INFORMATION TECHNOLOGY AND ITS ROLE IN IMPROVING THE QUALITY OF FINANCIAL CONTROL DUE TO CORONA PANDEMIC: THE JORDANIAN INCOME TAX AS A CASE STUDY

Ashraf Mohammad Salem Alrjoub, Laith Akram Muflih Al-Qudah, Leqaa Naife Al-Othman, Ashraf Bataineh, Khaled Eriej Aburisheh, Faris Alkarabsheh

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Purpose: This study aims to examine the impact of information technology aspects and its role in improving the quality of personal income tax financial control in Jordan due to the corona pandemic

Design/ methodology/ approach: The sample of the study consists of (166) tax auditors and programmers from the Jordanian Income and Sales Tax Department, and a questionnaire is prepared and delivered to the study sample to accomplish the study's objectives. Improving the quality of financial control for the Jordanian income tax, and the results also indicate that the region is not a modified variable for the function of technical equipment and software in enhancing financial control quality.

Findings: As a result of the Corona epidemic's spread on the Jordanian income tax. While the area is a modified variable to reflect the role of networks and databases in improving the quality of financial control due to the Corona pandemic's influence on Jordan's income tax, the center has the biggest impact, followed by the north and then the south.

Originality: This study extends the use of data science technology, big data, and artificial intelligence, as these are required and effective tools for enhancing the quality of financial control and contribute significantly to attaining the fundamental goals of containing, stopping, and controlling the epidemic.

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ABSTRACT

Keywords: Information Technology; Quality of Financial Control; Corona Pandemic; Equipment; Software; Networks; Databases; Jordanian Income Tax.
A TECNOLOGIA DA INFORMAÇÃO E SEU PAPEL NA MELHORIA DA QUALIDADE DO CONTROLE FINANCEIRO DEVIDO À PANDEMIA DE CORONA: O IMPOSTO DE RENDA JORDANIANO COMO ESTUDO DE CASO

RESUMO
Objetivo: Este estudo tem como objetivo examinar o impacto dos aspectos da tecnologia da informação e seu papel na melhoria da qualidade do controle financeiro do imposto de renda pessoal na Jordânia devido à pandemia de corona

Desenho/metodologia/abordagem: A amostra do estudo consiste em (166) auditores fiscais e programadores do Departamento de Imposto de Renda e Vendas da Jordânia, e um questionário é preparado e entregue à amostra do estudo para atingir os objetivos do estudo. Melhorando a qualidade do controle financeiro para o imposto de renda da Jordânia, e os resultados também indicam que a região não é uma variável modificada para a função de equipamento técnico e software na melhoria da qualidade do controle financeiro.

Resultados: Como resultado da propagação da epidemia de Corona no imposto de renda da Jordânia. Embora a área seja uma variável modificada para refletir o papel das redes e bancos de dados na melhoria da qualidade do controle financeiro devido à influência da pandemia de Corona no imposto de renda da Jordânia, o centro tem o maior impacto, seguido pelo norte e depois pelo sul.

Originalidade: este estudo amplia o uso da tecnologia de ciência de dados, big data e inteligência artificial, pois são ferramentas necessárias e eficazes para melhorar a qualidade do controle financeiro e contribuir significativamente para atingir os objetivos fundamentais de conter, parar e controlar a epidemia.


INTRODUCTION

Background
The economic environment, as well as the information technology revolution, are characterized by change, acceleration, and intense competition, making it necessary for organizations to keep up with these rapid and enormous changes, and it also obliged them to

find new ways and methods of work to ensure their stability, survival, and continuity to achieve all their objectives.

Information technology has ushered in developments at all levels, particularly in business organizations. It has been able to infiltrate most, if not all, private and governmental business organizations and corporations, fundamentally changing human life and business operations. It has been noted in previous years that many institutions use information technology to enable work teams to increase the efficiency and effectiveness of administrative performance and develop their skills and behavior. Thus, the use of information technology has an active role in highlighting the scalable administrative capabilities of individuals. Furthermore, it will provide them with everything they need, i.e., the means, tools, and capabilities necessary for development and change in their work institutions (Al-Otaibi, 2010).

The critical role of technology at all levels of upper and middle management in job and administrative efficiency requirements for the occupants of these positions. This role is manifested in decentralization solutions in the authority of middle management via operation programming and the resulting depersonalization of performance and the reduction of cadres due to process automation of jobs, particularly routine ones. Information technology requires technical knowledge and allows as many individuals as possible to participate in decision-making (Ibrahim et al., 2020). As a result of the preceding, the subject of this study is the role of information technology in enhancing the quality of financial control at the Jordanian Income Tax.

The Problem of the Study and its Questions

Due to the critical nature of modern technology in the workplace, the process of integrating information technology into government institutions is a modern requirement for keeping up with the rapid evolution of the work environment. As a result, it has become necessary for various institutions to place a premium on the notion of information technology and to prepare for its use, particularly in the country's regulatory institutions. In a supervisory job, the employees in Jordanian income tax are responsible for designing data and final outputs. Therefore, this study aims to identify information technology and its role in enhancing the quality of financial management in the context of the Corona pandemic's impact on Jordan's income tax and to address the following questions. The primary question is as follows:
"What role does information technology play in enhancing the quality of financial control due to the Corona pandemic on Jordan's income tax?"

This question generates the following sub-questions:

1. Does technology equipment have a role to play in enhancing the quality of financial control due to the Corona pandemic on the Jordanian income tax?
2. Is software's role in enhancing the quality of financial control due to the Corona pandemic on Jordanian income tax?
3. Is networks' role in enhancing the quality of financial control due to the Corona pandemic on the Jordanian income tax?
4. Is there a role for databases in enhancing the quality of financial control due to the Corona pandemic on the Jordanian income tax?

The Significance of the Study

The study is significant because it provides a stream of scientific knowledge that addresses one of the most urgent and critical issues confronting institutions at present. It sheds light on the importance of information technology and its effective role in addressing development goals. The significance of this study is demonstrated in the variables used to determine the role of information technology in enhancing the quality of financial control due to the Corona pandemic on the Jordanian income tax, following the rapid development of information technology, global convergence, and administrative development, and considering it a continuous process that does not come to a halt. The study aims to define the concept of financial control and its significance to contribute to the improvement of accounting and its work in financial control, as well as the application of obtained results.

The Study Plan

A study plan was established in response to the problem of the study; it shows the relationship among the independent variable, the dependent variable, and the mediator, which are depicted in Figure 1
Information Technology and its Role in Improving the Quality of Financial Control due to Corona Pandemic: the Jordanian Income Tax as A Case Study

Keywords

Financial Control

It is a part of control activities that include financial and accounting policies and processes, paperwork, records, and financial reports that ensure the institution's assets and money are preserved (Kullab, 2005).

Information Technology

It is a type of technology that is used to create, store, exchange, and utilize various types of information (business data, motion pictures, voice chats, multimedia presentations, and other forms of technology). It includes various equipment, applications, and fundamental services used to process data (Oyewole et al., 2008).

Networks

They are a type of communication system that enables the collaboration of multiple software applications. These applications can be used by anyone, such as Internet browsers, and can operate without human intervention, such as information browsing programs on the World Wide Web (Internet) (Raymond et al., 2009).

Databases

These are a set of data that have been arranged and organized so that several applications may use them by centralizing the data and decreasing repeats efficiently rather than storing the data in distinct and separate files with their own independent application (Chowdhury, 2010).
Devices and equipment

They are electronic devices that are capable of processing data by receiving, storing, and retrieving data automatically, as well as executing arithmetic and logical operations on it (Murar and Brad, 2014).

Software

It is a collection of commands that instruct the computer on how to accomplish specific activities, as software is designed to instruct computers on how to read inputs, store, retrieve, update, and transform data into useful forms (Maelah et al., 2021).

The Concept of IT

The term technology is fraught with ambiguity and interpretation since some use it interchangeably with technology, while others see a clear distinction between the two. Technology's origins can be traced all the way back to the Greeks. It is composed of two syllables: *techno* which means industrial operation, and *logic*, which means science or method; so, it is the science of industrial operation in one word.

According to Webster's Dictionary, technology is the technical language, applied science, and technical method for accomplishing a practical purpose and a collection of means used to provide for people's livelihood and well-being. Technology, as defined by the dictionary, is a method or method of processing technical details or a method for achieving a purpose. Moreover, it refers to the way of producing a particular product or performing a particular task as technology. Additionally, it is described as the optimal combination of technological outputs or products to achieve production goals. It entails the application of scientific knowledge to the production of specialized products (Ibrahim Elhadidy, 2021).

There are numerous and varied perspectives among individuals interested in defining the concept of technology from various perspectives. Others define it as the process of developing the manufacturing process and the methods used to reduce production costs and improve work methods. In contrast, others define it as the technical methods and processes used by the organization to convert inputs such as materials, knowledge, energy, and capital to outputs in the form of goods and services (Naser et al., 2013).

Additionally, technology is defined as the processes, techniques, equipment, and works that are utilized to convert inputs (materials, information, and ideas) into outputs (products and services). Numerous notions relating to information technology have also arisen. There is no
clear definition, as each researcher is aware of their own trends and viewpoints within their specialized scope.

Among the well-known concepts of information technology are computer hardware and software, data and storage technology, and information and data management. These concepts include the process of storing and supplying information and data as resources for an organization's information technology (Loudon and Loudon, 2004).

The Concept of Financial Control

Financial control is defined as a set of procedures that aims to protect the security of financial transactions, safeguard public funds, ensure that public performance complies with applicable laws, rules, and directions, and identify and remedy any irregularities. Additionally, control is defined as the organized processes that aim to verify the implementation of the organization's plans necessary to achieve the organization's objectives, to coordinate between administrative units and to ensure proper utilization of the institution's resources, and assist the administration in taking corrective action in the event of a systemic weakness (Hooper et al., 2008).

Financial control is also defined as the process by which an independent body ensures the safety of financial, accounting, and administrative actions, ascertains the legitimacy of alimony and its compliance with applicable laws, compares implementation results to established plans, measures the level of business results against what was planned, and studies and treats deviations (Naser et al., 2013). After reviewing numerous references dealing with the concept of control, this study defines financial control as the procedures that are carried out to ensure the proper progression of work in the right direction, ensuring the efficiency and effectiveness of performance through the use of the most appropriate control pattern, examination of supervisory systems and procedures, and monitoring following Labor Standards.

Information Technology and its Role in Improving the Quality of Financial Control due to the Corona Pandemic

The Corona pandemic is an unprecedented public health disaster and has had substantial economic consequences for both industrialized and developing countries. As the epidemic spreads and governments respond, the Supreme Audit Institutions' role in assisting government response procedures by enforcing financial management discipline and guaranteeing openness
and accountability has been regarded as important. It discusses prior experiences of higher agencies participating in the government's reaction to natural and manufactured disasters. Critical oversight and essential controls may be jeopardized in these conditions, particularly given the requirement for public financial management systems to be responsive and flexible.

Supreme Audit Institutions can critically analyze and upgrade economic recovery efforts, financial management systems, and governance following the crisis. It entails mobilizing and prioritizing available systems and government technology resources to produce adaptable audit techniques. Thus, the current study demonstrates the importance of information technology in enhancing financial control in the aftermath of the Corona pandemic, influencing all state sectors, including the tax department.

**Related Studies**

The study (Musaed Alkthery and Abdullah Al-Qiawi, 2020) tries to determine the role of public transaction control in optimizing government spending. This is accomplished by debating how to provide oversight of public transactions. To have a better understanding of the subject, Hedada-souk ahras municipality was chosen as a case study. The study is undertaken through a personal interview and analysis of numerous documents received from the Department of Finance and Economic Activity's Office of Public Transactions. The study concluded that public transactions are subject to internal control, specifically the Commission for opening tenders and evaluating offers, and external control, specifically the municipal committee for public transactions, to ensure the transaction runs smoothly and to ensure transparency, equality, and freedom in awarding the transaction.

While the study (Tarabay, 2021) aimed to evaluate financial control procedures in banks operating in Jordan during the Corona pandemic from the perspective of bank employees in Jordan, the results of the study indicated that overall financial control procedures, as well as both the general framework of control, internal control, and external control, are implemented well in Jordanian banks during the Corona pandemic, with rates reaching 62.5% for total financial control, 62.17% for the general control framework within banks, and 65.13% for external control. External control procedures have a statistically and morally significant impact on the quality of internal control procedures application, and financial control procedures play an active role.

On the other hand, the study (Al-Aqib et al. 2021) attempts to determine the reality of information systems in Sudanese banks and the impact of information systems on
行政控制和财务控制。研究人员使用描述性的分析方法，设计并分发了一份包含29个问题的问卷，随机抽取一部分在杰济拉州运营的银行作为样本。研究中使用的统计学方法包括频次、百分比、算术平均数和 Spearman相关系数，通过社会科学统计学软件（SPSS）程序进行分析。研究发现所有关于信息系统的准备程度的描述段落的算术平均值为4.03，表明相对权重为80.3%，并且也确定了信息与行政控制和财务控制之间存在显著的统计关系。研究人员建议在行政和财务控制领域投入精力关注信息系统输出的质量，这些输出支持决策者在行政和财务控制领域的决策，并且信息系统（硬件、软件、网络、人力资源、操作）的各个组成部分。

根据研究（Ali，2016），信息科技的快速和巨大增长，以及随之而来的资金数量的增加和范围的扩大，迫使为用户提供信息时必须以适当的速度和准确性，促使他们考虑利用信息科技及其系统的重要性，作为处理数据及时准确的基础工具。研究试图通过与会计和控制部门的经理和人员进行访谈和分发问卷来量化信息科技对会计绩效的影响。研究结果表明，信息科技有利于会计绩效，通过减少完成财务交易所需的时间和提高会计师的绩效。

同样，研究（Ben Aishi et al.，2016）旨在确定信息科技对阿尔及利亚股份制企业的内部控制系统的有效性的影响，特别是Biskra州。研究对Biskra州13家上市企业进行了调查，确定了：- 他们影响和信息系统的使用，从而影响内部控制系统的有效性，实现公司的目标，并调整工作。

而研究（Al-Aroud，2010）则旨在证明信息科技质量对约旦公共股份制工业内部审计的有效性的影响。研究中，调查了13家上市企业，确定了：- 它们影响信息科技的使用，从而影响内部控制系统的有效性，实现公司的目标，并调整工作。
and service firms, seventy-two questionnaires were retrieved, including 33 from the industrial firm's sector and 39 from the service companies' sector, representing a rate of (68%) of the questionnaires issued. The study addressed the problems using descriptive statistical methods (means and deviations) and multiple regression analysis. The study questioned and tested its hypotheses, concluding that internal auditors' perceptions of the quality of information technology and each of its dimensions, as well as the effectiveness of internal audit, were relatively high and that there is a significant statistically significant impact of the quality of information technology on the effectiveness of internal audit, as explained by its percentage of variance (67 percent). The study proposes that information characteristics be improved as a measure of information technology quality, as well as the need to strengthen the skills of information technology professionals in applying current technology.

According to the study (Jumada, 2010), most businesses tend to design accounting information systems with specific specifications, particularly in light of information technology, to control the massive amounts of necessary data in these businesses and ensure their high reliability. As such, this study focused on the general controls inherent in electronic accounting information systems and their effect on the trustworthiness of accounting data. A questionnaire was designed and distributed to Damascus' audit offices to accomplish the study's aims. The questionnaire assessed the impact of four general control controls for electronic accounting information systems on increasing the reliability of accounting information in businesses: organizational controls - access control controls - file security and protection controls - and system development and documentation controls. The study indicated that the general controls of electronic accounting information systems substantially boost the trustworthiness of accounting information in businesses.

**Measurement Model**

CFA was used to assess the model's fit and adapted from the CFA. CFA was performed. The fit statistics in Table 1 indicate that the theoretical model fits the data well (2/df=1.644, p.00; CFI:.924; GFI; RMSEA:.062; SRMR: 0.049). Cronbach's alpha is larger than 0.60 in Table 2, indicating that the internal consistency is satisfactory. Additionally, Hair et al. (2012) determined the discriminant validity of their method by calculating the square root of the average variance retrieved. The square root of The AVE was greater than the partial correlations for each construct.
Therefore, VIF values for independent variables must be less than 5.00. Between the independent variables, there is no association. The validity of the concept is illustrated in Figure 2 using factor loadings. Particularly the convergent validity assessment results. In Figure 2, all factor loading values are more than 0.50 (Hair et al., 2012), indicating that all constructs pass the construct validity test and all items were assigned to the stated core values.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Mean</th>
<th>SD</th>
<th>Q</th>
<th>EQU</th>
<th>S</th>
<th>N</th>
<th>D</th>
<th>The square root of AVE</th>
<th>vif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>4.10</td>
<td>0.64</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQU</td>
<td>3.78</td>
<td>0.93</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3.51</td>
<td>1.25</td>
<td>-</td>
<td>0.41</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>4.01</td>
<td>0.77</td>
<td>-</td>
<td>0.59</td>
<td>0.27</td>
<td>1</td>
<td></td>
<td>0.77</td>
<td>1.91</td>
</tr>
<tr>
<td>D</td>
<td>4.16</td>
<td>0.85</td>
<td>-</td>
<td>-0.44</td>
<td>-0.07</td>
<td>-0.64</td>
<td>1</td>
<td>0.84</td>
<td>1.62</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
<td>0.91</td>
<td>0.95</td>
<td>0.97</td>
<td>0.90</td>
<td>0.93</td>
<td></td>
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Hypothesis

The study proposed several hypotheses, including the following:

1. Due to the Corona pandemic and the Jordanian income tax, technological equipment can help improve the quality of financial control.
   1- There is a role for software in enhancing financial control quality in light of the Corona pandemic's impact on Jordan's income tax.
   2- The usage of networks has a role to play in enhancing the quality of financial control in light of the Corona pandemic's impact on Jordan's income tax.
   3- The usage of databases has a role to play in enhancing the quality of financial control in light of the Corona pandemic's impact on Jordan's income tax.
   4- In light of the Corona pandemic and the Jordanian income tax, the region is regarded a modified variable for the role of technology equipment in enhancing the quality of financial control.
5- In light of the Corona epidemic over the Jordanian income tax, the region is regarded a modified variable for the function of software in increasing the quality of financial control.

6- In light of the Corona epidemic and the Jordanian income tax, the region is considered a modified variable for the function of networks in enhancing the quality of financial control.

7- The region is treated as a modified variable for the role of databases in enhancing the quality of financial control in the aftermath of the Corona pandemic regarding Jordan’s income tax.

**Testing of Hypotheses**

The hypotheses 1, 2, 3, and 4 were tested using maximum likelihood estimation (MLE). MLE is a technique for estimating the parameters of a probability distribution using a probability function as the objective function. However, H5, H6, H7, and H8 are modeled using observed variable OLS and logistic regression path analysis (Hayes, 2018).  

Fig.1: Model of multiple regression - Unstandardized Estimates

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Fig. 2: Model of multiple regression—Standardized Estimates

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Table (3) shows the effects between independent variables and dependent variable. The effect (EQU → Q) was 0.15, (S → Q) its effect was 0.281, the effect (N → Q) was 0.171, and the effect (D → Q) was 0.297. All these effects are significant (p < 0.05), therefore H1, H2, H3, and H4 were supported.

Table 3: Maximum Likelihood Estimates (N=166).

<table>
<thead>
<tr>
<th>Links</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQU → Q</td>
<td>0.15</td>
<td>0.032</td>
<td>4.766</td>
<td>0.000</td>
</tr>
<tr>
<td>S → Q</td>
<td>0.281</td>
<td>0.065</td>
<td>4.323</td>
<td>0.000</td>
</tr>
<tr>
<td>N → Q</td>
<td>0.171</td>
<td>0.058</td>
<td>2.944</td>
<td>0.003</td>
</tr>
<tr>
<td>D → Q</td>
<td>0.297</td>
<td>0.053</td>
<td>5.655</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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To investigate the hypotheses of moderation, modeling with OLS and logistic regression path analysis was used. As shown in (table 4), the interaction term was not statistically significant for EQU (p=0.459>0.05), showing that region was not a substantial moderator of EQU on Q's influence, and so H5 is not supported.

S(p =0.068,) had a statistically significant interaction term, showing that region was not a substantial moderator of S's effect on Qt, and so H6 is not supported. The interaction term was statistically significant for N (p=0.047, R²=0.0168), showing that region was a substantial positive moderator by a factor of 0.0168 of the influence of N on Q. As a result, H7 was endorsed.
The interaction term was statically significant for D (p = 0.003, ΔR² = 0.0489), indicating that region was a significant moderator positively of the effect of N on Q by a factor of 0.0489. Therefore H8 were supported.

To better understand the interaction effects, Q scores were plotted at combination of levels for region. The plots demonstrate that both the effects of N and D on Q were positive for all. The more effect for central then north and then south (Figs. 2, Fig. 4).

<table>
<thead>
<tr>
<th>Table 4: Results of Moderation Testing (N=166).</th>
</tr>
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<tbody>
<tr>
<td>Moderation</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>EQU_R</td>
</tr>
<tr>
<td>S_R</td>
</tr>
<tr>
<td>N_R</td>
</tr>
<tr>
<td>D_R</td>
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</tbody>
</table>

Fig. 3. Effect of N on Q.

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The Results

1- Due to the Corona pandemic and the Jordanian income tax, technological equipment can help improve the quality of financial control.

2- There is a role for software in enhancing the quality of financial control, particularly in view of the impact of the Corona pandemic on Jordan's income tax.

3- Due to the Corona pandemic and the Jordanian income tax, there is a role for the use of networks in enhancing the quality of financial control.

4- The usage of databases has a role to play in enhancing the quality of financial control in light of the Corona pandemic's impact on Jordan's income tax.

5- Due to the Corona pandemic and the Jordanian income tax, the region is not regarded a modified variable for the role of technology equipment in enhancing the quality of financial control.

6- Due to the Corona epidemic over the Jordanian income tax, the region is not regarded a modified variable for the function of software in increasing the quality of financial control.

7- The area is a modified variable for the function of networks in increasing the quality of financial control in light of the Corona pandemic's influence on the Jordanian income tax, with the center having the greatest beneficial impact, followed by the north and south.

8- The area is treated as a modified variable for the function of databases in enhancing the quality of financial control in light of the Corona pandemic's influence on the
DISCUSSION

The purpose of this study is to quantify the influence of information technology elements and their function in enhancing the quality of financial control in the Jordanian income tax in the aftermath of the Corona pandemic through descriptive and quantitative ratio analysis. To accomplish this goal, the study examined the theoretical aspects of information technology and its role in enhancing the quality of financial control through a review of concepts, objectives, methods, and effects, as well as case studies of selected countries throughout the world, particularly third world countries. Additionally, the study of the Jordanian Income Tax Department's experience aims to develop the study's framework and extract basic factors about information technology and its role in improving the quality of financial management in light of the department's impact from the Corona pandemic. All previous studies (alkthery, 2021, Tarabiya, 2021, Al-Aqib and colleagues, 2021, Ben Aishi, 2016, Al-Aroud, 2010) addressed the same subject, with the exception of the sectors studied and assessed and the time of study.

RECOMMENDATIONS

This study includes a set of recommendations recommended by the researcher, namely: the need to adhere to the defense orders and laws issued by the government regarding the Corona pandemic, and also the need to expand academic research on the expansion of the policy of using advanced technological methods in information technology, such as the use of data science technology, big data, and intelligence analytics. The industrial sector plays an important role in improving the quality of financial control, and also has an important impact in achieving the basic goals of containing, stopping, and controlling the Corona epidemic. This is in addition to the lack of Arab studies on this subject.

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