومات المحاسبية , مما يبرز أهمية تعزيز الأمن السيبراني في الوحدات الاقتصادية. وأوصت الدراسة بضرورة توجيه الاستثمارات نحو تنفيذ الحلول التقنية والإجراءات الإدارية لتحقيق الأمان السيبراني والمحاسبي بشكل فعال، بالإضافة إلى ضرورة قيام الوحدات الاقتصادية الإفصاح في التقارير السنوية عن المخاطر السيبرانية التي تتعرض لها وكيفية مواجهتها من اجل تعزيز قيمتها.
الكلمات المفتاحية : متطلبات الامن السيبراني , نظم المعلومات المحاسبية.

Evaluating cyber security requirements for accounting systems in economic units a survey of communication companies in the local environment

Abstract

Securing financial information is essential in the digital world, and in light of the challenges faced by economic units represented by the danger of advanced cyber threats that affect their accounting systems and cause the theft and destruction of their data or the destruction of their infrastructure, which makes them faced with the need to enhance the security of their systems by activating the field of cyber security with all its requirements. To confront or reduce the risk of these threats and ensure business continuity Therefore, the current study aimed to understand cyber security practices and evaluate the requirements for achieving it, and the seriousness of this field's threats to accounting information systems in economic units. To achieve the research objectives, the two researchers used the deductive approach to frame the theoretical side by using Arab and foreign references, periodicals, and the Internet, and the inductive approach to frame the practical side of the research through... Evaluating cyber security requirements on the accounting



information systems of economic units in the local environment, and relying on extrapolating data and information obtained according to a questionnaire that included several questions in three axes for the research sample, represented by those with experience in the field of cyber security and accounting information systems in economic units, The data collected was analyzed to detect system weaknesses and their impact on data security using statistical techniques and methods. The results of the study showed that there is a positive value between cyber security and accounting information systems, which emphasizes the importance of directing attention to enhancing cyber security in economic units, as it indicates Statistical results indicate that cyber security directly affects accounting information systems, which highlights the importance of enhancing cyber security in economic units. Recommended the study emphasizes the need to direct investments towards implementing technical solutions and administrative procedures to effectively achieve cyber and accounting security, in addition to the need for economic units to disclose in annual reports the cyber risks to which they are exposed and how to confront them in order to enhance their value.

Keywords: cyber security requirements, accounting information syst

The introduction

Evaluating cyber security requirements is vital to ensuring the security and integrity of financial and accounting information in economic units. This evaluation aims to determine how to evaluate the security risks facing accounting information systems and how to deal with these risks effectively. Cyber and information systems are considered one of the vital assets in the



modern era. As it contains sensitive and vital information related to business, personal and financial data, and with the increase in cyber threats, it becomes necessary to evaluate requirements Security is an urgent necessity to ensure business continuity and the confidentiality and integrity of the data and information contained in computerized accounting information systems from hacking and exploitation, as computerized systems are among the most important assets in any economic unit, and the security of these systems is considered an urgent matter for business continuity and the accuracy and integrity of financial and non-financial reports, and with the development of modern technologies. Accounting systems face many challenges in the field of cyber security, represented by electronic intrusions resulting from many reasons. They may be due to the weakness of the system, i.e. the presence of software vulnerabilities exploited by cyber attackers, or due to failure to keep up with the continuous technological updates of the systems. Also, the complexity of the system may be a reason that makes computerized systems vulnerable to serious danger. With it

Based on the above, this research will be divided into the following sections:

- ✓ The first section: research methodology, previous studies, and the contribution of the current research.
- ✓ The second section: A theoretical introduction to cyber security requirements for accounting systems in economic units.
- ✓ The third topic: The extent of the impact of cyber security on accounting systems in economic units / a survey of a sample of companies contributing to the local environment.
- ✓ Fourth section: conclusions and recommendations.



The first topic

(Research methodology, previous studies, and the contribution of the current research)

1-1 Research problem

The problem of the current study is one of the prevailing problems in our current era, especially in the economic fields, represented by the challenges that economic units face when implementing the cyber security system with all its measures, especially with the great developments in the field of technology and piracy, and how to provide adequate protection for their computerized accounting system, and solutions must be found. appropriate by formulating the following question: Are the cyber security requirements necessary to protect accounting information systems in economic units available?

2-1: The importance of research

The importance of the current study arises from the necessity of exploring the importance and benefits of adopting a cyber-security system in economic units, in addition to analyzing the challenges that may face the process of implementing it, and how to overcome these challenges and make the most of advanced technologies in the context of accounting work in order to build a strong and reliable security system to protect... Financial and accounting information, ensuring legal compliance, maintaining the reputation of the economic unit and improving work efficiency, which makes it of great importance to other institutions in all sectors, as maintaining its reputation in light of increasing threats is crucial to gaining the trust of customers and



users. When economic units fail to protection Customer data and financial information, this negatively affects their reputation and financial health, as economic units that take strong measures to protect their information contribute to creating a safer and more confident environment for individuals and companies that deal with them, and promoting economic development and sustainability, as investment in the field of cyber security is one of the The main factors for economic development and sustainability, which contributes to enhancing confidence in the market and promoting economic growth, which requires evaluating cyber security requirements for accounting information systems and its wide-ranging impacts related to financial, legal, reputational, operational efficiency, and economic development issues, which supports the accounting literature in this regard. The track.

3-1 Research objectives

The research aims to achieve the following- :

1. Understanding cyber security practices and evaluating the requirements for achieving it, and the seriousness of this field's threats to accounting information systems in economic units.
2. Analyzing the role of the cyber security system and the degree of its impact on the effectiveness of computerized accounting information systems in economic units.

4-1 Research hypothesis

In this regard, and in light of the problem, importance and goal of the research, and for the purpose of achieving the goals it seeks to achieve, the two researchers determined two hypotheses for the current study:



- The first hypothesis: “There is a significant relationship between cyber security and enhancing accounting information systems”.
- The second hypothesis was: “There is a significant effect of cyber security in strengthening accounting information systems”.

5-1: Literature Review

The field of cyber security is one of the important fields in the business world and at the level of individuals around the world. In this regard, a large amount of literary work has been completed in several aspects, and our focus was on a sample of studies that provide a comprehensive and detailed overview of the evaluation of cyber security requirements in accounting information systems. It contributes to identifying gaps and providing recommendations to enhance security

The researchers Johnson (2014) and Michael (2017) ,focused on the impact of information security risks on the company’s reputation in the long term. The study shows that companies’ exposure to security violations may lead to deterioration in their reputation in the market, which affects relationships with customers and companies, and provides a deep understanding. For the challenges and opportunities related to information security in the business context, the two researchers highlighted the importance of managing information security risks and its impact on the performance and value of the company.

Ali's (2016) study discussed in depth detail to address the challenges and opportunities related to securing accounting information systems in small and medium-sized companies and to provide action plans to assess the need



for improvement and development in this vital aspect of information security. This study aimed to explore and evaluate how cyber threats affect the security of accounting information, and how the types of potential threats are analyzed. And how it affects the integrity of accounting information, which helps determine the security strategies necessary to enhance protection.

Smith's (2017) study dealt with assessing cyber risks in accounting information systems using an experimental approach to analyze security vulnerabilities and how to confront cyber threats. The study aimed to understand the factors that affect the security of accounting information and estimate the basic needs to ensure adequate protection of this information. Many factors are analyzed, such as Security threats, security defenses, security policies, encryption and identity management techniques, and other basic aspects of cyber security,

The researchers Abdullah (2018), Muhammad (2019), and Khalid (2022) discussed the analysis of gaps in the security of accounting information: an evaluation study for the retail sector. This study provides a comprehensive analysis of the gaps in the security of accounting information systems in the retail sector, and the weak points and challenges facing security are identified. Information in this sector, enabling companies to take corrective action and enhance protection.

While researchers Doe (2019) & Jan (2021) presented a framework for assessing security risks in institutional cloud computing systems, it includes analyzing the security vulnerabilities of the cloud infrastructure, estimating their impact on the overall security of the system, analyzing the risks of



cyber-attacks on financial and accounting information, infrastructure, and vitality, and developing appropriate response strategies. She has.

Brown (2020) provided a critical review of the security risks of information systems in e-commerce applications, and the main threats facing e-commerce sites and their impact on information integrity and privacy are analyses, which helps in developing appropriate protection strategies.

David (2020) focused on the impact of adopting technological improvements such as cloud computing on accounting information systems, and a case study was presented for small and medium-sized companies to understand how the use of cloud technology affects accounting processes and financial reports.

While Emily's study (2023) discussed the role of block chain technology in enhancing the security of accounting information systems, the focus is on how to use encryption and decentralized distribution to ensure the integrity of financial data and achieve transparency in accounting operations, and thus the reliability of the data in the light of which financial reports are prepared.

Khan's (2018) study reviewed the impact of accounting information systems on the performance of companies in emerging economies. This study aimed to analyze how to improve accounting processes and decision-making thanks to the use of information technologies, and to provide evidence supporting this impact on financial and administrative decisions

The researchers White (2019) & Miller (2020) addressed the ethical aspects that must be taken into account in the processes of implementing and operating accounting information systems. The researchers reviewed the potential ethical challenges and how to adapt implementation strategies to



ensure ethical compliance. They provided additional analyzes and diversity in the methods used and the aspects that are focused on. In studying the challenges facing the implementation of accounting information systems.

6-1:Contribution of the current research

In light of the rapid developments of information and communications technology, accounting information systems need high levels of cyber security to ensure the integrity of financial data and sensitive information, which requires a careful assessment of cyber security requirements, and determining appropriate strategies to enhance protection. Accounting literature and society are among the most important sources that should be taken. Taking into account while evaluating cyber security requirements, accounting literature provides guidance on how to effectively secure financial data and accounting reports, while societal trends reflect the expectations of the public and parties concerned with the company regarding the integrity of its information, and through a literature review Accounting and studying society's trends, researchers and practitioners in the field of accounting and information technology can determine the context in which the assessment of cyber security requirements is compatible. When this assessment is guided based on best practices and new trends, the cyber security of accounting information systems can be improved, which contributes to enhancing trust between parties. Concerned and supporting the sustainability of financial and accounting operations. In conclusion, we can say that evaluating cyber security requirements for accounting information systems is considered a multidimensional challenge that requires taking into



account accounting literature and community trends to ensure the application of effective and appropriate security measures .

(The second topic)

A theoretical introduction to cyber security requirements for accounting systems in economic units

1-2 Cyber security

Cyber security is vital in our current era, which relies heavily on technology and electronic communications. It affects all aspects of modern life, from maintaining the privacy of personal and financial data, to protecting vital infrastructure such as energy, industry, and communications facilities. It is considered a comprehensive concept that refers to efforts and the measures taken to protect electronic systems and information from cyber threats and attacks. Cyber security is related to protecting sensitive data, computer systems, electronic networks, software, devices, and even individuals from cyber threats. The importance of this field has contributed to the emergence of new concepts that are compatible with the concept of cyber security, as researchers have explained it as “the field that relates to procedures and standards.” The protection that must be taken to confront threats and limit their effects” Nisrina & Edward: 2016, and considering that cyber security It is an issue that has priorities, so many countries have focused on it, especially after electronic wars, with the presence of a policy and coordination at a high level of accuracy. Also, the concept of cyber security indicates that it is “a matrix of organizational, technical and procedural tools, and practices aimed at protecting computers, networks and the data inside them.” From hacking, damage, change, or disruption of access to information or services, and it is



a global trend, whether at the level of countries or even government organizations or companies. ”Canelon, et.al:2020.

2-1-2 Cybersecurity patterns

The term cyber security can be applied to a wide range of contexts, from the business sector to mobile computing, and in general it can be divided into several common categories, namely network security: which focuses on protecting computer networks from unauthorized access and cyber-attacks, whether from Targeted attackers or malicious software, application security: It aims to protect programs and devices from threats, as it seeks to prevent hacked applications from accessing protected data, and the concept of security must be focused on from the design stage of the program or device, information security: It is concerned with the protection, integrity and privacy of data, whether during storage or during movement and exchange, and it includes access management, data encryption and other means to ensure its integrity. Also, operational security: relates to the processes and decisions that deal with data assets and ensure their protection during system operations, and this includes access and verification policies. Identity and system control. These categories show the multiple challenges facing the field of cyber security and the necessity of adopting multiple strategies to protect against various threats. Mijwil&et.al:2023, Mijwil&Salem:2023.

3-1-2 Cybersecurity elements

In order for the goal of cyber security to be achieved, a group of interconnected elements must be present to activate this field, and among the most important elements of cyber security are the following: Valverde: 2015



&Wolden: The issue of information security and protection is considered one of the most important issues of the modern era, as the success of any economic unit has become largely dependent on the information it possesses. At the same time, many information, systems and infrastructure connected to networks are vulnerable from time to time, as they face different types of threats. Electronic breaches. It is also exposed to criminal activities (hackers) that disrupt its services and destroy its property. Hacker attacks vary from one party to another, from one place to another, and from time to time, using new and advanced hacking tools and mechanisms all the time.

-Technology: Technology and technology constitute an extremely important role in the lives of individuals and organizations, as it provides them with superior protection against cyber-attacks, and includes protecting devices in various forms of smart and computer systems and networks by relying on firewalls, the use of malware, anti-virus software, and others

-People: It is necessary for people who use data and systems in an establishment to use basic data protection principles, such as specifying a strong password and avoiding opening external links and attachments via e-mail, in addition to making backup copies of data.

-Activities and operations: People and technologies are employed to carry out many operations and activities and manage them in line with applying the foundations of cyber security and responding to its attacks efficiently.

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4-1-2: Evaluation of cyber security requirements

The process of evaluating cyber security requirements is an important step in the business world to ensure the integrity of data and information in the modern era of technology and to enhance the awareness of working individuals about modern systems by keeping pace with potential events and risks fraught with them. It is carried out through four steps represented as follows: **Badara, Saidn: 2013:-**

1. Threat and vulnerability analysis: Identify and evaluate potential cyber threats and weaknesses in infrastructure, technical infrastructure and security policies
2. Security asset assessment: Identifying and classifying sensitive assets, data and information that must be protected.
3. Review policies and procedures: Review current security policies and procedures and analyze their effectiveness. and their relevance to current threats.
4. Security techniques and tools: Evaluating the techniques and tools used to enhance cyber security, such as intrusion detection systems, protection devices, security programs, training employees, and evaluating their level of awareness and training on security behaviors and sound practices.



5-1-2: Reasons for evaluating cyber security requirements

With technological development, the complexity and seriousness of cyber threats are growing, which makes cyber security assessment vital in order to identify potential new threats and deal with them. The reasons for evaluating cyber security requirements can be summarized as follows: **Ciolan: 2010.**

-Enhancing security awareness: Evaluating security requirements contributes to promoting continuous improvement of security practices by increasing security awareness among employees and officials.

-Legislation: Current laws and regulations require cyber security to be taken into account, so the assessment contributes to compliance with these legislation and regulations.

-Data and information protection: The assessment contributes to identifying security gaps and strengthening preventive and defensive measures to protect financial and non-financial data and information from hacking and exploitation.

From the above, the two researchers believe that the evaluation of cyber security requirements is considered an integrated and continuous process aimed at protecting systems and data from cyber threats. The evaluation must be comprehensive and multidimensional to ensure the effectiveness of security measures and maintain the integrity of financial and non-financial information in light of the evolving threats in the world of modern technology

2-:2 Computerized Accounting Information Systems (CAIS)

In the modern era, economic units are witnessing a rapid development in adopting technology and using it in various aspects of their work, and the



accounting sector is no different from this development. Computerized accounting information systems have become a vital tool for managing accounting and financial operations effectively and accurately. Computerized accounting information systems are a set of techniques and tools designed to facilitate the collection of... Financial Statements

And accounting, storage, processing and analysis in an automated manner. These systems include components such as databases, accounting software, customer relationship management systems and other applications that work together to provide accurate and useful accounting information. Computerized accounting systems deal with financial and non-financial transactions that directly affect financial transactions. When making changes to customer data **Abu-Musa:2005**, adopting computerized accounting information systems is a necessity.

It is urgent for economic units, as it provides many tangible and intangible benefits. Through these systems, financial institutions can improve the efficiency of their accounting operations, reduce human errors, improve data quality, save time and effort in preparing financial reports, and make strategic decisions based on accurate and effective information **Olatunj&Olusegun:2021** In this regard, the concept of accounting information systems indicates that it is “an automated process for simplifying the flow of financial information internally and externally”.

“And enabling accounting tasks such as recording accounting data in the database and creating reports” **Chinyere: 2017**, and others described it as “a financial system that uses specialized automated machines called calculators and the computer system to collect and analyze data, interpret and present



information to its user for decision-making” **Adeliza: 2017**, also known as information systems. Computerized accounting is defined as “a system that helps process accounting data to enable us to obtain the information that user need.” **Appiah: 2014**.

2-2-1: Structural characteristics of computerized accounting information systems

Computerized accounting systems are an integration of various components and subsystems. These components constitute the architectural framework of the system that determines its structural characteristics and the software structure, which in turn determines the logical organization of the program to enhance the system’s performance and reliability **Itang: 2020**. Accounting information systems consist of integrated components such as hardware, software, brain tools, and rules. Data, network technologies and processes. Components of accounting systems also include inputs and processes and outputs, storage, and internal controls **Hurt: 2013**, and one of the important features of computerized accounting systems is the integration of operations, as this is represented by the system’s ability to coordinate its various parts to perform several operations at the same time. This means that accounting information systems consist of integrated components with interconnected functions, The quality of the output depends on the inputs to the system, and this is what helps in conceptualizing the structural characteristics of computerized accounting information systems, in terms of the internal control component, the automated data processing component, the relational database component, the automated



reporting component, and enhancing technologies **Anggraeni: 2016**, as follows- :

1- Internal control component: Computerized accounting information systems must possess inherent internal control functions that can be implemented during the input, processing, storage, and output processes of the accounting system, as the primary goal of internal controls is to ensure the effectiveness of operations, prepare good quality reports on operations, and achieve the required compliance. For policies, regulations and laws, therefore, the internal controls element is a very important structural feature of the computerized accounting system, as it enhances the integrity and effectiveness of the accounting process within the system and the performance of the entire system **Fardinal: 2013**.

2- Automated data processing component: Computerized accounting systems rely on software packages based on accounting principles and procedures, in addition to business logic that enables them to perform accounting tasks and operations automatically. The subsystem responsible for this function is referred to as the “automated data processing component.” This component is distinguished With its ability to seamlessly process and comprehensively process accounting systems, verify the validity of data and subsequent transactions, and calculate balances, and reconcile them without human intervention, the automated ability of a computerized accounting system makes it possible to carry out tasks such as capturing financial data, posting transactions, and balancing accounts without human intervention, quickly and accurately. Above, therefore, the element of automated data processing is a



fundamental structural feature of computerized accounting systems
Intuit Inc.: 2018.

3- The relational database component: The relational database component is one of the subsystems that accounting information systems deal with. It is the subsystem responsible for storing, maintaining, and using data in the computerized accounting system. RDBMS deal with storing, maintaining, and using data and information in automated environment. Every computerized accounting system features a relational database management subsystem that maintains the relationship between the various records and files stored in the system, thus ensuring data independence, integrity, security, scalability, and simultaneous access to the data in the system. If the RDBMS is not efficient, the functions of data processing and preparation Reports in the system will be ineffective, hindering the optimal functioning of the entire accounting system.
Ramakrishnan & Agung: 2015.

4- Automated reporting component: The computerized accounting system is characterized by the ability to automatically generate outputs in the form of reports based on specific parameters and reporting options. Intuit:2018 This automated reporting subsystem works in coordination with the relational database management subsystem to retrieve and use data and information related to each report. Therefore, the automated reporting element is a very important structural feature of the computerized accounting system, as its efficiency would jeopardize the strategic goal of the system, which is to provide useful information for decision-making to various stakeholders **Sage Software: 2020.**



5- Enhancing technologies: The structural components and the entire system depend on some other technological tools for effective performance. These secondary technological tools depend on the accounting system to work effectively and are referred to as enhanced technologies. Improvement technologies are represented by many computers, firmware, applications and accessories such as network infrastructure, Web and cloud technologies, printing and imaging equipment
Gupta&et.al:2017,Amidu:2011.

2-2-2:Challenges faced by computerized accounting information systems

The speed of technological development is one of the important challenges that requires computerized accounting information systems to keep pace with continuous adaptation and updating to maintain their effectiveness, as cyber threats are constantly increasing, making maintaining the security of data and information necessary, in order for them to be permanently available and reliable to ensure the continuity of business operations and ensure Data integrity and consistency also requires accounting information systems to adhere to financial regulations and controls as they change Financial legislation. Accounting systems may also face challenges represented by the cost of developing and maintaining them, especially with the ongoing technological developments and the need to update equipment and programs regularly in order to achieve operational continuity, communication and interaction with other systems within the organization or with external customers and partners.



3-2 The impact of cyber security requirements on accounting information systems in economic units

The cyber security assessment leads to identifying and implementing security measures to protect the financial and sensitive data stored in the system. This helps reduce the risks of hacks and leaks of financial data that can lead to significant financial losses that could have a negative impact on the reputation of the economic unit. Also, the cyber security assessment constitutes an opportunity for the units. economic to comply with legislation and regulations related to data protection and privacy and enhance trust and reliability with strong security measures that increase units the economy increases the reliability of its accounting systems, which leads to increased confidence among customers, business partners and investors and reduces interruption in operations by reducing the risks of cyber-attacks and penetrations. Also, assessing cyber security requirements can maintain business continuity and reduce productivity losses and costs and thus enhance the sustainability and stability of the units. Economic by providing a safe and reliable accounting environment that contributes to achieving its financial and operational objectives effectively. The following figure illustrates this:

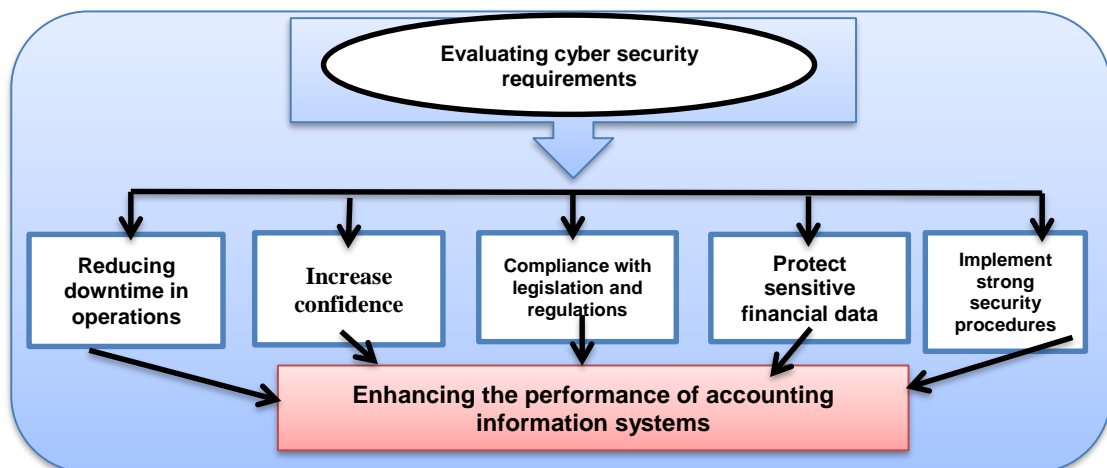




Figure No. (1) shows how the assessment of cyber security requirements is reflected in accounting information systems

Source: Figure (1) prepared by the two researchers

Evaluating cybersecurity requirements leads to strong security measures that protect data and enhance compliance with legislation and regulations, which increases confidence, reduces downtime in operations, and enhances sustainability and stability of economic units .

The third Researcher

The extent of the impact of cyber security on accounting systems in economic units /a survey of a sample of companies contributing to the local environment

In this study, the information resulting from the analysis of the data collected according to the questionnaire form that was designed in light of the five-point Liked scale will be interpreted, and using statistical analysis and moral interpretation techniques to understand the main trends and problems and to prove the following two hypotheses:-

Research hypotheses: The research is based on two main hypotheses:

- 1- There is a significant correlation between cyber security and enhancing accounting information systems.
- 2- There is a significant impact of cyber security in strengthening accounting information systems.

First: data collection methods

In order to achieve the objectives of the research and test its hypotheses, it was necessary to choose the appropriate community for the practical application of the research, by relying on communication companies in the



local environment of the research community. The research sample was chosen randomly and systematically, as the research sample consisted of (92) forms that were distributed. Electronically via a dedicated link based on Google Forms. Table (1) shows the demographic characteristics of the individuals in the research sample.

Table (1) Demographic characteristics			
percentage	the number	Answer alternatives	Variables
%16.30	15	Less than 30 years old	the age
%41.30	38	From 30 to 40 years	
%29.35	27	From 41 to 50 years old	
%13.04	12	More than 51 years old	
%100	92	the total	
%15.22	14	diploma	Certificate
%54.35	50	Bachelor's	
%17.39	16	Master's	
%13.04	12	Ph.D	
%100	92	the total	
%8.70	8	Sperani security official	Function
%21.05	20	Electronic information system manager	
%22.10	21	Electronic information system operator	
%46.74	43	Accountant in a company equipped with an electronic information system	
%100	92	the total	
%9.78	9	Less than 5 years	Scientific experience in the field of the profession
%26.09	24	From 5 years - to 10 years	
%32.61	30	From 11 years - to 15 years	
%17.39	16	From 16 years - to 20 years	
%14.13	13	From 21 years and over	
%100	92	the total	

Source: Table No. (1) prepared by the two researchers based on the outputs of the (7spss.v2) program.



a. Age: As for the age group, the statistical results showed that a percentage of (29.35% to 41.30%) of the sample's members were aged within the range (from 30 to 40) and (41 to 50), as their total number reached (65) individuals, and this represented The categories had the highest percentages, which indicates the heavy reliance on the middle category in managing functional businesses, while the categories (less than 30 years) and the category (more than 51 years) recorded total participation rates amounting to (13.04% to 16.30%), and the number of individuals reached (35). An individual within the scope of these categories.

a. Certificate: The research sample shows that most of the members of the research sample hold a bachelor's degree (50) individuals, at a rate of (54.35%), then the other percentages were distributed in varying percentages between (13.04% to 17.39%) of those who hold a master's degree (16) individuals and those who hold Diploma (14) individuals, and finally those who hold a doctorate (12) individuals.

b. Job: It appears to us, through the demographic distribution of the study sample for job variables, that the category (accountant in a company equipped with an electronic information system) recorded the highest percentage (46.74%) with a frequency of (43) individuals participating in the questionnaire, and the other categories were distributed as (system manager Electronic Information) and (Electronic Information System Operator) with percentages reaching (21.05% to 22.10%) and a total frequency of (41) individuals. Finally, the category (Cybernetic Security Official) recorded a frequency of (8) and a participation rate of (8.70%)



c. Scientific experience in the field of the profession: The statistical results indicate that the largest percentage was for the categories (from 11 years - to 15 years) and the category (from 5 years - to 10 years), where the participation rate was recorded (32.61%) and (26.09%), with a total frequency of (54) individuals. These percentages indicate that the study sample has an area of expertise in the field of the profession, while the other categories were distributed in varying percentages between (9.78% to 17.39%).)

Second: Testing the normal distribution of the research variables

To answer the research questions and hypotheses, it is necessary to ensure that the normal distribution is tested before starting to review and analyze the results of the study. It is necessary to first ensure that the data collected from the research sample follows a normal distribution according to the Kolmogorov-Smirnov Test, as shown in the following table.

Table (2) Results of the normal distribution test

Significance of the test	Kolmogorov-Smirnov			Type and parameters of the test Variables
	Moral value	Sample volume	Test parameter	
moral	0.220	92	0.160	Cyber security
moral	0.134	92	0.130	Accounting Information Systems

Source: Table No. (2) prepared by the two researchers based on the outputs of the program (spss.v27)

It is clear that the value of the significance level of the Kolmogorov-Smirnov test for the variables was higher than (5%). This indicates that the data is normally distributed, and thus the results obtained from the sample can be generalized.



Third: Stability test:

This test is considered one of the basic conditions in adopting the research tool, and important in adopting the tool (questionnaire), as reliability indicates the extent of internal consistency of the scale for the main research “variables”, and the Cronbach’s alpha coefficient is one of the most widely used measures in testing the research tool, as shown in The following table-:

Table (3): Reliability test

Significance of the test	Cronbach's alpha		Type and parameters of the test Variables
	Number of paragraph	Test parameter	
Moral stability	10	0.854	Cyber security
Moral stability	10	0.863	Accounting Information Systems

Source: Table No. (3) prepared by the two researchers based on the outputs of the (27spss.v) program.

Table (3) shows that Cronbach's alpha values ranged between (0.854 - 0.863), which is greater than (70%), and this indicates that the research variables have a good level of stability.

Fourth: Results of descriptive statistics:

The process of presenting and discussing the results requires the use of different tools and methods, to facilitate the solution to the problem of the study. We will try to rely on the data obtained, summarize it in tables, analyze and interpret it to facilitate the process of reading the results obtained accurately.

1- 1 Cyber security

Table (4) Descriptive indicators of the variable (cybersecurity)

The severity	standard deviation	Arithmetic mean	Questions
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of the answer			
81.80%	0.709	4.09	The company is exposed to the risk of malware, which can lead to the loss of sensitive data and disrupt its operations.
78.40%	0.768	3.92	The company issues instructions on how to manage cyber risks, and sets policies to develop the cyber security system.
81.80%	0.594	4.09	The company is increasing its focus on enhancing cyber security awareness among its employees by introducing and training them on malware and how to deal with it.
80.40%	0.654	4.02	The company relies on well-known international standards and frameworks for risk management to hedge against cyber threats and breaches
84.20%	0.627	4.21	The company uses data leak prevention systems to identify and prevent any attempts to transfer or copy sensitive data outside the secure network.
81.00%	0.614	4.05	Implement technological measures such as firewall and anti-virus software to ensure cyber security
82.40%	0.742	4.12	Periodic assessments of cybersecurity weaknesses are conducted and the necessary measures are taken to correct them.
75.60%	0.587	3.78	The company uses security information and event logging systems to record all security events and information about users and systems and analyze them to identify any threat or danger.
83.00%	0.581	4.15	The company uses a backup storage system as an important part of its cyber security measures to protect sensitive data and financial information from loss, damage or cyber breach.
81.40%	0.483	4.07	The presence of a specialized team to manage, monitor and analyze electronic records for early detection of any security threats
81.00%	0.635	4.05	Total

Source: Table No. (4) prepared by the two researchers based on the outputs of the program (spss.v27)



Through Table 4, we notice that the general trend for the paragraphs of the variable (cybersecurity) was towards the level of agreement, as the arithmetic mean range for all paragraphs within the domain reached (3.78 to 4.21), which indicates that there is relative agreement whose intensity within the domain reached (75.60% to 84.20). %), which supports the level of agreement of the study sample, as the variable (cybersecurity) recorded an overall arithmetic average of (4.05) with a standard deviation of (0.635) and a strong agreement of (81%), these percentages indicate the importance of protecting critical infrastructure and protecting sensitive data, computer systems, electronic networks, and even individuals from cyber threats, as cybersecurity is an important step in the business world to ensure data integrity. Information in the modern era of technology and enhancing the awareness of working individuals about modern systems. As for the highest and lowest agreement rates for the items in the cybersecurity variable, we explain the following:

- a. The fifth paragraph containing (the company uses data leakage prevention systems to identify and prevent any attempts to transfer or copy sensitive data outside the secure network) recorded the highest amount of agreement with an arithmetic mean of (4.21) and a standard deviation of (0.627), where the intensity of agreement in the content of the phrase reached (84.20). %). These statistics indicate the importance and role of data leakage prevention systems to identify and prevent any attempts to transfer or copy sensitive data outside the secure network.
- b. The eighth paragraph, which includes (the company uses security information and event recording systems to record all security events and



information about users and systems and analyze them to determine any threat or danger) recorded the lowest rate of agreement with an arithmetic mean of (3.78) and a standard deviation of (0.587), as the intensity of agreement reached in the content of the phrase. (75.60%) These percentages indicate the importance of systems for recording security information and events to record all security events and information about users and systems and analyze them to determine any threat or danger.

2- Accounting information systems

Table (5)
Ratios, frequencies, means, and standard deviations (accounting information systems)

The severity of the answer	standard deviation	Arithmetic mean	Questions
78.40%	0.677	3.92	The company uses accounting information systems to provide accurate and reliable reports to management through which financial and administrative operations can be effectively tracked. 1
80.80%	0.806	4.04	The company is interested in developing and customizing accounting information systems to fully meet the needs of the economic unit. 2
80.40%	0.467	4.02	The company makes it a priority to keep pace with technological developments in modernizing its cybersecurity, which will enhance the effectiveness and efficiency of its accounting information system. 3
82.40%	0.604	4.12	The company uses the necessary training for employees to use accounting information systems efficiently. 4
80.60%	0.558	4.03	The company is preparing a plan and strategy to manage cyber risks and threats, which includes defining tasks and increasing the speed of responding to cyber-attacks and recovering from them in record time, which enhances the outputs of accounting information systems. 5



82.60%	0.685	4.13	Information loses many of its characteristics when it is generated in the electronic system as a result of many threats to which these systems are exposed, including hacking, malicious programs, and others.	5
81.40%	0.641	4.07	The company is often exposed to unauthorized access to the electronic system and accounting databases from professional external parties or hackers.	7
77.80%	0.565	3.89	The company's management realizes that information security risks can undermine users' confidence in the information produced and provided by the system.	3
81.60%	0.641	4.08	The company has quick alternative solutions for electronic systems in the event of a partial or complete failure of the electronic systems so that it does not affect the ability to provide users with the required information.	9
79.40%	0.508	3.97	The company's management submits a report that includes important information about cyber risks, as one of the information that is disclosed with its financial reports, which will enhance the symmetry of information between users and management.	9
80.54%	0.615	4.027	Total	

Source: Table No. (5) prepared by the two researchers based on the outputs of (spss.v27)

Through Table (5), we notice that the general trend for the paragraphs of the variable accounting information systems was towards the level of agreement, as the range of the arithmetic mean for all paragraphs within the range reached (3.92 to 4.13), which indicates that there is a relative agreement that reached a degree of intensity within the range (78.40% to 82.60%). Which supports the level of agreement of the study sample, as the variable accounting information systems recorded an overall arithmetic mean of (4.027), a standard deviation of (0.615), and a strong agreement of (80.54%).



These percentages indicate the importance of computerized accounting information systems as a vital tool for managing operations.

And finance effectively and accurately, as computerized accounting information systems are a set of techniques and tools designed to facilitate the collection, storage, processing and analysis of financial and accounting data in an automated manner. As for the highest and lowest agreement rate for the variable items (accounting information systems), we explain the following:

a. The five paragraph, which includes (information loses many of its characteristics when it is generated in the electronic system as a result of many threats to which these systems are exposed, including hacks, malicious programs, etc.) recorded the highest amount of agreement, with an arithmetic mean of (4.13) and a standard deviation It reached (0.685), where the intensity of agreement in the content of the statement reached (82.60%). These statistics indicate the importance of the characteristics of information, as it loses many of its characteristics when it is generated in the electronic system as a result of many threats to which these systems are exposed, including hacks, malicious programs, and others.

b. The eight paragraph containing (the company uses accounting information systems to provide accurate and reliable reports to management through which financial and administrative operations can be effectively tracked) recorded the lowest rate of agreement with an arithmetic mean of (3.92) and a standard deviation of (0.677), as the intensity of agreement in the content of the phrase reached (78.4). %) These percentages indicate the importance of providing accurate and reliable reports to management



through which financial and administrative operations can be tracked effectively

Second: Testing and analyzing the correlation between the research variables:

To determine the type of relationships between the research variables through the statistical program (SPSS.27) and through its statistical outputs in testing the significance of the association between the main variables of the research. Table (6) shows the relationship test.

Moral level	Accounting Information Systems	Variables
less than 5%	**0.758	Cyber security

Source: Table No. (6) prepared by the two researchers based on the outputs of (spss.v27)

We note from the previous table that the relationship between cybersecurity and accounting information systems is a very strong, positive relationship with a positive trend, as the correlation coefficient was recorded (0.758**) at a significant level (less than 5%) and with confidence limits (95%), where it indicates This relationship is that cybersecurity provides guidance on how to effectively secure financial data and accounting reports, as it contributes to enhancing trust between the parties concerned and supporting the sustainability of financial and accounting operations.

Third: Testing and analyzing the influence relationship between the main research variables:



This paragraph deals with testing the influence relationship according to the simple linear regression equation for (cybersecurity) in (accounting information systems), and this is explained in the following table.

Statistical indicators	Statistical parameters	
0.574	Coefficient of determination (R ²)	
1.017	Constant term(a)	
0.761	β (direct effect)	
92	Degree of freedom	
0.06	Standard error	
0.000	Moral Sig	
160.017	Calculated	value (f)
3.83	Tabulation	
12.650	Calculated	value (t)
1.984	Tabulation	
Y= 1.017 +0 .761X		

Source: Table No. (7) prepared by the two researchers based on the outputs of (spss.v27)

Table (7) shows that cybersecurity has a significant impact on accounting information systems, as we found that the significance of the calculated (F) factor is greater than the tabulated value at a significant level (5%), and the explanatory power of the model (cybersecurity) was recorded (0.574).) According to the coefficient of determination, as this value indicates the amount of what is explained by the cybersecurity variable in accounting information systems, at a rate of (57.4%), and the rest is attributed to the amount of differences from other variables that were not included in the research model. The results of the impact test also showed that the direct impact parameter (β) is equal to (0.761). This shows the amount of impact that cybersecurity has on accounting information systems. This proves that the impact relationship has been achieved according to the linear regression



equation, which shows the amount of change that cybersecurity brings about in accounting information systems. The significance of the relationship refers to the value of the t-test, which recorded (12.65), as it is greater than its tabular value (1.984) at the level of (5%)

Conclusions and recommendations

Conclusions:

- 1- The importance of cybersecurity for economic units is evident in the current digital era, as it contributes to securing financial information and ensuring its protection and electronic safety, which contributes to achieving trust and stability in the digital environment.
- 2- The weak role of economic units in developing accounting information systems and their role in providing accurate and reliable information to management, in order to make effective decisions and deal with cyber challenges quickly and effectively, which enhances work efficiency and responds to immediate needs.

Recommendations:

- 1- The economic unit must carefully analyze security accounting necessities, such as the need to protect financial data and sensitive information, document these necessities, and direct investments and efforts towards implementing technical solutions and administrative procedures that effectively meet security and accounting requirements.
- 2- The economic unit should estimate the costs of compliance with cybersecurity requirements and security audits related to accounting systems. This includes estimating the costs of implementing additional



security measures, the potential costs of compensation for data breaches, and the costs related to cybersecurity audits and reports. Based on this assessment, resources can be allocated Finance effectively implements the necessary security measures and ensures that the economic unit adheres to relevant standards and legislation and the necessity of disclosing in its annual reports the cyber risks to which it is exposed

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