

## The role of cyber security in the efficiency of financial reports in Iraqi universities: A field study on workers at the AL-Furat AL-Awsat Technical University

By

**Qassim Ali Omran Al Bayati**

Technical Institute of AL-Mussaib, AL-Furat AL-Awsat Technical University (ATU), Iraq

Email: [Qsimail64@gmail.com](mailto:Qsimail64@gmail.com)

### Abstract

With the large and rapid technical developments in the technical field, and the increasing reliance on the Internet in the field of administrative work in its various departments, the interest in cyber security has increased in various companies, especially in universities, for preserving data and information, especially financial data. Hence, the importance of this study, which aimed to get acquainted with the concept of cyber-security and its basic dimensions, illustrating the basic concepts of financial reports and their components and the factors affecting them, studying the role of cyber security in enhancing the efficiency of financial reports at the AL-Furat AL-Awsat Technical University. However, the descriptive analytical method was used in the study. Also, a questionnaire was also designed and distributed to an accessible sample of administrative workers at the AL-Furat AL-Awsat Technical University. The data was entered into the SPSS program, and after analyzing the questionnaire and studying the relationship between the variables, the study reached to the following results: There is a statistically significant effect between cyber security and enhancing the efficiency of financial reports at the AL-Furat AL-Awsat Technical University from according to the study sample. There is a statistically significant effect among (cyber security governance, enhancing cyber security, cyber security resilience, external cyber security, and cyber security for control systems) in enhancing the efficiency of financial reports at the AL-Furat AL-Awsat Technical University according to the study sample.

**Keywords:** cyber security, financial reports, governance, efficiency, information.

### Introduction

Electronic technology has become an important part of our daily life, as we use it as people, employees and business owners. It uses the network by collecting, processing, storing, sharing large amounts of digital information and collecting and sharing more digital information. Therefore, protecting this information has become an important topic at the level of individuals, companies and countries. However, the term cyber security has begun to appear and be dealt with strongly in the last decade, because of its importance and impact on the economic and social aspects...etc.

Financial reports are the final product of accounting science in organizations, so they must be accurate and characterized by high quality and efficiency. Many relevant organizations work to identify risks that affect the efficiency of preparing their financial reports and work to solve them. The most important of these risks in our time, in light of the spread of technology and the connection of most computers with it, are cyber security risks. Consequently, most organizations pay great attention to cyber security because of its great importance in ensuring that financial data is not tampered with or deleted, for example.

### Study Methodology

#### *Study Problem*

Accounting work is an important part of the work of all organizations, including

universities, and because accounting information and financial reports have great importance in clarifying the financial situation of universities, most departments focused on protecting accounting information in different ways. These ways including traditional and modern technical methods. Because of the technical development around the world and the resort of most organizations to disclose their accounting data and financial reports electronically, this development has many risks, the most important of which is cyber security risk that affect financial reports and their degree of efficiency. Thus, the main problem of the study can be formulated by the following question: Is there a role for cyber security in enhancing the efficiency of financial reports at the AL-Furat Al-Awsat Technical University. The following sub-questions are derived from it:

- 1) Is there any role for cyber security governance in enhancing the efficiency of financial reports in the University
- 2) Is there any role for enhancing cyber security in improving the financial reports efficiency in the University?
- 3) Is there any role for the endurance of cyber security in enhancing the efficiency of financial reports in the University?
- 4) Is there any role for external cyber security in enhancing the efficiency of financial reporting in the University?
- 5) Is there any role for cyber security of control systems in enhancing the efficiency of financial reporting in the University?

***Second: Objectives of the study***

- 1) The objectives of the study can be defined as follows:
- 2) Identifying the concept of cyber security and its basic dimensions.
- 3) Illustrating the basic concepts of financial reports, their components and the factors affecting them.
- 4) Studying the role of cyber security in enhancing the efficiency of financial reports in the University.
- 5) Reaching a set of consequences and recommendations that could contribute to improving the reality of cyber security in the University and hope to enhance the efficiency of its financial reports by connecting its role with cyber security.

***Third: The importance of the study***

The importance of the study can be determined from the scientific side, as it is one of a few studies that focused on linking information security to enhancing the efficiency of financial reports in universities. It is seldom one of the rare studies that dealt with the two variables in Iraqi universities. The practical importance of the study also lies through its focus on Iraqi universities and the way of measuring cyber security and determine its role in enhancing the efficiency of financial reports in Iraqi universities.

***Fourth: Study Methodology***

The descriptive analytical approach was used in the study, which is one of the appropriate approaches that give a clear image on the study problem, as well as it helps understand the study by clarifying and explaining the relationship among its variables.

***Fifth: The study tool***

The study tool has three parts. The first part includes the demographic information of the relevant study sample members (gender, age, educational level). The second part includes the dimensions of cyber security (governance, reinforcement, endurance, external cyber security, cyber security of control devices). The third part includes the efficiency of financial reports in Iraqi universities.

### ***Sixth: Statistical Methods***

The appropriate analysis method is mainly based on the type of data to be analyzed. The statistical package (SPSS) is used to analyze the collected data to achieve the objectives of the study and to test hypotheses. Where the following test methods were used:

- 1) Validity and reliability test of the study tool.
- 2) Pearson's correlation test between variables.
- 3) Analyzing the impact of the relationship between the independent variable and the dependent variable.

### ***Seventh: Study Limits***

The spatial limits of the study are represented by the AL-Furat Al-Awsat Technical University in Iraq including the administrative workers in the various faculties whose work is related to cyber security and accounting financial reports. On the other hand, time limits are represented in the year of 2022, which is the year of research completion and the questionnaire distribution on the study sample. The limits of the study are confined to two variables: cyber security and the efficiency of financial reports.

### ***Eighth: Study community and sample***

The study community was represented by the administrative workers in the Iraqi universities related to the subject of the study. The helpful sample was relied upon in collecting the data. A questionnaire was distributed to 60 administrative workers in the university in its various faculties, institutes and departments. Also, the data was entered into the SPSS program for analyzing it and testing hypotheses.

### ***Theoretical Aspect***

#### ***First: The concept of cyber security***

The emergence of modern technologies around the world, such as the Internet, consecutive barriers, cloud computing services, etc., has led to a great connection and communication around the world between individuals and organizations. This massive use of information technology and its connection to various administrative fields has been accompanied by an increase in electronic security risks, attacks and penetrations around the world. This, in turn, led to an increasing interest in electronic protection factors. However, the concept of cyber security arose and began to be greatly concerned with during the past decade around the world. (Lewis, 2006; Joffroy, 2020; Joffroy & Cuttier, 2021; Metcalfe, Soboroff, & Kelley, 2020)

It is necessary to review some concepts about cyber security by focusing on its definitions as follows:

"Cyber" defines: "The interconnection of information technology network infrastructures, which includes the Internet, means of communication, computers, etc. (GCCT, 2020)

***According to the US Department of the Interior, cyber security is defined as:*** "The activity or process, ability or condition by which information and communications systems can be protected and preserved from damage, modification, espionage, destruction, or unauthorized access." (Canongia et al, 2014)

***The International Communication Union defines cyber security as:*** "the set of tools, policies, security concepts, guarantees, principles, risk management approaches, procedures, trainings, the best technological practices and guarantees that can be used to protect the cyber environment of the user and the organization (Dan et al, 2014).

### *Cyber risks*

The combination between the possibility of risk and an accident occurring in the information systems networks and the effects of these risks on the work of the establishment and the expected losses of this risk. (Bouveret, 2018)

Cyber security is the ongoing effort to protect these interconnected networks and all data from unauthorized or harmful use on the individual, company, and state levels. Cyber security is seen as a part of national security in many countries because of its great risks on the economic aspects, such as manipulating the stock exchanges or the military aspects.etc. Thus, cyber security has become a matter of concern and assertion by the leaders of the great powers around the world.

### *Second: The importance of cyber security*

It is possible to identify the most important points that indicate the necessity and importance of cyber security as follows:

- 1) **Personal Importance:** In preserving personal data from use, and personal financial data (bank accounts, bank cards.etc) from theft, in addition to preserving personal life and relationships from extortion by others.
- 2) **Importance for Organizations:** All economic and social organizations, including universities, are greatly interested in cyber security in the present world. Furthermore, the interest has become greater for those organizations that have big data for their clients or students, which makes them bear a double responsibility in maintaining their data and information and those of their clients. However, the more customers there are, the greater the pressure on organizations to maintain their security and safety is. For example, cyber security in universities includes preserving their administrative, financial and organizational data and information, etc., in addition to preserving students' personal and banking data. Since there is a big amount of data, they must pay more attention to cyber security and its components.
- 3) **The national importance of countries:** Cyber security has become one of the most important points that leaders focus on to protect economic, social and military data and information, ... etc. of their countries, as well as to reduce potential risks and expected economic losses.

*(Canada's Cyber Security Strategy,2010)*

### *Third: Cyber Security Components and Dimensions*

There are many components of cyber security, and the following components can be relied on:

(Lukonga,2018) (McAfee, 2014)

- **Cyber Security Governance:** It includes the taken cyber security strategies and policies, in addition to the specialized cyber security management and its expected risks. It also includes training, auditing and evaluation programs of the work of the departments or entities which is permanently responsible for cyber security, and the adherence to local and external laws and legislation related to cyber security, in addition to clients and human resources security cyber.

- **Enhancing cyber security:** It includes the organizations' network security management, protecting data, information, systems and devices related to the Internet and means of communication. Moreover, managing login and registration identities including mobile phones, managing cyber risks, gaps and backups, testing potential penetrations and

managing ways of confronting them and reduce their risks.

- **The endurance of cyber security:** it includes the continual securing of cyber security requirements and credits, ensuring the continuity of relative procedures to cyber security, defining the plans of responding and confronting risks, and defining rapid recovery methods from cyber security risks and how to return to normal work.

- **External cyber security:** It means the external factors affecting the cyber security of organizations, where many organizations depend on external and internal parties to activate the role of cyber security and it includes the following: contracts, liabilities and responsibilities on each external party contracting with in order to protect the organization; items of information protection and confidentiality and safe deletion by the third party upon completion of use; methods of communication in case of risks; testing and evaluation of the work of third parties responsible for cyber security and their ability to face risks; ensuring that the external company's operations center is inside the country; and applying cyber security requirements in cloud computing and hosting .

- **Cyber security related to control systems:** the compliance with the appropriate partitioning when connecting the local network with the external one to reduce penetration risks. Activating event logs related to cyber security. The adherence to agreed external storage methods and systems' update and fixing methods.

#### **Fourth: The concept of efficient financial reports**

The role of financial reports is that they help departments, researchers and supervisory authorities to make the necessary decisions according to them. Financial reports are the final form of calculations in establishments. Today, most organizations resort to electronic financial reports because of their multiple features and benefits.

**Financial reports, according to the International Accounting Council, are defined as:** "a depiction in numbers and words of the results of economic activities at the end of the financial period, as they represent useful information for current and prospective investors, lenders, creditors and other external parties, who cannot directly obtain the information they need to make the necessary decisions and evaluate the managers ' performance and the establishments' board of directors in using its available resources efficiently and effectively.

(Hope et al,2011)

**Efficiency:** is defined as the optimal use of available human resources and achieving the best results at work. The efficiency of employees is measured by their ability to complete the assigned tasks in the best way. (Feng,2010)

It may be difficult to set a decisive limit between the financial statements and reports because they are both a final product of accounting related to the delivery of information to beneficiaries. It can be said that the financial reports have more detailed information than the financial statements, which makes the attention to them greater in many cases.

The efficiency of financial reports means the way in which financial reports can be obtained electronically in the best way through the optimal use of human resources working to prepare them. (Jabbarzadeh et al,2011).

The more efficient the financial reports are, the more important the element that prepares them is. Because the tendency of most companies to publish their financial reports via the Internet, in addition to the connection of most devices and internal networks to the Internet, it has become important to pay attention to cyber security in order to protect primary data and final accounting reports from penetration, theft and manipulation (Klai, 2011.)

The importance of financial reports stems from the dependence of many parties on them in evaluating the organization's performance and clarifying its status, in addition to the association of many interested individuals in obtaining financial data because of its role in forming an economic or social vision of the establishment. Therefore, these reports must be appropriate and efficient to satisfy everyone's desires. Financial reports contribute to providing management with the required vision to develop strategies and future plans. (Balakrishnanetal.2011)

#### ***Fifth: Financial Reports Parts***

The financial reports are divided in terms of the degree of liability into two parts as follows: (Ma, 2012)

***Special financial reports: They are associated with a special task, such as individual project reports.***

- ***General financial reports:*** They are prepared based on the laws and regulations of each country, such as the tax report and the issuance of shares and bonds.

The financial reports are also divided in terms of contents and volume into the following: (Beatty etal, 2010)

- ***Abbreviated reports:*** they are commonly known as abbreviated reports, and some call them budget reports. They include the basic financial statements: the financial position statement, the income statement, the retained earnings list.etc.
- ***Extended reports:*** They are those reports prepared for special purposes and include a detailed explanation. They include explanations and items that are not mentioned in the abbreviated reports.

#### ***Sixth: Cyber Security and Efficiency of Financial Reporting***

The role of cyber security in enhancing the efficiency of accounting financial reports can be determined by the following points:

(Biddle,2011) (Chen,2011)

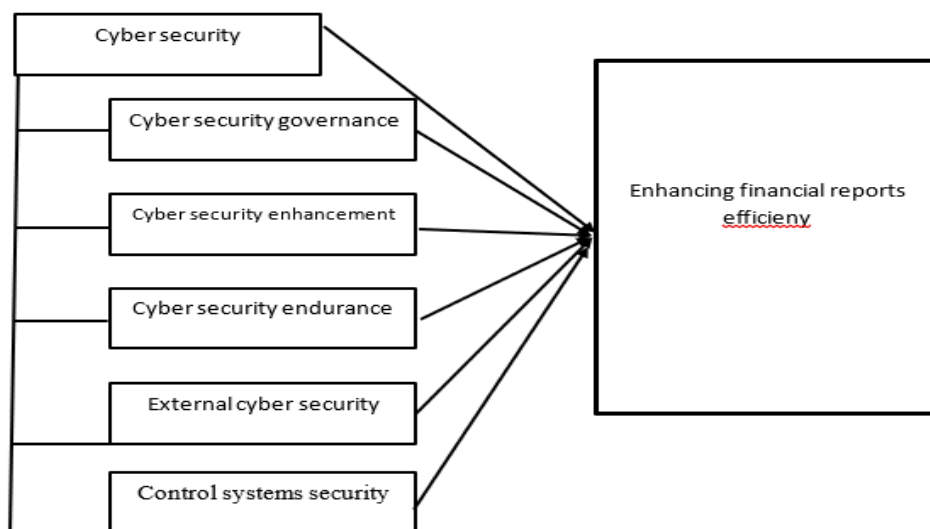
- Maintaining the organization's primary information and data from manipulation, theft and hacking.
- Protecting the devices using by accountants from penetration and hacking.
- Keeping data backups free of hacking and tampering.
- Protecting final financial reports from fraud and manipulation after publishing them electronically.
- Saving human resources working in preparing financial reports.

Thus, we can say that information security today has a clear impact on financial reports, and enhancing their efficiency by saving them, preventing data tampering and delays their issuance.etc.

#### ***Analytical framework of the study***

##### ***First: The model and hypotheses of the study***

The study model shown in Figure (1) was designed depending on the study relevant variables, literature and reference. Thus, the role of cyber security is embodied in enhancing the efficiency of financial reporting at the AL-Furat Al-Awsat Technical University. The following figure illustrates the study model:



**Figure (1): Study Model:**

**Source: the researcher's preparation**

Basing on the study model, the following hypotheses can be developed:

H1: There is no statistically significant impact between cyber security and enhancing the efficiency of financial reports at AL-Furat Al-Awsat Technical University according to the study sample.

H2: There is no statistically significant impact between cyber security governance and enhancing the efficiency of financial reports in the University according to the study sample.

H3: There is no statistically significant effect between enhancing cyber security and enhancing the efficiency of financial reports in the University according to the study sample.

H4: There is no statistically significant effect between the endurance of cyber security and the enhancement of the efficiency of financial reports in the University according to the study sample.

H5: There is no statistically significant effect between external cyber security and enhancing the efficiency of financial reports in the University according to the study sample.

H6: There is no statistically significant effect between the cyber security of control devices and the enhancement of the efficiency of financial reports in the University according to the study sample.

**Second: The validity and reliability of the study tool**

The questionnaire was designed in order to measure the study variables and dimensions and the impact between the independent and dependent variables. However, to confirm the validity of the questionnaire, the questionnaire was judged by a number of specialists. So, some questions were merged, and others were deleted before distributing the questionnaire to the study sample. The form was distributed to a (available) sample of 60 administrations in the University, and it was fully retrieved. This data was entered into the SPSS program in order to analyze the data. Moreover, the Alpha Cronbach test was conducted in order to know the degree of internal consistency and stability between the questions. The test result was as follows:

**Table (1) Measuring the internal consistency and stability of the questionnaire questions**

<b>Reliability Statistics</b>	
Cronbach's Alpha	N of Items
.945	39

Source: prepared by the researcher depending on SPSS program

This means that if the questionnaire, with its different indicators, is distributed to another sample including university employees who are not the study sample at different times, there is a 95% probability of obtaining the results that have been reached.

The fivefold Likert scale was adopted in answering the questions directed to the study sample as follows:

<b>Strongly agree</b>	<b>agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
5	4	3	2	1

The arithmetic mean of the Likert scale is  $1+2+3+4+5=15/5=3$ , which is the value by which the arithmetic mean is compared for each question.

The criteria for judging average responses according to Likert scale:

Category length = (highest response score – lowest response score)/number of response categories

Category length =  $(5-1) / 5 = 0.8$

**Accordingly, the closed tab was used, and the following fields were identified**

**Table (2) fivefold Likert Scale of answers**

<b>field</b>	<b>Degree of agreement</b>	<b>Relative importance</b>
1.8-1	Very weak	36-20
2.60-1.81	Weak	52-36.1
3.40-2.61	moderate	68-52.1
4.20-3.41	Strong	84-68.1
5-4.21	Very strong	84.1-100

Source: assembling by the researcher depending on (Asaad, 2016)

If the arithmetic mean value of the question or expression lies within the range (1-1.8), it corresponds to the "very weak" answer. While if it is within the range (1.81-2.60), it corresponds to the "weak" answer. If it is within the range (3.40-2.61) it corresponds to the "moderate" answer. If it is within the range (3.41-4.20) it corresponds to the "strong" answer. Finally, if it is within the range (4.21-5) it corresponds to the "very strong" answer.

### **Suitability of the study model: multi-Co-linearity**

Multi-Co-linearity test was conducted to show the degree of appropriateness of the independent function data of decline analysis. Pearson's correlation coefficients were used to detect the problem of multiple linear correlation for the independent sub-variables. (Asaad,2020)

**Table (3) Pearson's correlation matrix among the sub-variables of the independent variable**

<b>Correlations</b>		<b>Cybersecurity Governance</b>	<b>Cybersecurity defense</b>	<b>Cybersecurity Resilience</b>	<b>Cloud Cybersecurity</b>	<b>IC Cybersecurity</b>
Cybersecurity Governance	Pearson Correlation	1	.375**	.414**	.503**	.326**
	Sig. (2-tailed)		.003	.001	.000	.001
	N	60	60	60	60	60
Cybersecurity defense	Pearson Correlation	.375**	1	.661**	.662**	.623**
	Sig. (2-tailed)	.003		.000	.000	.000
	N	60	60	60	60	60
Cybersecurity Resilience	Pearson Correlation	.414**	.661**	1	.658**	.631**



	Sig. (2-tailed)	.001	.000		.000	.000
	N	60	60	60	60	60
Cloud Cybersecurity	Pearson Correlation	.503**	.662**	.658**	1	.693**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	60	60	60	60	60
IC Cybersecurity	Pearson Correlation	.326**	.623**	.631**	.693**	1
	Sig. (2-tailed)	.001	.000	.000	.000	
	N	60	60	60	60	60

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

Source: assembling by the researcher depending on (Assad, 2016)

The previous table (3) shows Pearson correlation coefficients matrix among the independent sub-study variables. Most values are statistically significant and at the level of significance (0.01), and the value of the correlation coefficient for all of them is less than (0.80). However, this is an indication to the absence of multiple linear correlation among study variables. The value of the correlation coefficient ranged between the two values (0.693-0.326), so it can be said that the sample is devoid of the problem of high multiple correlation.

### *Description of Study Variables*

The study relied on the average means method in collecting data. The arithmetic mean was calculated for each question, then for each independent sub-variable, and after that for the independent and dependent variable. The results of the arithmetic means and the standard deviation for all variables were as in the following table:

### *Descriptive data for all study variables*

Variable	Arithmetic mean	Standard deviation (Std)
Cyber Security Governance	3.055	0.869
Enhancing cyber security	3.493	0.679
cyber security endurance	3.783	0.606
External Cyber Security	3.681	0.665
Cyber security for control systems	3.854	0.574
cyber security	<b>3.573</b>	0.579
Efficiency of financial reports	<b>3.900</b>	0.396

Source: prepared by the researcher depending on SPSS program

### *The previous table (4) shows the following*

The arithmetic mean of the independent sub-variables (Cyber Security Governance) lies within the range (2.61-3.40), corresponding to the "moderate" answer on the fields of five Likert scale, and with a significant difference. The relative importance of these independent variable indicates that the sample members agree moderately with the reality of Cyber Security Governance in the University.

The arithmetic mean of the independent sub-variables (Enhancing cyber security, cyber security endurance, External Cyber Security, Cyber security for control systems) lies within the range (3.41-4.20), corresponding to the "strong" answer on the fields of the five Likert scale, with a significant difference. The relative importance of these independent variables indicates that the sample members agree strongly with the degree of interest of the University administration in it.

The arithmetic mean of the independent variable (cyber security) lies within the range (3.41-4.20) corresponding to the "strong" answer on the fivefold Likert scale fields, and with a significant difference. The relative importance of this variable indicates that the sample

members agree strongly with the Middle Euphrates University administration's concern with cyber security.

The arithmetic mean of the dependent variable (Efficiency of financial reports) is within the range (2.61-3.40) corresponding to the "moderate" answer on the fields of the fivefold Likert scale, and with a significant difference. The relative importance of this dependent variable indicates that the university administration concerns with the efficiency of its financial reports.

### **Hypothesis Test**

To confirm the validity of the hypotheses, the correlation among variables was studied in order to study the correlation and impact of each independent variable on the dependent variable. It was done by using the simple Pearson correlation coefficient to study the relationship strength or consistency between two variables. Its value varies in the range (-1, +1) and is symbolized by R. Its value is studied in two ways:

1. **Algebraic sign:** If the sign of the correlation coefficient is positive, then there is a positive relationship between the two studied variables. While if its sign is negative, the relationship between them is inverse.
2. **Absolute value:** The absolute value of the correlation coefficient means the relationship between the two variables is strong and can be classified as follows:

The value of the correlation coefficient is the intensity of the relationship

**Table (5): Correlation Coefficient Values**

Correlation coefficient	Relationship
$R > 0.90$	Very strong
$0.90 > R > 0.80$	Strong
$0.80 > R > 0.70$	Good
$0.70 > R > 0.60$	Not bad (accepted)
$0.60 > R > 0.50$	Weak
$0.50 > R$	Very weak

Source: assembling by the researcher depending on (Assad, 2016)

**First Hypothesis Test:** There is no statistically significant impact between the cyber security and enhancing the efficiency of financial reports at the AL-Furat Al-Awsat Technical University according to the study sample.

In order to test the relationship between the dependent and independent variable and to test the first hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table (6) the study of the correlation between the cyber security and enhancing the efficiency of financial reports**

Correlations	Cybersecurity	efficient of financial reporting
Cybersecurity	Pearson Correlation	.890
	Sig. (2-tailed)	.000
	N	60
efficient of financial reporting	Pearson Correlation	1
	Sig. (2-tailed)	.000
	N	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table that the value of  $R = 0.890$ , which means that there is

a strong and positive correlation between the two variables, and the value of the probability  $P(\text{Sig}) = 0.000 < \alpha = 0.05$ . Therefore, the correlation is significant.

Since the value of P is less than the connotation level  $\alpha = 0.05$ , so we reject the first hypothesis and accept the alternative hypothesis: There is a statistically significant effect between the cyber security and enhancing the efficiency of financial reports at the Middle Euphrates University according to the study sample.

*Second Hypothesis Test:* There is no statistically significant effect between the governance of cyber security and the enhancement of the efficiency of financial reports in the University according to the study sample.

In order to test the relationship between the dependent variable and the sub-independent variable and to test the second hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table (7):** *The study of the correlation between cyber security governance and enhancing the efficiency of financial reports*

Correlations		efficient of financial reporting	Cybersecurity Governance
efficient of financial reporting	Pearson Correlation	1	.655
	Sig. (2-tailed)		.049
	N	60	60
Cybersecurity Governance	Pearson Correlation	.655	1
	Sig. (2-tailed)	.049	
	N	60	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table: The value of  $R = 0.655$ , which means that there is an accepted and positive correlation between the two variables, and the probability value  $P(\text{Sig}) = 0.049 < \alpha = 0.05$ , therefore the correlation is significant.

Since the value of P is less than the significance level  $\alpha = 0.05$ , so we reject the second hypothesis and accept the alternative hypothesis: There is a statistically significant effect between the cyber security governance and enhancing the efficiency of financial reports in the University according to the study sample.

*Third Hypothesis Test:* There is no statistically significant effect between enhancing cyber security and enhancing the efficiency of financial reporting in the University according to the study sample.

In order to test the relationship between the dependent variable and the sub-independent variable and to test the second hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table (table):** *The Study of the Correlation between enhancing cyber security and enhancing the efficiency of financial reporting*

Correlations		efficient of financial reporting	Cybersecurity defense
efficient of financial reporting	Pearson Correlation	1	.894
	Sig. (2-tailed)		.000
	N	60	60
Cybersecurity defense	Pearson Correlation	.894	1
	Sig. (2-tailed)	.000	
	N	60	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table: The value of  $R = 0.894$ , which means there is a strong and positive correlation between the two variables, and the value of the probability  $P(\text{Sig}) = 0.000 < \alpha = 0.05$ . Therefore, the correlation is significant. Since the value of  $P$  is less than the significance level  $\alpha = 0.05$ , so we reject the third hypothesis and accept the alternative hypothesis: There is a statistically significant effect between enhancing cyber security and enhancing the efficiency of financial reports at the AL-Furat Al-Awsat Technical University according to the study sample.

**Fourth Hypothesis Test:** There is no statistically significant effect between the endurance of cyber security and the enhancement of the efficiency of financial reports in the University according to the study sample.

In order to test the relationship between the dependent variable and the sub-independent variable and to test the second hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table | (9):** *the study of the correlation between the endurance of cyber security and enhancing the efficiency of financial reports*

Correlations		efficient of financial reporting	Cybersecurity Resilience
efficient of financial reporting	Pearson Correlation	1	.824
	Sig. (2-tailed)		.000
	N	60	60
Cybersecurity Resilience	Pearson Correlation	.824	1
	Sig. (2-tailed)	.000	
	N	60	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table: that the value of  $R = 0.824$ , which implies there is a strong and positive correlation between the two variables, and the value of the probability  $P(\text{Sig}) = 0.000 < \alpha = 0.05$ . Therefore, the correlation is significant. Since the value of  $P$  is less than the significance level  $\alpha = 0.05$ , so we reject the fourth hypothesis and accept the alternative hypothesis: There is a statistically significant effect between the endurance of cyber security and the enhancement of financial reports efficiency in the University according to the study sample.

**Fifth Hypothesis Test:** There is no statistically significant effect between the external cyber security and enhancing the efficiency of financial reports in the University according to the study sample.

In order to test the relationship between the dependent variable and the sub-independent variable and to test the second hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table (10):** *the study of the correlation between the external cyber security and enhancing the efficiency of financial reports*

Correlations		efficient of financial reporting	Cloud Cybersecurity
efficient of financial reporting	Pearson Correlation	1	.835
	Sig. (2-tailed)		.000
	N	60	60
Cloud Cybersecurity	Pearson Correlation	.835	1
	Sig. (2-tailed)	.000	
	N	60	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table: that the value of  $R = 0.835$ , which means there is a strong and positive correlation between the two variables, and the value of the probability  $P(\text{Sig}) = 0.000 < \alpha = 0.05$ . Therefore, the correlation is significant. Since the value of  $P$  is less than the significance level  $\alpha = 0.05$ , so we reject the fifth hypothesis and accept the alternative hypothesis: There is a statistically significant effect between the external cyber security and the enhancement of the efficiency of financial reports in the University according to the study sample.

*Fifth Hypothesis Test:* There is no statistically significant effect between the cyber security of control devices and enhancing the efficiency of financial reports in the University according to the study sample.

In order to test the relationship between the dependent variable and the sub-independent variable and to test the second hypothesis, the Pearson correlation coefficient was applied, and the results were as in the following tables:

**Table (11):** *the study of the correlation between cyber security of control devices and enhancing the efficiency of financial reports*

Correlations		efficient of financial reporting	IC Cybersecurity
efficient of financial reporting	Pearson Correlation	1	.806
	Sig. (2-tailed)		.000
	N	60	60
IC Cybersecurity	Pearson Correlation	.806	1
	Sig. (2-tailed)	.000	
	N	60	60

Source: prepared by the researcher depending on SPSS program

It is clear from the previous table: that the value of  $R = 0.806$ , which means there is a strong and positive correlation between the two variables, and the value of the probability  $P(\text{Sig}) = 0.000 < \alpha = 0.05$ . Therefore, the correlation is significant. Since the value of  $P$  is less than the significance level  $\alpha = 0.05$ , so we reject the sixth hypothesis and accept the alternative hypothesis: There is a statistically significant effect between the cyber security of control devices and the enhancement of the efficiency of financial reports at the AL-Furat Al-Awsat Technical University according to the study sample.

### **Study Consequences:**

Through the analytical study, the most important findings of the study can be identified as follows:

- 1) There is no multiple linear correlation among study variables. The value of the correlation coefficient ranged between the two values (0.693-0.326), so it can be said that the sample is devoid of high multiple correlation problem.
- 2) The arithmetic mean of the independent sub-variables (financial reports efficiency) lies within the range (2.61-3.40) corresponding to the "moderate" answer on the fields of the fivefold Likert scale.
- 3) The arithmetic means of the independent sub-variables (enhancement of cyber security, endurance of cyber security, external cyber security, cyber security of control systems) lie within the range (3.41-4.20) corresponding to the "strong" answer on the fields of the five Likert scale.
- 4) The arithmetic mean of the independent variable (cyber security) lies within the range (3.41-4.20) corresponding to the "strong" answer the fields of the five Likert scale.
- 5) The arithmetic mean of the independent sub-variables (cyber security governance) lies within the range (2.61-3.40) corresponding to the "moderate" answer on the fields of

- the five Likert scale.
- 6) There is a statistically significant effect between cyber security and enhancing the efficiency of financial reports in the University according to the study sample.
  - 7) There is a statistically significant effect between the governance of cyber security and the enhancement of the efficiency of financial reports at the AL-Furat Al-Awsat Technical University according to the study sample.
  - 8) There is a statistically significant effect between enhancing the cyber security and enhancing the efficiency of financial reporting in the University according to the study sample.
  - 9) There is a statistically significant effect between the endurance of cyber security and the enhancement of the efficiency of financial reports in the University according to the study sample.
  - 10) There is a statistically significant effect between external cyber security and enhancing the efficiency of financial reports in the University according to the study sample.
  - 11) There is a statistically significant effect between cyber security of control devices and enhancing the efficiency of financial reports in the University according to the study sample.

### **12) Recommendations**

- 13) The increasing interest in the cyber security governance and its components at the AL-Furat Al-Awsat Technical University. This can be done according to the following:
- 14) The increasing interest and developing clear strategies and policies for cyber security, in addition to creating a specialized cyber security department.
- 15) Training employees on cyber security and how to deal with, enhancing cyber security for human resources and customers, and studying cyber security management.
- 16) Focusing on launching independent projects at the university with cooperation between students and the administration in order to support cyber security.
- 17) Emphasizing on segregation and division within the university departments and the increasing protection of sensitive departments, especially the financial department.
- 18) Activating the role of electronic financial reports and connecting the cyber security with enhancing the efficiency of financial reports at the university through permanent studies and analyzes.
- 19) Continuous evaluation and periodic tests of cyber security at the university in order to maintain information and data in general, and financial data and reports in particular.

## **Conclusion**

After studying and analyzing the reality of cyber security and its role in the efficiency of financial reports at the AL-Furat Al-Awsat Technical University, it was found that cyber security has an important role in enhancing the efficiency of financial reports. Although there are some notes about cyber security governance and the absence of clear independent management and strategies related only to cyber security, the sample members' point of view confirmed the existence of a strong impact of the dimensions of cyber security on enhancing the efficiency of electronic financial reports.

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