

# **The Effect of Using Computerized Accounting Information Systems on Reducing Production Costs in Jordanian Pharmaceutical Companies**

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**ABSTRACT:** *The study aims to identify the effect of using Computerized accounting information systems,(CAIS) on reducing production costs in Jordanian pharmaceutical companies. The study sample consisted of 100 employees working in the Jordanian pharmaceutical companies, including the administrative and financial director, head of the accounting department, information systems staff, and the accountants. The study relied on descriptive analytical method and also used regression analysis. The study results showed an important effect of the (CAIS) on reducing production costs in Jordanian pharmaceutical companies. It also showed a positive relationship between each component of (CAIS) (human resources, hardware, software, databases, control and procedures) and production costs reduction in the Jordanian pharmaceutical companies. The study's recommendations included the need to maintain the highest levels of (CAIS) by keeping pace with the latest developments in the fields, such as software, hardware, and databases.*

**KEYWORDS:** *computerized accounting information systems (CAIS), reducing production costs, human resources, hardware, software, databases, control, procedures, Jordanian pharmaceutical companies.*

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## **I. INTRODUCTION**

Manufacturing cost reduction considers one of the topics that manufacturing companies puts emphasis on today, or at least take an accurate estimations of it. In this stage, businesses must evaluate and reduce their costs well by using good estimation techniques. At this point, accounting information systems (AIS) considers an important tool, where it provide an important solutions in defining and reducing the general production cost (Bozkurt, et.al.2014). Therefore, (AIS) considers an internal control on all activities that happens at several business procedures and operations which covers each area of finance, production, marketing, and human resources (Darmansyah & Fitrijanti,2015).

Therefore, when companies entered the competition field, they must achieve many things, the most important of those may be the appropriate price for their products, and the careful selection of markets and outlets to sell those products, which depends on the quality of products and the ability of management to make the appropriate decisions regarding the right price for their products in a timely manner, which in turn requires high accurate calculations of product costs, and ensures adequate information concerning the product in a timely manner (Al-Dalabeeh, & Al- Zeaud, 2012).

Moreover, the use of effective raw materials may decrease acquirement and storage costs but a greater amount of it may results in more complexity of the decision making process. Management has to decide what input to select for the items produced, how to integrate it in the process, and to select the appropriate cutting plan for it. These multi-processes may waste too much time, effort, and cost and cause a delay in the required time for production. Additionally, even with the financial experience this may leads to considerable loss because when companies reduce the quantities in stock, it also reduces the alternatives to slash materials. The companies may also save time on the decision making process, save some material and labor cost, and decrease operating and fixed costs too, in the course of this reduction in raw materials and decision making procedures (Duarte & Pereira, 2015).

Currently, the Jordanian pharmaceutical companies seeks to cope with the technical and scientific developments, by using the latest software, communication equipments and devices, and databases in all its operations, for the purpose of designing a (CAIS) that works to raise performance competency, in order to reach the desired competitive advantage, with the fact that Jordanian pharmaceutical companies considers one of the companies that took the center stage, due to their products' quality, and their contribution to the development of the Jordanian national economy.

This study seeks to measure the impact of using computerized accounting information systems (CAIS) through a variety of variables, such as human resources, hardware, software, databases, control and procedures used to reduce production costs in Jordanian pharmaceutical companies.

## **II. STUDY PROBLEM**

Despite what the Jordanian industrial companies, as a whole and the Jordanian pharmaceutical companies, in specific suffer from many problems that led in their summary to create a large industrial and competitive gap between them and the foreign companies operating in the same field. This gap represented in the rising cost of products manufactured by these companies, which makes it a necessity to direct the attention, in order to keep the resources away from waste, and over-spending, and mismanagement, with staying away from spending on issues that not related to the company's operations, by relying on (CAIS) capable of providing accurate information about products' cost, and following the performance of various spending elements inside the companies, which calls on those companies to use the CAIS that operate in an integrated way to ensure the performance, quality, and cost management to meet the challenges of competition.

The problem of this study stems from here, which can be represented in the following question:

Is there an effect for using (CAIS) on reducing production costs in Jordanian pharmaceutical companies?

Accordingly, the following secondary questions have been formulated:

1. Is there an effect for using human resources on reducing production costs in Jordanian pharmaceutical companies?
2. Is there an effect for using hardware on reducing production costs in Jordanian pharmaceutical companies?
3. Is there an effect for using software on reducing production costs in Jordanian pharmaceutical companies?
4. Is there an effect for using databases on reducing production costs in the Jordanian pharmaceutical companies?
5. Is there an effect for using control on reducing production costs in Jordanian pharmaceutical companies?
6. Is there an effect for using procedures on reducing production costs in Jordanian pharmaceutical companies?

## **III. STUDY OBJECTIVES**

This study aims to identify the effect of using (CAIS) on reducing production costs in Jordanian pharmaceutical companies; we will identify these goals through the following:

1. Identify the effect of using human resources on reducing production costs in Jordanian pharmaceutical companies?
2. Identify the effect of using hardware on reducing production costs in Jordanian pharmaceutical companies?
3. Identify the effect of using software on reducing production costs in Jordanian pharmaceutical companies?
4. Identify the effect of using database on reducing production costs in Jordanian pharmaceutical companies?
5. Identify the effect of using control on reducing production costs in Jordanian pharmaceutical companies?
6. Identify the effect of using procedures on reducing production costs in Jordanian pharmaceutical companies?

## **IV. STUDY IMPORTANCE**

The theoretical study importance comes from its topic, which is " the effect of using the (CAIS) on reducing production costs in Jordanian pharmaceutical companies", where the study will help to improve the performance competence of those businesses, by providing a conceptual framework that link between the (CAIS) and the production costs reduction, as the accounting link itself consider an important addition, as long as there is a deficiency in such studies, according to the Jordanian literatures found, therefore this study should enrich the Arabic and Jordanian libraries in this area.

But the practical study importance reside in providing the processors, suggestions, and opinions for other companies and institutions in Jordan and putting them into effect to make use of them, in order to achieve economical and financial savings, and also by taking advantage of the (CAIS) in solving the shortcomings, constraints, and barriers which interrupt the production costs reduction at the Jordanian pharmaceutical companies.

## **V. CONCEPTUAL FRAMEWORK**

### **5.1 Accounting Information Systems**

The accounting system in any business contains a number of staffs who specify and select materials needed for the accounting duties, such as equipments, machines, files, and paperwork according to the issued accounting rules and procedures to record, calculate, and transform data into multi-financial statements and reports which are required to support staffs and managers in the decision making processes (Dahmash, Abu Zir, 2004).

AIS helps business units and solve long-term problems of managers in the areas of final prices, costs, and cash flows by providing information to support and supervise companies in the dynamic and competitive environment, and help the companies to integrate their operations in a profitable way (Ismail, 2009).

The important of (AIS) comes from its existence in the facilities that monitor all employees' activities, (Marshal & Paul, 2006) (George & Hoffer, 2001) which consists from group of automated and human components, procedures, databases, constraints, techniques, and applications found as part of the facilities overall system, which are capable of identifying, gathering, operating, analyzing, and collecting information and sending it to the decision maker positions (Hall, 2004) for the purpose of responding to the actual requirements of applicants and provides them with the coordination, coverage, and the required quality in the real time. It also helps to control the businesses efficiently and economically. Therefore, the AIS were created to care about the existing relationship between the official information systems, management functions, organizational structures, and information users in the environment that systems function in (Nicolano, 2000).

The CAIS can be defined as an application or process, where in it the financial figures of business transactions could be recorded, arranged, summed up, examined, explained, and delivered to the applicants, users, and managers by using computer based systems, such as accounting information systems, and production cost systems (Marivic, 2009), ( Al Bataineh & Bataineh, 2018).

## **5.2 Reducing Production Cost**

Over the last several years, (CAIS) has played an important role to help companies' deals with the tremendous demands, such as lower costs, enlarge product assortments, improve product quality, and provide reliable delivery dates through effective and efficient coordination between production and distribution activities. (Duarte & Pereira, 2015).

The significance of cost reduction in industrial companies emerged as the primary goal, in order to gain profits and maximize the profitability of companies, because without achieving the profit margin, they cannot stay in business for long (Carenys & Sales, 2008). These companies can achieve this objective through controlling their activities, either by providing the best product at the lowest price, or by reducing the cost of product in order to compete in the market with other companies (Bataineh, 2018). The use of cost lists help to specify the cost of product to be charged and the importance of preparing these cost lists emerged in indicating whether the cost collected in the various departments in the company is reasonable or not, and know to what extent these costs can be reduced and control them through analyzing the economic size. The cost considers the basic and important element of any activities, whether its service (Stanton, 2002), (Carenys & Sales ,2008) or industry (Akyol, Tuncel, & Bayhan, 2005), especially industrial activities, which plays a fundamental and important role in determining the price of the final product, determining the product market share, and also competition strength in the market. It's known that whenever product cost goes lower, the market share (competition) goes higher. Due to this role played by cost, all levels of management started to go towards cost control, and cost identification, as the need for cost management appears to be more important (Taylor, 2000).

However the manufacturing costs assume an important role, due to its influence on costs, and mainly the need to reduce them and here are many ways to decrease production costs (Rababah & Bataineh, 2016). In this paper we will focus on cost reduction, through process-performance and through inventory optimization and raw materials usage focus. By acting at the inventory level, the results may present a wave effect through the production process and waste reduction. Briefly, this wave effect might be presented in the lower quantity purchases, which leads to less storage needs and less overhead costs.

## **5.3 pharmaceutical industry in Jordan**

The pharmaceutical industry in Jordan has started since 1962. Its exports have reached more than (75) markets in different countries around the world. Drug exports increased by 5.10% to reach 300 million JDs compared with 232 million JDs during the first half of 2016, and subsequently increased by 7.10% to reach 622 million JDs up from 500 million JDs. The pharmaceutical industry in Jordan is the highest added value to the national economy due to its high quality and high competitiveness. The representative of the pharmaceutical and medical supplies sector at the Jordan chamber of commerce confirms that the pharmaceutical industry relies on couple of personal strengths, such as the long expertise, long term in the field of rehabilitation, management, control, development, and research, which through them can overcome the challenges and difficulties it faces to achieve this remarkable success. In addition, the medical industries sector is a major pillar in the industrial sector, in particular and the Jordanian economy in general. The pharmaceutical industry has achieved many achievements in the region for adopting a group of Jordanian manpower and competencies at various technical and administrative levels. (<http://alrai.com/article /281555> )

## **VI. LITERATURE REVIEW**

Accounting information system considers one of the most important information systems that have been used to manage business operations, which has with its strict formulas direct influence on the common quality, especially reliable accounting facts, indexes, and information where users builds on it the business decisions inside and outside the company (Mihailovic, et al., 2010).

Moqbel, et.al (2015) identified the degree of AIS implementation and its impact on the improvement of production costs at the Jordanian manufacturing companies. The results of the study showed that Jordanian manufacturing companies implement AIS proficiently and successfully, and that the most important level of implementation resides in the system search for skewness or deviation level in the production system. The study also showed the existence of positive impact on the adoption and implementation of (AIS), in relation to the identification of production cost skewness, (AIS) efficiency, and production cost improvement.

Sulub, (2014) examined the impact of (CAIS) on reducing costs at the Somaliland business firms; a case studies of Telesom Company, and Shaam Construction Company. The study results showed a strong impact of (CAIS) on reducing costs at both companies and also showed a positive correlation between each part of the (CAIS) (human resources, hardware, software, equipments, machines, and procedures) and cost reduction in those companies. The study recommended maintaining a high level of (CAIS) by sustaining the different parts of (CAIS) and developing work procedures along with the CAIS development. The study also recommended performing deep and farther studies to identify the impact of (CAIS) on cost reductions at other companies and sectors.

While the study of Jamil & Ahmad (2013) found the existence of impact when using the AIS on the quality of financial statements submitted to the income tax and sales department in Jordan. The study recommends focusing on the development of the devices used in the department, trains and develops the staff on an ongoing basis to enable them to continue perform their jobs, and improves the quality of financial statements in the department.

But El-Dalabeeh & Alshbiel, (2012) identified in their study the role of (CAIS) in reducing the costs of medical services provided at King Abdullah University Hospital. The study results showed a significant role for (CAIS) in the reduction of medical service costs at the hospital. It illustrated a positive correlation between each component of (CAIS) (human resources, hardware, equipments, software, databases, and procedures) and the reduction of medical service costs at the hospital. The study recommended included retaining the highest levels of (CAIS) through keeping up with the latest developments in the fields of software, hardware, and databases, conducting regular maintenance which helps raise the level of services provided to patients at King Abdullah University Hospital, and developing work procedures along with the progress of (CAIS).

While Wedyan (2012) in his study identify the impact for implementing (AIS) to increase profitability, and reduce banks cost in Jordan. The most important finding of the study that banks rely on accounting systems, to connect all the bank services for each department together and links between all departments at the same time. Banks rely on (AIS) to satisfy the clients through the implementation of clients banking quickly and with least effort, therefore achieving a competitive advantage among banks. Banks makes effort to provide accurate information by presenting the financial position to the clients and providing them with the electronic access to their account by making deposit, withdrawal, and transfer money using the full connection between the electronic accounting systems. The most important recommendations of the study to provide staff with the required training, the full awareness of the AIS, and take into consideration the client bank culture, which in turn leads to increased competition and attract clients, therefore speed up the implementation of banking services, save time, and reduce cost.

Also Bawaneh (2011) performed a study to inspect the impact of information technology and AIS on the quality of university accounting education for Jordanian financial institutions operating in Jordan and listed on Amman Stock Exchange in 2010, because these institutions are hiring the fresh accounting university graduates by showing the advantages of using information technology to develop the (AIS). The study also examines the significance of information technology to build up the (AIS), and to anticipate the means for university accounting education quality. It shows that employers recognize any information technology advancement and development of (AIS) have a positive interaction impact on the quality of university accounting education.

Where Al-Matarneh, & Al-Sharayri, (2010) acknowledged the impact of information technology on the effectiveness of (AIS) in the Jordanian pharmaceutical companies, by defining the impact of hardware, software, and databases uses on the effectiveness of (AIS) at these companies. To reach the study goals and test its hypotheses, a questionnaire was set up and distributed to a sample of (42) respondents; the standard and average deviation were calculated, and (T-test) was used to test the hypotheses. The study results showed an impact for information technology use on the effectiveness of (AIS), and also showed an impact of hardware, software, and databases uses on the effectiveness of (AIS). The study recommended the need to develop the information

technology in management and accounting systems, in accordance with the changes and needs of the external environment.

But Al-Omari, (2009) conducted a study to identify the (AIS) in the Jordanian industrial companies and demonstrate their role in controlling production costs. He arrived to the conclusion that AIS, with their different dimensions plays a key role in controlling production costs.

The study of Romney & Steinbart, (2003) concluded that a well-design (CAIS) is capable of adding value to the organization by improving the quality of products or services, and in the same time reducing the wasted materials, improving operational efficiencies by providing the essential information at the right times, improving the decision making process by providing the decision makers with accurate information in real time, and sharing knowledge by providing the competitive advantages. Therefore, Information produced by the well-design (CAIS) is capable of improving the decision making process.

While the study performed by Banks, et.al (2002) concentrated on the skills and competencies of the human resources represented by doctors, nurses, and technical and administrative personnel, as they are highly correlated with the quality of medical services offered. The study results showed the possibility to reduce the costs of interior departments at the hospitals without influencing the level of medical services offered to patients, taking into consideration the significance of the hospital staffs in reducing the costs of health care.

Also, al-Sheikh, (2000) conducted a study that aimed to recognize the cost reduction model and the required moves or programs to be executed, in order to reduce the costs. It concluded that hesitation in defining the notion of cost reduction may leads to the undesired results or generate a new financial burden. It also concluded a numerous methods for reducing costs; each of them depends on the cost reduction program, and the size and activities of the economical unit.

Another study by (Ali, 1999) was performed on the hospitals in Jordan, where the researcher addressed the issue of rising costs of medical services, from the prospect of the relationship between production efficiency in managing the hospitals operations and services requirements to promote such services. The study found three main dimensions which control this relationship: scheduling, cost, and quality. Among the studies which addressed the measurement of factors that impact the medical costs represented in monitoring costs, in order to reduce it which have become a serious concern for Jordanian hospitals.

## **VII.METHODOLOGY**

### **7-1 Sample characteristics and data collection**

The study using a survey method and the data type of this study was descriptive and verificative. The study population was consists the Jordanian pharmaceutical companies whose total number (17) companies. The study sample was used a random sample selection to include all Jordanian pharmaceutical companies. The study data was composed of primary and secondary data. Primary data were obtained directly from respondents through questionnaire. The questionnaire was designed and sent to the sample companies to be filled by four categories: Administrative & financial director, Accounting department head, information systems personnel, and accountants (7 questionnaires for each company). A questionnaire contained (36) paragraphs that are related to measuring the study variables. Thus, the sample consisted of (119) individuals. The (110) questionnaires were returned from which (10) were eliminated due to the incomplete information they contained. So, the total number of questionnaires which were analyzed is (100) with a percentage of response at (84%). Secondary data were obtained through a literature review and via the internet. Data were processed and analyzed using the linear regression by the computer program statistical program for social science (SPSS).

### **7-2 Research hypotheses**

The following hypotheses have been tested in this study:

**Main hypothesis H<sub>01</sub>:** There is no statistical significant effect for using (CAIS) on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-1</sub>:** There is no statistical significant effect for using human resources on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-2</sub>:** There is no statistical significant effect for using hardware on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-3</sub>:** There is no statistical significant effect for using software on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-4</sub>:** There is no statistical significant effect for using databases on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-5</sub>:** There is no statistical significant effect for using control on reducing production costs in Jordanian pharmaceutical companies.

**Sub-hypothesis H<sub>01-6</sub>:** There is no statistical significant effect for using procedures on reducing production costs in Jordanian pharmaceutical companies.

7-3 Study Model

Independent Variables

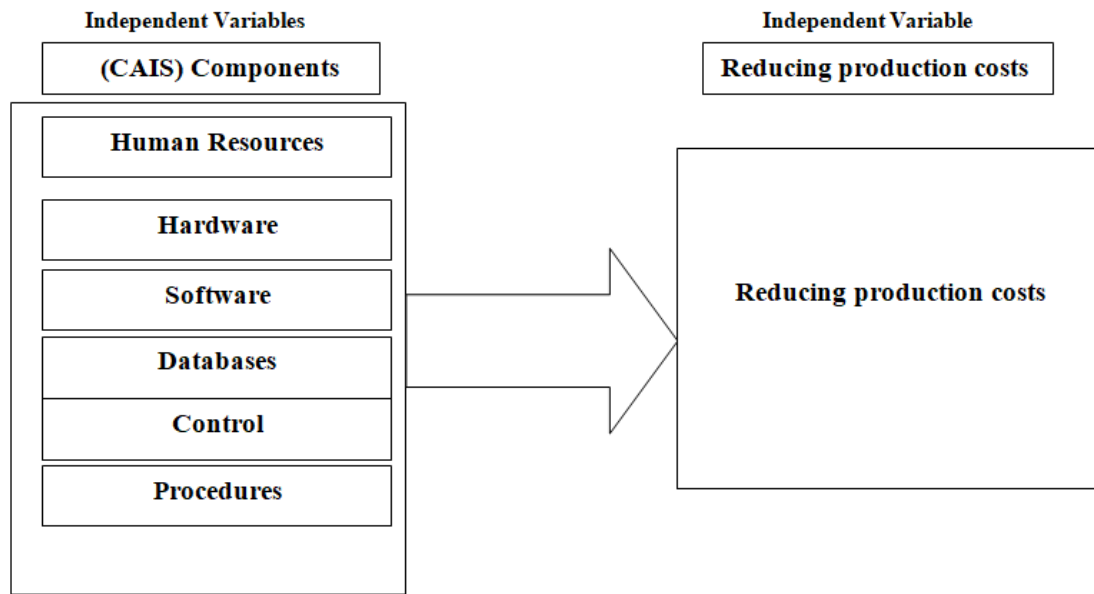


Figure (1): The study Model prepared by the researcher based on the previous studies: (Al Bataineh & Bataineh, 2018),(Sulub, 2014),( Al-Dalabeeh & Al-Shbiel 2012), (Al-Matarneh, & Al-Sharayri, 2010)

VIII. ANALYSIS

8-1 Reliability of Statistics

Table (1): Reliability of Statistics

Cronbach's Alpha	No of Items
0.812	6

The reliability check is done to guarantee that we arrive to the same result every time the measurement gets repeated. A well-known technique for checking this reliability is by splitting it in half, where high reliability is related to the Cronbach alpha value close to 1, and here the data value is 0.812, which suggest that data have a reasonable amount of internal reliability.

8-2 demographic characteristics

Table (2): The demographic characteristics of the study sample

Variable	Type	Percentage
<b>Age</b>		<b>100%</b>
Less than 25 years old		17 %
25 – less than 35 years		33 %
35 – less than 45 years		29 %
More than 45 years		21 %
<b>Experience</b>		<b>100%</b>
Less 5 years		22%
5 years -Less 10 years		31%
10 years -Less 15 years		26%
Over 15 years		21%
<b>Practical Qualification</b>		<b>100%</b>
Less than Bachelors		25%
Bachelors		70%
Master's		5%
Doctoral		0%
<b>Scientific Specialty</b>		<b>100%</b>
Accounting		52%
Business Administration		27%
Economics		0%
Finance & Banking		5%
Others		26%

From the table (2), it found that a 33% of respondents were between the ages of 25- Less than 35years, while 17% of respondents were the ages Less than 25 years old, this indicates a consistent age and considerable experience among respondents, while the Practical Qualification, the percentage is 70% of the sample were bachelor's degree holders. while 5% of respondents were the Master's degree holders and there is not any responder from the holders of doctoral, this indicates that all respondents are well qualified to understand the questionnaire questions, while the experience we note that 31% of respondents were between of 5- Less than 10 years of experience and that 21% of respondents were Over 15 years of experience, which indicate that the majority have distinguished and long experience. Finally, the Scientific Specialty, the percentage is 52% of the sample had an specialization accounting, and that 5% of the respondents had specialization financial, and there is not any responder had specialization economy, which suggest that the respondents are well qualified to understand and answer the questions of the questionnaire with views that enhance the reliability of their reliability in the analysis.

**8-3 Descriptive Analysis**

The descriptive analysis show the results of study variables, by using the methods of statistical analysis that represented by mean, standard deviation, and the maximum value, minimum value, for the entire study sample. Descriptive statistics for the instrument are presented in Table (3) Measurement using a five-item five-point Likert-scaled instrument anchored by (1) “to strongly disagree” and (5) “to strongly agree”.

**Table (3) : Descriptive Analysis of the study variables**

Variables	Mean	St. Devia	Minimum	Maximum	Skewness	Kurtosis
Human Recourses	4.250	0.444	3.333	5.000	0.225	-0.848
Hardware	4.310	0.353	3.400	5.000	0.028	-0.351
Software	4.332	0.340	3.800	5.000	0.511	-0.619
Databases	4.328	0.361	3.600	5.000	0.429	-0.766
Control	4.393	0.309	3.670	5.000	0.211	-0.537
Procedures	4.447	0.402	3.500	5.000	-0.139	-0.989
Total	4.338	0.270	3.900	4.970	0.602	-0.521
Reducing Production Costs	4.474	0.373	3.200	5.000	-0.366	-0.122

From the table: The arithmetic mean of the human recourses (4.250), and the standard deviation (0.444) which indicates that the human resources have a high skills when use of (CAIS) at the companies.

- The arithmetic mean of the hardware (4.310), and the standard deviation (0.353), which means that the hardware has the ability to deal with the nature and volume of work in Jordanian pharmaceutical companies.
- The arithmetic mean of the software (4.332), and the standard deviation (0.340), which indicates that the software has a high degree of accuracy and speed in the implementation of financial and accounting processes.
- The arithmetic mean of the database (4.328), and the standard deviation (0.361), which means that the accuracy of the databases in retrieving data and information required.
- The arithmetic mean of the control (4.393), and the standard deviation (0.309), which means that the companies use many control methods when implement the (CAIS).
- The arithmetic mean of the procedures (4.447), and the standard deviation (0.402), which indicates that the procedures in the (CAIS) are suitable for the nature of the work.
- The arithmetic mean of the reducing production costs (4.474), and the standard deviation (0.373), which indicates that the Jordanian pharmaceutical companies use (CAIS) components to reducing costs in production in Jordanian pharmaceutical companies.
- finally the arithmetic mean of the total of (CAIS) (4.338), and the standard deviation (0.270), which indicates that the (CAIS) providing statistical information, financial information, managerial information, monitoring, procedures to reducing production costs in Jordanian pharmaceutical companies.

**8-4 Correlation matrix**

The regression model was examined before performing the analysis, due to the presence of multi-co-linearity problems between the independent variables, which occurs when two or more independent variables are highly correlated which makes it hard to figure out the single contribution of each variable to the prediction of the dependent variable (Barrow, 1988), (Kennedy, 1985). (Anderson et al. 1993) believes the absolute correlation coefficient is high, if it surpasses (70%) for any two variables. To measure the level of this problem with regard to the present regression model, a correlation matrix that includes all of the independent variables was run, as seen in table (4) which showed a low correlation coefficient between each pair of the independent variables, implying that results of the regression model are not affected by the multicollinearity.

**Table (4): Correlation matrix for all independent variables**

Variables*	Human Recourses	Hardware	Software	Database	Control	Procedures
Human Recourses	1					
Hardware	0.526	1				
Software	0.403	0.460	1			
Databases	0.453	0.345	0.538	1		
Control	0.540	0.481	0.442	0.518	1	
Procedures	0.413	0.293	0.248	0.363	0.519	1

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

#### 8-4-1 Multicollinearity Test

General linear model (GLM) is largely based on the assumptions of each independent variable, and because this condition wasn't achieved, then the general linear model isn't appropriate with the application and it's impossible to consider it good for the process of parameters assessment (Saifo & Meshaal, 2003). The collinearity diagnostics scale was used to help in this assessment, where the test measure the impact of connection between the independent variables, and (Gujarati, 2003) found that getting a coefficient value higher than (10) refers to a problem with the multicollinearity independent concerned variables.

**Table (5) Multicollinearity Test**

Variables	Multicollinearity Test	
	Tolerance	VIF
Human Recourses	0.574	1.743
Hardware	0.621	1.603
Software	0.616	1.623
Databases	0.589	1.698
Control	0.510	1.961
Procedures	0.700	1.428

Table (5) showed that coefficient value (VIF) for all of the independent variables is less than (10), which enhance the results of Pearson correlation matrix that showed a very weak connection between the independent variables, and so the problem of overlapping linear has no significant on the general model study.

#### 8-4-2 Autocorrelation Test

The problem of auto-correlation will be illustrated in case if views are interrelated, and this will affect the validity of used model, where it produces a non-significant real effect of independent variables on the dependent variable as a result of this link. In order to verify the non-existence of this problem in the form, Durbin Watson Test (D-W) was used, and the test value came between (0-4). (Bashir, 2003) showed an optimal result that ranged between (1.5 -2.5), which indicate the lack of self-correlation between variables. The economists feel that their findings when the value of (D-W) is close to (2), the problem of auto-correlation are weak (Saifo & Meshaal, 2003), and the results showed that value of (D-W) amount to (2.194) and is in agreement with the previous decision rule to the test result calculated within proper expression, which showed a non-significant of autocorrelation problem on the correct study model.

#### 8-5 Multiple Regression Analyses

Table(6): shows results of a Multiple regression test effect of using computerized accounting information systems on reducing production costs in Jordanian pharmaceutical companies.

**Table(6): Results of a Multiple Regression**

Independent Variable	(Beta)	B	Calculated (t)	(sig)*
(Constant)		1.050	1.97	0.052
Human Resources	0.632	0.505	1.653	0.015
Hardware	0.774	0.851	2.706	0.022
Software	0.886	0.568	1.696	0.038
Databases	0.750	0.699	1.426	0.031
Control	0.702	0.663	2.250	0.014
Procedures	0.689	0.973	3.624	0.000
Calculated (F)			8.434	
R <sup>2</sup>			0.352	
R			0.594	
Adjusted R Square			0.28.6	
(sig)*			(0.000)	
(D-W)			2.194	

\*Significant (sig) at the 5% level



Table (6) above shows a statistical significant correlation between the using (CAIS) variables and the reducing production costs in Jordanian pharmaceutical companies, where the correlation value amounted to (59.4%), which indicate a strong correlation and effect, while the (Adjusted R Square) explains (%28.6) percentage of the variance in the dependent variable, which means that (28%) value of the changes that occur in the of reducing production costs result from the (CAIS), and confirms that the value of calculated (F) test

which amounted to (8.434) at a statistical significance of ( $\alpha \leq 0.05$ ), and this assure the significant of the model, and refers to the existence of statistical significance effect of independent variables on dependent variable. so the null hypothesis is being rejected and accept the alternative.

Also according to the results in table (6) above testing sub-hypothesis (Ho1-1 which states that “There is no statistical significant effect for using human resources on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.505, Sig = 0.015. Therefore the null hypothesis is rejected, and the alternative hypothesis is accepted. This represents a high significant effect for using human resources in reducing costs. When the company has skilled and qualified human resources, it gets or benefits from using the (CAIS).

The results testing sub-hypothesis (Ho1-2): which states that “There is no statistical significant effect for using hardware on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.851, Sig = 0.022. Therefore the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the Jordanian pharmaceutical companies used modernize the hardware in order to reduce the costs.

As for the results testing sub-hypothesis (Ho1-3): which states that “There is no statistical significant effect for using software on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.568, Sig = 0.038. Therefore the null hypothesis is rejected and the alternative hypothesis is accepted, This indicates that the software in the computerized accounting information systems (CAIS) has vital effect on reducing costs at Jordanian pharmaceutical companies.

The results testing sub-hypothesis (Ho1-4): which states that “There is no statistical significant effect for using databases on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.699, Sig = 0.031 Therefore the null hypothesis is rejected and the alternative hypothesis is accepted, This indicates that the Jordanian pharmaceutical companies used modernize the software in order to reduce the costs.

But he results testing of testing sub-hypothesis (Ho1-5 which states that “There is no statistical significant effect for using control on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.663, Sig = 0.014. Therefore the null hypothesis is rejected and the alternative hypothesis is accepted, This indicates that the Jordanian pharmaceutical companies used many control methods to reduce the costs at this companies

Also, the results testing sub-hypothesis (Ho1-6): which states that “There is no statistical significant effect for using procedures on reducing production costs in Jordanian pharmaceutical companies” The coefficient = 0.973, Sig = 0.000. Therefore the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the increase of procedures in the computerized accounting information systems (CAIS) leads to less costs at Jordanian pharmaceutical companies.

## **IX. DISCUSSION AND CONCLUSIONS**

The current study examines the effect for using (CAIS) on reducing production costs in Jordanian pharmaceutical companies. The study findings confirmed of the use of (CAIS) in the manufacturing industry especially the pharmaceutical companies in Jordan. The results indicate that there is a high significant effect for using (CAIS) on reducing production costs in Jordanian pharmaceutical companies; they also do proper calculations to variances between budgeted and actual outcomes and provide detailed cost information per cost object. The Pharmaceutical companies have proper reporting systems that rely on costing systems and the cost data are characterized by completeness and accuracy. These systems provide costing information that is useful for decision-making, budgeting, control and performance evaluation. The high level of cost systems functionality attributed to the fact that Pharmaceutical companies have adjusted their cost systems to accommodate the increased information needs created.

This study contributed to the current knowledge in cost and management accounting practices in the industrial sector in Jordan, especially pharmaceutical companies.

The study conclusion has important implications for both professionals and managers in pharmaceutical companies.

According to the results mentioned above, the study recommends focusing on the interest in (CAIS) by keeping abreast of the latest developments in the field of hardware, software, control and databases, while performing the role to it's in raising the level of services provided. And the pharmaceutical companies need to develop work procedures in line with the mechanism of operation of (CAIS). The future research should lead to taken into consideration in the areas of lower product cost in other industrial companies not covered by previous studies such as iron, paper and cardboard.

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