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**The Impact of Enterprise Resources Planning ERP Systems on
Internal Auditors' Operational Performance
(Case study in Jordanian Banks)**

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Abstract:

ERP systems are spreading widely inside banks environments for many reasons such as develop making decisions process, customer satisfaction and Competitions. This study was to identify the impact of ERP systems' dimensions represented by (performance management, task characteristics, technology characteristics and individual characteristics) on internal auditor's operational performance dimensions represented by (Standardization, Quality, Deliverables). A virtual model was developed to reflect the relationship between the variables and hypothesis of the study. (215) questionnaire distributed with response of (86.5%). Then by using descriptive and statistical methods based on the statistical package of the social sciences SPSS the study revealed a number of results, the most prominent of which were: The level of ERP systems implementation was high inside banking environment and there is a significant impact of the ERP systems on operational performance of internal auditors in Jordanian banks. The study found that there were differences in the level of operational performance related to internal auditors' experiences that correspond to the work field. These results were presented a set of recommendations, the most important is to provide the internal auditors in Jordanian banks with sufficient training to deal with modern electronic environment so that they can face challenges and support their operational performance.

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Key words:

ERP Systems, Operational Performance, Internal Auditors, Jordanian Banks

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Introduction

The increase and expansion of the scope of economic activities in various fields in recent times, as well as the multiplicity of shareholders and the appearance of agency theory¹ led to the need for periodic and annual reports that benefit in assessing the efficiency and performance of management and the optimal and efficient use of economic resources. This has led to increased attention and highlighting the role of internal auditing. An effective cycle is not performed unless there is an internal audit department that performs an internal assessment of the effectiveness of the department within different kind of businesses. The importance internal auditor role in developing internal control requires the raising of his/her cognitive requirements and skills in order to operate tasks in efficiency and effectiveness manner. (Bordelon and Rusate, 2019) declared that identifying the root cause within ERP environment enable management to implement corrective actions that led to them having increased profitability on a consistent basis. Enterprise Resource Planning (ERP) systems appear to have significant effect on the auditing function, internal control procedures and auditors' role (Mengistu, 2019).

Electronic information systems are a distributed man-machine system that effectively organizes related resources, conducts information processing and actualizes business activities and intelligent technology is necessary for electronic information system to improve performance level and advance decision advantage (Li, 2017) and in light of the rapid changes in the fields of information technology, recent decades have witnessed the emergence of some electronic systems that contributed to the formation of a joint cooperative structure in the exchange of information in the company with its ability to accommodate all functions and departments (Al-taweel and Younis, 2013). So, enterprises, such as banks, that are characterized by dynamism and high modernity emerged in the last decades are seeking to coordinate their internal

1 Agency theory discusses the problems that surface in the firms due to the separation of owners and managers and emphasises on the reduction of this problem (Panda and Leepsa, 2017).

and external operations in order to obtain high-value benefits by reducing costs, increasing production efficiency and achieving a competitive advantage.

Adopting electronic information systems inside businesses entities such as ERP systems required internal controls performed by internal auditors. The process of electronic data processing has become necessary in large and small enterprises that aim to achieve greater effectiveness in their activities (Romney et al, 2018). Therefore, it is necessary to evaluate the operational performance represented by (Standardization, Quality, Deliverables) of internal auditors inside this environment of electronic data processing.

This study comes at a time when various banks live at the global and local levels, a shift towards relying on ERP systems for decision-making at various administrative levels. Moreover, The economically importance of the researched banking field at the local and international levels.

Theoretical Background and Literatures Review

Business performance is an overall concept of organizational effectiveness, which includes both indicators of operational performance (i.e. nonfinancial indicators) and indicators of financial performance (Venkatraman and Ramanujam, 1986) and Operational performance measures are used to evaluate, control and improve operations processes to meet organization goals and performance targets and an organization is a measure against standards or prescribed indicators (Munene, 2016).

On 2002 (Dishaw et al, 2002) illustrate that Companies spend a lot of money on software so if managers had a better understanding of why users choose to use software and how frequently they are willing to use it, they could take actions to promote better utilization of the software that the organization has acquired. Thus, this is still working today within digital and information era we are living today on 2020.

Within Jordanian environment, many previous studies examined the impact or effect of information systems on internal auditors and the risks related to information systems that required from internal auditors to concentrate on the internal controls and needed monitoring such as (Al-Refaee, 2013) who mentioned there is an effect of using information technology on the role of internal auditor for monitoring operation risks within Jordanian commercial banks, in addition information technology affect positively internal auditors independent, also declared there is an risks regarding viruses facing information systems which correspond and congruence with (Nsour and Weshah, 2017) study. But, (AL-Dalabeeh, 2017) emphasized that the main risks of information systems are related to its inputs and banks should give inputs security into their consideration to reach right outputs. While both (Ismaeil, 2015) and (AL-Qadi,

2016) both concluded there is an impact of information systems on internal audit quality. (AL Theebah et al, 2018) recommended the necessity of developing the capabilities of the internal auditors in the use of the organization's ERP systems. Internationally, (Goodhue and Thompson 1995) cleared up that research field needs better understand the linkage between information systems and individual performance also ((Njina et al, 2017) emphasized that the correspondence between task requirements, individual abilities, and the functionality of the technology forming the base of task-technology fit. Also, mentioned that empirical studies have identified quality, use, and benefits dimensions as suitable descriptors of success of ERP systems.

(Saharia et al, 2008) declared from an internal audit perspective, enterprise systems have created new opportunities and challenges in managing internal as well as external risks and clearly illustrated that ERP systems have the potential to change the way risk management function in the organization.(Madani, 2009) clarified that ERP systems give internal auditors an enabling technology to advise management on the implications of ERP for risk-intelligence. Institute of Internal Auditors IIA within position paper (2009) declared that when internal auditing extends its activities beyond this core role (which include assess the company's risks and the efficacy of its risk management efforts, ensure that the organization is complying with relevant laws and statutes and evaluate internal controls and make recommendations on how to improve) it should apply certain safeguards, including treating the engagements as consulting services and, therefore, applying all relevant Standards. In this way, internal auditing will protect its independence and the objectivity of its assurance. (Kanellou and Spathis, 2011) have argued that ERP systems implementation have a great impact on auditing and (Elbardan and Ali, 2012) revealed that ERP systems motivate internal audit function improvements also (Tsai et al, 2015) emphasized that implementation of the ERP system can facilitate improvements in the role of management accountants, including the elimination of routine jobs.

(Vinatoru and Calota, 2014) revealed that ERP system is usually followed by an increase in internal audit procedures as a result the organisation may reach a higher level of integration in business processes and to improve the quality of the reports and (Elbardan et al, 2015) concluded that ERP systems constrain the activities of the organization, and shape the cognitive processes of internal auditors. Consequently, it constrains corporate governance's institutional forces that influence specific trajectories of the configuration of the internal audit function.

Previous studies and more examined the quality, risks, internal controls and monitoring within information technology and ERP systems. Current study

The Impact of Enterprise Resources Planning ERP Systems

examined the internal auditors' operational performance depended on new dimensions (Standardization, Quality, Deliverables).

Standardization

Business process standardization is the activity of unifying different variants of a family of business processes and the unification of business processes and the underlying actions within a company (Romero, et al, 2015).

Quality Performance

Quality performance is measured with several indicators, including product feature and characteristics, quality improvement activities, product technical durability, product specification, and product function (Kurniawana et al, 2020).

Deliverables

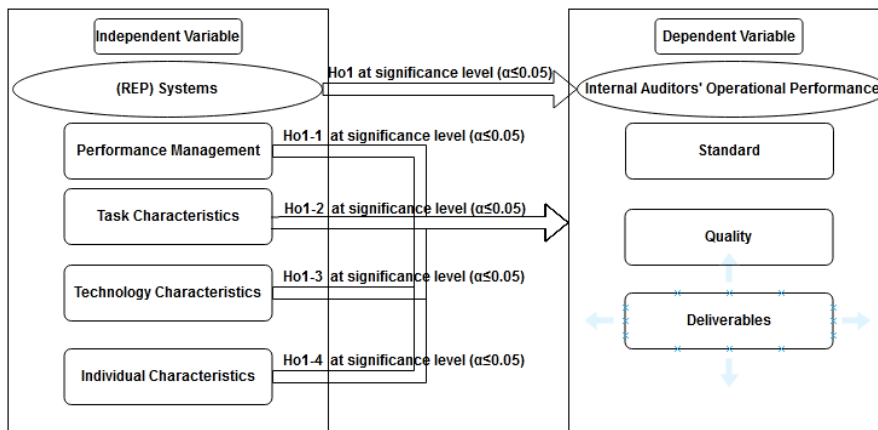
Providing needed information in timely manner.

Task Characteristics

Regarding to Institute of Internal Auditors (IIA) internal auditor's task characteristics depending on independence, objectivity, and proficiency.

Study Influence Diagram and Hypothesis

The following Figure 1 developed to illustrate study's variables and hypothesis which depended on (Njina et al, 2017), (Moorthy et al, 2011), and (D'Souza, 2012):



Data Analysis and Discussions

Descriptive and analytical method in conducting this study, where the findings from descriptive analytics can quickly identify areas that require improvement

and this methodology is appropriate for the current study because it describes the impact of the implementation of ERP systems on operational performance on internal auditors as it is in reality, where the analytical approach and statistical treatment of study variables have been used, and their relevance according to the goals and hypotheses of the study consequently to reach study results and recommendations.

A questionnaire was developed and distributed in study society which consisted of (215) internal auditors within Jordanian banks with response of (186) appropriate questionnaire.

Table 1: Evaluate the Alpha Cronbach coefficients for study variables within questionnaire

Variable	Dimensions	Alpha Cronbach
ERP systems	Performance Management	0.844
	Task Characteristics	0.811
	Technology Characteristics	0.838
	Individual Characteristics	0.839
Total	0.940	
Operating Performance	Quality	0.906
	Standardization	0.924
	Deliverables	0.836
Total	0.953	

Alpha Cronbach's all values were high values, which indicates that the questionnaire has a high degree of stability.

Table 2: level of ERP systems implementation within Jordanian Banks

Dimensions	Average	Standard Deviation	Implementation Level
Quality	4.25	0.622	Very High
Standardization	4.19	0.567	Very High
Deliverables	4.24	0.610	Very High
All	4.23	0.550	Very High

Table 2 shows the high level of ERP systems implementation, which is normal and expected within this digital and electronical era.

For measuring the impact of ERP systems on internal auditors’ operational performance, the study used multiple linear regression analysis for ERP systems’ dimensions represented by (performance management, task characteristics, technology characteristics and individual characteristics) as following:

Table 3: One-Way ANOVA Analysis for ERP Systems Impact on Internal Auditors’ Operational Performance

Source	Total Sum of Squares (TSS)	Degrees of Freedom	Squares Average	F Value	Significance Level
Regression	39.651	4	9.913	123.899	0.000
Residuals	13.841	173	0.080		
Total	53.492	177			

The value of the significance level reached (0.00) which is less than (0.05), which means rejecting (Ho1) and indicating that there is an effect of applying ERP systems on internal auditors’ operational performance.

Table 4: Multiple regression analysis for ERP Systems Impact on Internal Auditors’ Operational Performance

Dimensions	B	t	Significance Level
Performance Management	0.280	4.843	0.000
Task Characteristics	0.377	6.358	0.000
Technology Characteristics	0.201	3.265	0.000

Individual Characteristics	0.241	3.548	0.000
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$R^2 = 0.735$

The values of the significance levels were less than (0.05) for all dimensions which indicate of an impact of all these dimensions on internal auditors' operational performance. The results also showed that the implantation of enterprise resource planning systems with their dimensions explained (73.5%) of the variance in the levels of operational performance.

Regarding Enterprise Resources Planning ERP systems and its impact on each dimension of internal auditors' operational performance, the following are statistical analysis for each one of them:

Table 5: One-Way ANOVA Analysis for ERP Systems Impact on Performance Management as Dimension of Internal Auditors' Operational Performance

Source	Total Sum of Squares (TSS)	Degrees of Freedom	Squares Average	F Value	Significance Level
Regression	44.491	4	11.123	80.384	0.000
Residuals	23.938	173	0.138		
Total	68.429	177			

Table 6: Multiple regression analysis for ERP Systems Impact on Performance Management as Dimension of Internal Auditors' Operational Performance

Dimensions	B	t	Significance Level
Performance Management	0.366	5.448	0.000
Task Characteristics	0.244	3.539	0.001
Technology Characteristics	0.206	3.620	0.000
Individual Characteristics	0.202	2.563	0.011

$R^2 = 0.642$

Table 5 and 6 showing that (Ho1-1) rejected and indicated that there is an impact of applying ERP systems on performance management as one of internal auditors' operational performance dimensions depending on the values of the significance levels were less than (0.05). In addition, the results also showed that the implantation of enterprise resource planning systems with their dimensions

The Impact of Enterprise Resources Planning ERP Systems

explained (64.2%) of the variance in the levels of internal auditors’ operational performance.

Table 7: One-Way ANOVA Analysis for ERP Systems Impact on Standard as Dimension of Internal Auditors’ Operational Performance

Source	Total Sum of Squares (TSS)	Degrees of Freedom	Squares Average	F Value	Significance Level
Regression	43.369	4	10.842	83.478	0.000
Residuals	22.469	173	0.130		
Total	65.838	177			

Table 8: Multiple regression analysis for ERP Systems Impact on Standards as Dimension of Internal Auditors’ Operational Performance

Dimensions	B	t	Significance Level
Performance Management	0.217	3.276	0.001
Task Characteristics	0.471	6.911	0.000
Technology Characteristics	0.014	4.187	0.000
Individual Characteristics	0.208	2.672	0.008

$R^2 = 0.651$

Table 7 and 8 showing that (Ho1-2) rejected and indicated that there is an impact of applying ERP systems on standards as one of internal auditors’ operational performance dimensions depending on the values of the significance levels were less than (0.05). In addition, the results also showed that the implantation of enterprise resource planning systems with their dimensions explained (65.1%) of the variance in the levels of internal auditors’ operational performance.

Table 9: One-Way ANOVA Analysis for ERP Systems Impact on Deliverables as Dimension of Internal Auditors’ Operational Performance

Source	Total Sum of Squares (TSS)	Degrees of Freedom	Squares Average	F Value	Significance Level
Regression	29.745	4	7.436	47.513	0.000
Residuals	27.076	173	0.157		
Total	56.822	177			

Table 10: Multiple regression analysis for ERP Systems Impact on Deliverables as Dimension of Internal Auditors’ Operational Performance

Dimensions	B	t	Significance Level
Performance Management	0.149	2.020	0.041
Task Characteristics	0.278	3.452	0.001
Technology Characteristics	0.229	2.876	0.005
Individual Characteristics	0.265	2.878	0.005

$R^2 = 0.512$

Table 9 and 10 showing that (Ho1-3) rejected and indicated that there is an impact of applying ERP systems on deliverables as one of internal auditors’ operational performance dimensions depending on the values of the significance levels were less than (0.05). In addition, the results also showed that the implantation of enterprise resource planning systems with their dimensions explained (51.2%) of the variance in the levels of internal auditors’ operational performance.

Conclusions and Recommendations

The results of the study showed that the effect of the internal auditors’ operational performance represented by (quality, standardization, delivery on time) in Jordanian banks from the point of view of the sample members was high, as the quality got first rank with an average of (4.25), and this indicates the importance of quality in performance, came in second rank the standardization by internal auditors in operational performance with an average of (4.24) which so close to quality dimension, and finally deliverables specified in the third rank with an average of (4.19) which is the least dimensions.

The study depended on revealed results conducted number of recommendations, intensifying the training courses for the internal auditors and preparing appropriate programs and means that help in upgrading quality while performing operational performance at work. Moving on forward, based on data generated from the research the training step particularly when it is considered as one of main policies inside banks, this will secure that every individual within the bank is informed about the new policy, as well as, it will ensure that the policy itself is followed.

In addition, directing workers within banking sector to the importance of enterprises resource planning systems and their role in facilitating business methods in a standardized and ideal way to work and avoiding hindering their success and consequently success to achieve bank’s goals.

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The Impact of Enterprise Resources Planning ERP Systems

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