

The Role Of Information And Communication Technology As A Mediator In The Relationship Between The Management Support And Performance Improvement In Jordan

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Abstract:— Information and communication technology (ICT) has been affected the performance by improving it through the ICT's elements that simplify and accelerate the exchange the relevant information for decision makers which improve the results of those decisions. In other hand, without a management financial (infrastructure, money,...) and non-financial (time and personal,...) support for ICT elements then the effect will be weak. This study examine the mediating role of information and communication technology on the relationship between management support and performance improvement in public universities as one of the most sectors which the elements of the study available and needed in Jordan, the data collected and analyzed from 107 respondent working in financial internal control departments. That used to validate the framework and test the hypothesis related to the relation between study variables using PLS-SEM, the result of the study shows that the management support and ICT will improve the performance of the public universities in Jordan, Also ,it indicate the positive role of ICT as mediator variable in the relation between MS and PI, these results may help the universities top management to be supportive (financially and non-financially) to ICT elements in improving its performance.

Index Terms:— Information and Communication Technology, Management Support, Performance Improvement, Public Universities, Jordan.

1 INTRODUCTION

Management seeks to maximize the value of its products of its institutions - small or large institutions- by developing various methods, tools and systems which will contribute to provide the valuable and useful information that align reversibly with the risk [1] by improving the outcomes of decision-making processes, the differentiation between the alternatives and selecting the most profitable one, or reducing costs in the case of government institutions [2]. The challenge is to obtain the information at the shortest possible time or at least within the appropriate decision-making period where information and communication technology ICT consider a vital part of the organizations due to its usefulness in providing the decision makers with the appropriate information needed in their decisions which can rely on it to perform the work, improving the type of service and simplifying procedures in order to improve the performance [3]. Its logical for the institutions management to adopt the required methods and techniques to develop these systems (technology) and its components where all management levels play an important role in the development of information technology in general and the specialized systems as accounting system by providing its needed resources in added to the effective and meaningful participation between management, users, and the system developers. It's expected f'rom the management to support this development in ICT by providing the financial and non-financial allocation, such as time, people, location, consultations, and other necessary resources which will increase the quality that needed to activate ICT to improve the decisions making process, therefore improve the performance of organization [4].

2 STUDY PROBLEM

The improvement of organization performance depends largely on the quality of managerial decision which in turn depends on the relevance level and reliability degree (information quality) and the characteristics of an accurate financial and non-financial information provided to the decision-maker, where the lower information quality will lead to a reduction in the management decision quality level and result in unfavorable deviations and variances from the targeted and standard performance [5],[6] which leads to complexity in the administrative procedures and leads to a decline in the performance of management and organization and cause a repetition in time and costs which makes it necessary for the institutions management to keep up with the new needs, and cope with and ensure the availability of ICT development process requirements [2] and that calls for examine the relationship between ICT and the organization's performance [8]. In other hand, the management must firstly play an expected positive role through its support in the ICT to provide the necessary information which will ultimately affect the second expected positive role that improve the institutional performance [9]. The researcher chose the environment of government sector and the official universities in Jordan in particular due to the presence of researcher own observations problems in information and communication which suppose to be supported by the university administration (top management) represented in the Board of Trustees and the University Council, this study comes to identify the impact of ICT on the relationship between management support and performance improvement at the Jordanian public universities. According to the above, the following study questions can be raised:

1. What is the impact of management's support on ICT at the Jordanian public universities?
2. What is the impact of management's support on improving performance at the Jordanian public universities?
3. What is the impact of ICT on improving performance at the Jordanian public universities?

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4. What is the impact of ICT on the relationship between management support and performance improvement at the Jordanian public universities?

Based on the study questions and in an attempt to answer them, the following null hypotheses were formulated:

1. There is no impact of management support on ICT at the Jordanian public universities.
2. There is no impact of management support on improving performance at the Jordanian public universities.
3. There is no impact of ICT on improving performance at the Jordanian public universities.
4. There is no impact of ICT on the relationship between management support and performance improvement at the Jordanian public universities.

3 THEORITICAL FRAMEWORK AND LITRITURE REVIEW

3.1 Theoretical Framework

Information technology has become the new force in the contemporary economy where in every job and every form of communication will be handled through the changing structure of IT environment [10], and this is not limited to the developed countries but the benefits have even reached the developing countries like Jordan as a result of trade and transactions globalization that require the development of information and communication technology and systems [11] which simplify the communication within the single institution (private or public) and between the institutions within the same country, eventually ensuring the communication and exchange of information between the countries. The main purpose of this communication is to achieve the benefits that embodied in reducing and rationalizing the costs, and increasing the revenues and returns to its maximum extent within the targeted quality. This indicate that ICT is expected to have a role in ensuring the communication network between the departments in organizations and that to be fast, clear, accurate, and secured from risks which will reduce the duplication of efforts for the same outputs and information that will be eventually used to make a decision. This accuracy and speed will be a reason for the efficiency and effectiveness of the used systems and simplify of the procedures that employees performed to achieve the daily operational processes and therefore reducing of costs needed to obtain the information. Many researchers have define information technology, they define it as a scientific technology and an administrative tool that used to process data and software operation. Also defined as the use of software and electronic devices to process, store, convert, and display information in its various forms. It's the studying, designing, developing, implementing, supporting and managing of the computerized information systems. It's also defined as anything related to the computerized technology, such as networks, devices, Internet connectivity, persons specialized in this technology and any element related to the transformation and delivery of information, and any other related systems that facilitate the communication and telecommunication processes [12],[13],[14],[15]. IT aims to provide a method to communicate and process information in a written, audio, or video signals form through the use of wires, cables, wireless, and other connectivity technologies that will reduce computing time, and

can summarized its objectives in supporting the technical functions of hardware, technology processing, sequential control possession, support of data and information storage, retrieving information and linking systems together [16].

The following are IT specific considerations where most of it depends on the support of top management in order to make it available [17],[18],[19]:

1. The availability of an IT budget related to the costs of hardware, software, and the salaries of programmers and also the costs of communications network infrastructure.
2. Furniture, buildings, equipped rooms of personal and main computers, and fixed power provider by creating an automatic supplementary power supply.
3. The availability of essential software to perform the work, ensure the meaningful communication between employees, acquisition of these software.
4. The recruitment and employment of staff who have the appropriate practical and scientific competence related to the targeted IT content, with taking into consideration the assumption of expansion and development on information technology to its maximum levels in the future, and this requires from workers such as programmers and developers to follow up on IT topic through the researches, conferences, and specialized courses.
5. The regulatory and internal control considerations that should be taken into account to ensure that employees work on programs leads to the prevention of physical and non-physical risks through the direct observation or the periodically management reports, and brief the programs and systems manager(s) in the institution.

The institutions make an effort to adopt and develop IT with its various components in order to contribute to the creation of value for the institution(university) and subsequently create a value for the consumer which reflects on the improvement of performance that IT was put for through the following points [20],[1]. First: The reduction of operational costs and the production costs per unit(university education service) where it works to reduce the time needed to complete the transactions, decrease the physical effort exerted to complete it, and preventing the duplication of effort needed to produce the same information, also more speed, accuracy to complete the transactions, timeliness of information, and reducing the number of employees where the electronic transactions need fewer employees than the traditional transactions. Second: The connection of IT with the internal control systems electronically will help to avoid errors in a better way by programming the controls and instructions and applying them to the computerized financial and managerial systems as much as possible. Third: The flexibility of modification and change in case of the presence of easy-to-modify and develop systems, in accordance with the contemporary instructions of information systems and the outputs of these systems. Forth: Control the delegation of authorities and the accountability of responsibilities in a better way by linking employees to passwords according to their positions and authorities. Fifth: Find an automatic route for the daily, monthly, and annually routines of managerial transactions and procedures by determining the accreditation according to the authorities, and to the whole steps of procedures that must be followed. Its shows from the above that improvement of the managerial

procedures would improve the management practices of its functions, such as planning, controlling, and decision-making based on the outputs of systems which have improved with the development of ICT levels that are supported by the management and eventually improved the organization performance, and by the implementation of regulatory controls on the regulatory systems that will help to improve the performance, and avoid the errors and its negative consequences. All of this require financial allocations, scientific and practical competencies, an infrastructure that was addressed previously which can't be obtained and achieved without the full support of top management, the support of systems' development team, purchasing of software, establishing the infrastructure, therefore the concepts of continuous improvement and permanent support must be part of the management culture.

3.2 Literature Review

Several researchers addressed in their studies the importance of IT to public institutions and the adoption of public authorities to this tool in order to achieve its objectives by obtaining information that used to manage the institution [21] and the subsequent changes in employees skills on the short term and in the organization culture on the long term, where government agencies not only should keep up with the developments in IT but also should advance in it to the level of innovation and creativity [22] where companies management should prepare their employees to understand and adopt the technological pattern of information management, whether at the organization level as a whole or at the individual level by being a tool that used by management to improve the communication among its members as one of its important issues [23]. While [24] sees it as a result of the transformation from industrial society to the information society and from the industrial economy to the knowledge economy, followed by a positive impact of this tool on the performance of enterprises[7] despite the need to bear and incur the cost of developing, designing, and establishing the structure of IT , which included under the term information system IS due to the fact that both terms have the same goal of collecting, processing, and retrieving information and putting it in a useful template for its users and decision makers. The IT tool has preceded positive role represented in the processing of large data within the computer hardware, communication networks, and the programs that employees at the organization deal with to accommodate the day-to-day operations in order to achieve the goals of the institution and improve its performance to justify that investment in IT has an impact on the improvement of financial and non-financial performance [25]. The study of [26],[27] showed an impact of IT utilization on saving the time spent to complete the tasks and deal with the changes in the institutions which will necessarily affect the structure of the organization [28],[29] compared with the period before the existence of IT and its impact on the productivity of workers and organizations [30]. The targeted level of ICT depends primarily on the high level of this information and the targeted form used to deliver the information to its users, therefore any increase in the complexity of IT will lead to an increase in the control level used in the organization [31]. This takes a form of supervising or directing on the targeted coordination and improving it between the departments of the single organization and reducing the cost of such coordination without increasing the risk of the organization's internal

operations and eventually will lead to the effectiveness of the learning curve [32]. Several studies have addressed the role of IT in the organization's operations, such as the value chain stages and the complexity it hold in some of the industries [33] where the goal of it will be to maximize the benefit of employing information to produce the goods and services, and the maximize project profits [34],[9] also encourage the creativity in the change style at the institution as a result of IT [35]. Therefore, the reader can see it as a model for the relationship between IT and its infrastructure in one hand and the processes and strategy of the business in other hand to achieve a competitive advantage [36],[37]. The working individuals at the organization need a permanent support of top management for the purposes of approving the allocation of financial and human resources that they need to activate the businesses in these departments by acquiring the hardware, software, and the communication networks that they need to process and run the data and get information to make rational decisions. Several studies addressed the important and vital role of top management support to improve the decisions and therefore improve the management where it considered one of the most critical success factors (CSF) of the organization [17] as the departments and sections of the organization need to implement its policies and achieve its goals of maximizing profitability, productivity, and increasing consumers' benefits as in the public sector where all of this will improve the organization's performance [18]. This support of top management begins by influencing the individuals' behaviors through the presence of incentives, motives, and supports of their ideas which will influence the behavior of job citizenship and will promote their work to the point of creativity and innovation [38], [39] and by influence the employees will affect the organization's performance since those individuals are the ones who formulate the procedures according to the business's structure and development, and they are also the one responsible for the design and development of various subsystems within the organization, which include the managerial and accounting systems that must provide the valuable and beneficial outcomes for the organization [40], [41]. The study of [42] proved the role of top management support to the improvement of communication and telecommunication, which in turn affects the implementation of lean manufacturing as one of the modern concepts that emphasizes the important role of top management support in the organizations, and that it has an a mediating role between several variables, where the study of [43] came to justify this intermediary role of top management support between the leadership variable and the organization success variable by improving the performance.

4 RESEARCH METHOD

4.1 Sample and Data Collection

The study population in the study contains of internal control and financial departments employees who work in the (10) Public Jordanian Universities, data collected by survey method (a questionnaire) which distributed among 159 employee randomly selected, (22) was eliminated because of incomplete answers or un objective responses and 107 are valid for analysis representing 67.3% of the total population, this data was used to test the hypothesized relationship between study variables.

4.2 Instrument

The researcher developed the questionnaire based on the literature review and previous study instruments using 1-5 likert-type scale which represent the level of respondents approval validated from 1 strongly disagree to 5 strongly agree. Paragraphs in the questionnaire related to the variables of the study were developed according to ideas and paragraphs in e.g. as the following past studies:

1. Top Management Support (MS) : which measured through eight-items questionnaire from the researcher own observation following studies [17], [18],[19] that concentrate on the availability of top management support policy and actions.
2. Information and Communication Technology (ICT): which measured through seven teen-items questionnaire from the researcher own observation following studies [4],[8],[16] that deals with availability of components of ICT.
3. Performance Improvement (PI) : which measured through six-items questionnaire from the researcher own observation following studies [3],[20],[1] that represent the rating of performance dimensions by internal control and financial department employees.

4.3 Data Analysis and Results

The study conducted PLS-SEM analysis, with Smart PLS, version 3 for the following purpose; to examine the formulated hypotheses [44], with PLS being the most suitable analysis owing to the study's small-sized sample coupled with its exploratory nature [45]. The size of the sample is 107 and it meets the least sample size criterion as explained by Roscoe's rule of thumb, referring to suitable samples as being over 30 and lower than 500. In addition, the study conducted a two-step approach that was suggested by prior studies [46],[47],[48], for the analysis and interpretation of the PLS results viz-a-viz the hypotheses tested. In this regard, reliability and validity of the outer model measurement was assessed and the inner model was tested.

4.4 Analysis of the Measurement Model

Before the measurement model was analyzed, the reliability of the individual measures was assessed along with the composite of each construct's measures reliability (internal consistency reliability) and the individual measures validity (convergent validity and discriminant validity) (refer to Table 1). The paper first focused on the internal consistency reliability, involving Cronbach's alpha coefficients and composite reliability to determine the measurement model's adequacy. In this regard [49] view Cronbach's alpha values lying between 0.901 and 0.944 as exceeding the threshold value of 0.70, indicating high internal consistency. Additionally, the values of composite reliability were between 0.907 and 0.946, which exceed the 0.70 threshold value, further confirming high reliability [50]. Added to the above tests, Dijkstra-Henseler's rhoA was employed in addition to Cronbach's alpha and composite reliability to generate accurate data consistency estimation and to confirm construct loadings reliability [44],[51]. The study also assessed convergent validity by obtaining AVE values. The AVE values varied between 0.625 and 0.672, which are over the 0.50 threshold value, illustrating high convergent validity as established by [50].

TABLE 1
EVALUATION OF MEASUREMENT MODEL

Construct	Items	Loadings	Cronbach's alpha	rhoA	CR	AVE
Management support	MS-1	0.749	0.922	0.929	0.936	0.646
	MS-2	0.826				
	MS-3	0.752				
	MS-4	0.759				
	MS-5	0.847				
	MS-6	0.864				
	MS-7	0.799				
	MS-8	0.828				
Information technology & communication	ICT-1	0.808	0.944	0.946	0.947	0.625
	ICT-2	0.814				
	ICT-3	0.838				
	ICT-4	0.764				
	ICT-5	0.797				
	ICT-6	0.791				
	ICT-7	0.760				
	ICT-8	0.730				
	ICT-9	0.751				
	ICT-10	0.766				
Performance improvement	PI-1	0.865	0.901	0.907	0.924	0.672
	PI-2	0.876				
	PI-3	0.818				
	PI-4	0.880				
	PI-5	0.712				
	PI-6	0.762				

TABLE 2
DISCRIMINATE VALIDITY (CROSS-LOADING METHOD)

Items	ICT	MS	PI
ICT-1-1	0.808	0.383	0.643
ICT-T-2	0.814	0.401	0.478
ICT-T-3	0.838	0.577	0.616
ICT-T-4	0.764	0.553	0.557
ICT-T-5	0.797	0.529	0.551
ICT-T-6	0.791	0.618	0.528
ICT-T-7	0.760	0.457	0.464
ICT-T-8	0.730	0.517	0.507
ICT-T-9	0.751	0.513	0.543
ICT-T-10	0.766	0.550	0.583
ICT-T-11	0.818	0.498	0.546
ICT-T-12	0.747	0.475	0.485
ICT-T-13	0.836	0.452	0.508
ICT-T-14	0.849	0.449	0.480
ICT-T-15	0.828	0.434	0.450
ICT-T-16	0.843	0.410	0.447
ICT-T-17	0.795	0.560	0.700
MS-1	0.367	0.749	0.547
MS-2	0.572	0.826	0.598
MS-3	0.384	0.752	0.374
MS-4	0.496	0.758	0.472
MS-5	0.610	0.847	0.483
MS-6	0.610	0.864	0.556
MS-7	0.467	0.799	0.440
MS-8	0.546	0.828	0.535
PI-1	0.635	0.535	0.855
PI-2	0.393	0.372	0.876
PI-3	0.522	0.441	0.818
PI-4	0.559	0.550	0.880
PI-5	0.428	0.523	0.712
PI-6	0.576	0.466	0.762

Moreover, the paper conducted an assessment of the measurement model's discriminate validity by obtaining the cross loading values and HTMT criterion. The first method calls for the indicator's outer loading on the related constructs to be higher than all outer loadings of the other constructs [52]. In case the cross-loading exceeds the indicator's outer loading, discriminate validity becomes an issue. Therefore, this study applied the cross-loading method on the study variables (management support, information technology and communication (ICT), and performance improvement). Table 2 tabulates the values of cross-loadings. The determination of discriminant validity in this study

has its basis on the indicators loadings in comparison to other constructs' cross-loadings. Lastly, the study established discriminate validity by conducting a comparison between the AVE square root and the correlations as presented in Table 3. Also, the HTMT value did not exceed 0.85, and is thus conservative as suggested by prior studies [52],[53]. HTMT is applied as a criterion for discriminate validity evaluation [54] to confirm the absence of multicollinearity. Additionally, construct correlation values remained under 0.85 as suggested by [52], [53], [55], [56], further establishing the presence of discriminate validity [53].

TABLE 3
DISCRIMINATE VALIDITY (HTMT METHOD)

Construct	I.C.T	M.S	P.I
I..C.T			
M.S	0.661		
P.I	0.717	0.684	

The final model and outer model assessment in terms of indicator reliability, internal consistency reliability and construct validity, involving both convergent and discriminate validity, presented above, showed the absence of any issue related to the indicators. (see Fig1).

4.5 Evaluation of Structural Model

The structural model analysis largely depends on evaluating the statistical significance of structural coefficients that are contained within the PLS model. While structural coefficients are represented by β values in Ordinary Least Square regression [57], the present study made use of bootstrap method with 5000 sub-samples [52] instead. On the basis of the results, hypotheses H1 to H3 are supported. Specifically, management support had a significant positive and direct effect on ICT and performance improvement ($\beta = .640, .329$; $t = 9.384, 3.243$; $p < .05$) respectively, and ICT had a significant positive and direct effect on performance improvement ($\beta = .468$; $t = 4.404$; $p < .05$) as presented in Fig 1 and table 4. Added to the above, coefficient of determination (R^2) was used to measure the model's predictive accuracy. Coefficient of determination (R^2) is a representation of the variance amount in each endogenous construct that are explained by the entire exogenous constructs that relate to it [58]. The (R^2) values vary from 0 to 1, with bigger values indicating higher predictive accuracy levels [59]. The established general rule of thumb [60] is that R^2 value of 0.26 is substantial, of 0.13 is moderate and 0.02 is weak in their predictive accuracy degrees. The predictive accuracy of ICT in this case is ($R^2 = 0.410$), while performance improvement is ($R^2 = 0.525$), which indicate substantial degrees. Meanwhile, the next step entailed the calculation of the effect size (f^2) to determine the measure of relative impact of a specific exogenous construct on its endogenous counterpart [60]. It is obtained by calculating the difference between total value of R^2 and the value of R^2 sans the specific exogenous construct. In this regard, the higher the value, the higher will be the contribution to the endogenous construct. According to the rule of thumb established [60], f^2 score of 0.35 is large, of 0.15 is medium and of 0.02 is small. Table 4 shows that majority of the f^2 values are medium to large, which means that the theoretical framework is convenient with the study variables.

TABLE 4
ASSESSMENT OF PATH COEFFICIENTS

Hypothesis	Beta and t value	f^2	95% confidence intervals	Decision
H1: M.S->I.C.T	0.640 (9.384)	0.695	(0.507 ; 0.764)Sig	Supported
H2: M.S->P.I	0.329 (3.243)	0.135	(0.179 ; 0.548)Sig	Supported
H3: I.C.T->P.I	0.468 (4.404)	0.272	(0.223 ; 0.639)Sig	Supported

Note: M.S= Management support, I.C.T= Information technology and communication, P.I= Performance improvement.

Lastly, for the mediating effect testing, this study adopted the approach proposed by [61], involving the exposure of the sampling distribution to bootstrapping to estimate the indirect effects. In relation to this, an indirect effect that is statistical significant should have a t-value of at least 1.96 [58], with confidence interval for the effects having no zero-straddling in between [61]. Table 5 displays the bootstrapping results and from the table, the indirect effects tested for hypothesis 4 succeeded in reaching the 1.96 yardstick and thus, the hypothesis is supported. In other words, ICT mediates the relationship between management support and improvement of performance. The final framework and confirmed and supported significant relationships are presented in Fig 1 and table 5.

TABLE 5
RESULTS OF INDIRECT EFFECT

Hypothesis	Beta and T value	95% confidence intervals	VAF	Decision
H4: M.S->I.T.C->P.I	0.300 (4.752)	(0.170 ; 0.409)Sig	0.50	Supported

Note: M.S= Management support, I.T.C= Information technology and communication, P.I= Performance improvement.

According to [62], the mediating effect, it is supported when the indirect a x b effect is significant. There are two mediation types, which are full mediation and partial mediation. The former is said to exist when the direct effect c' is insignificant, while the indirect a x b remains significant, which indicates an indirect effect through the mediating variable [62]. The latter is said to exist if the rest of the situations under direct effect c' and indirect effect a x b remains significant [62]. The study made use of VAF to calculate the indirect-to-total effect in ratio terms as suggested by [63]. Values of VAF that remain lower than 20% are indicative of zero mediation, those that lie between 20 to 80% are indicative of partial mediation, and lastly, those that exceed 80% are indicative of full mediation [52]. The VAF value obtained for this study is 0.50, which shows that ICT is a partial mediator of the management support-performance improvement relationship.

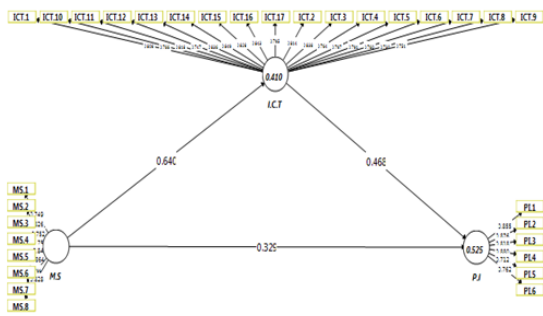


Fig. 1. Research model and path coefficients.

5 CONCLUSION

This study was motivated by the lack of evidence on the role of information and communication technology in the relationship between the top management support and the performance improvement. It explained the challenges associated with investigating the relationship through the 31 items related the three variables, it was the first study that test the mediating role and impact top management support on the improving performance in the Jordanian governmental universities as vital sector that really affect the country. The study found a strong evidence for the positive and direct effect of top management support firstly on information and communication technology (ICT) secondly on performance improvement and had a significant positive and direct effect of ICT on performance improvement .and finally found that ICT positively mediate the relationship between Management Support (MS) and Performance Improvement. According to the result, management of the universities have to reinforce of ICT components and increase of its capabilities to improve more and more of its performance which will add value to these universities and by delegating the top management authority to support the ICT in the financial and non-financial method. So researcher recommend to study the ability of top management for supporting the infrastructure and personal related to ICT, and continuously evaluate the improvement in financial and non-financial performance.

REFERENCES

- [1] T. R. Browning, S. D. Eppinger, J. J. Deyst Jr., and D. E. Whitney, "7.4.4 Complex System Product Development: Adding Value by Creating Information and Reducing Risk," vol. 10, no. 1, pp. 548-556, 2000.
- [2] A. El-Dalabeeh and S. O. Al-Shbiel, "The role of computerized accounting information systems in reducing the costs of medical services at King Abdullah University Hospital," *Interdisciplinary journal of contemporary research in business*, vol. 4, no. 6, pp. 893-900, 2012.
- [3] M. Attaran, "Exploring the relationship between information technology and business process reengineering," *Information & management*, vol. 41, no. 5, pp. 585-596, 2004.
- [4] A. Joiner Therese, "Total quality management and performance," *International Journal of Quality & Reliability Management*, vol. 24, no. 6, pp. 617-627,

2007.

- [5] E. Brynjolfsson and L. M. Hitt, "Beyond Computation: Information Technology, Organizational Transformation and Business Performance," *Journal of Economic Perspectives*, vol. 14, no. 4, pp. 23-48, 2000.
- [6] A. Carmeli, A. Tishler, and A. C. Edmondson, "CEO relational leadership and strategic decision quality in top management teams: The role of team trust and learning from failure," *Strategic Organization*, vol. 10, no. 1, pp. 31-54, 2012.
- [7] A. K. El-Dalabeeh, "The Role Of Financial Analysis Ratio In Evaluating Performance (Case Study: National Chlorine Industry)." *Interdisciplinary Journal of Contemporary Research In Business*, 5(2), 13, 2013
- [8] A. Albertin and R. de Moura, "The Benefits of Information Technology in Business Performance," in *AMCIS Proceedings*, 2004, p. 121.
- [9] F. Melchert and R. Winter, "The enabling role of information technology for business performance management," pp. 535-546, 2004.
- [10] Y. Spanos, G. P. Prastacos, and A. Poulymenakou, "The impact of information and communication technologies on firm structure: evidence from an economy in transition," in *Proceedings of the 2000 IEEE International Conference on Management of Innovation and Technology. ICMIT 2000. 'Management in the 21st Century' (Cat. No.00EX457)*, 2000, vol. 2, pp. 573-579.
- [11] A. K. El-dalabeeh, "The Impact of Accounting Information Systems Development on Improving e-Commerce in the Jordanian Public Shareholding Industrial Companies", *Academy of Accounting and Financial Studies Journal*, 23(2), 1-11., 2019.
- [12] T. Dewett and G. R. Jones, "The role of information technology in the organization: a review, model, and assessment," *Journal of Management*, vol. 27, no. 3, pp. 313-346, 2001.
- [13] G. Bassellier, B. H. Reich, and I. Benbasat, "Information Technology Competence of Business Managers: A Definition and Research Model," *Journal of Management Information Systems*, vol. 17, no. 4, pp. 159-182, 2001/03/01 2001.
- [14] S. T. March and G. F. Smith, "Design and natural science research on information technology," *Decision Support Systems*, vol. 15, no. 4, pp. 251-266, 1995/12/01/ 1995.
- [15] A. E.-R. kh Al-Dalabeeh and H. A. Al-Zeaud, "Accounting information systems and their role in the measurement and cost thriving in public shareholding industrial companies in Jordan," *International Journal of Business and Management* vol. 7, no. 12, p. 97, 2012.
- [16] D. Hackler and G. D. Saxton, "The Strategic Use of Information Technology by Nonprofit Organizations: Increasing Capacity and Untapped Potential," *Public Administration Review*, vol. 67, no. 3, pp. 474-487, 2007.
- [17] R. Ahmed, N. A. B. Mohamad, and M. S. Ahmad, "Effect of multidimensional top management support on project success: an empirical investigation," *Quality & Quantity*, journal article vol. 50, no. 1, pp.

- 151-176, January 01 2016.
- [18] R. Young and E. Jordan, "Top management support: Mantra or necessity?," *International Journal of Project Management*, vol. 26, no. 7, pp. 713-725, 2008/10/01/ 2008.
- [19] M. I. Štemberger, A. Manfreda, and A. Kovačič, "Achieving top management support with business knowledge and role of IT/IS personnel," *International Journal of Information Management*, vol. 31, no. 5, pp. 428-436, 2011/10/01/ 2011.
- [20] B. Dehning, V. J. Richardson, and R. W. Zmud, "The financial performance effects of IT-based supply chain management systems in manufacturing firms," *Journal of Operations Management*, vol. 25, no. 4, pp. 806-824, 2007/06/01/ 2007.
- [21] K. Kernaghan and J. Gunraj, "Integrating information technology into public administration: Conceptual and practical considerations," *Canadian Public Administration*, vol. 47, no. 4, pp. 525-546, 2004.
- [22] J. L. King, V. Gurbaxani, K. L. Kraemer, F. W. McFarlan, K. S. Raman, and C. S. Yap, "Institutional Factors in Information Technology Innovation," *Information Systems Research*, vol. 5, no. 2, pp. 139-169, 1994.
- [23] I. Stoyanov, "Information technology and managing organizational change," *KSI Transactions on Knowledge Society*, vol. 6, no. 1, pp. 10-13, 2013.
- [24] A. Berisha-Shaqiri, "Business Initiative For Creating Competitive Advantage Through Information Technology," *Romanian Review of Social Sciences*, no. 8, 2015.
- [25] M. Soliman and A. H. M. Zaky, "The Mediating Role of IT Governance Effectiveness between ITG and Financial/Non-Financial Performance: Empirical Research on Egyptian Banking Sector," 2017.
- [26] H. Lee and E. A. Whitley, "Time and Information Technology: Temporal Impacts on Individuals, Organizations, and Society," *The Information Society*, vol. 18, no. 4, pp. 235-240, 2002/07/01 2002.
- [27] D. Robey and M.-C. Boudreau, "Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical Directions and Methodological Implications," *information systems research* vol. 10, no. 2, pp. 167-185, 1999.
- [28] L. Raymond, G. Paré, and F. Bergeron, "Matching information technology and organizational structure: an empirical study with implications for performance," *European Journal of Information Systems*, journal article vol. 4, no. 1, pp. 3-16, February 01 1995.
- [29] R. T. Wigand, C. W. Steinfield, and M. L. Markus, "Information technology standards choices and industry structure outcomes: The case of the US home mortgage industry," *Journal of Management Information Systems*, vol. 22, no. 2, pp. 165-191, 2005.
- [30] M. L. Markus and D. Robey, "Information Technology and Organizational Change: Causal Structure in Theory and Research," *Management Science*, vol. 34, no. 5, pp. 583-598, 1988.
- [31] N. Bloom, L. Garicano, R. Sadun, and J. V. Reenen, "The Distinct Effects of Information Technology and Communication Technology on Firm Organization," *Management Science*, vol. 60, no. 12, pp. 2859-2885, 2014.
- [32] E. K. Clemons, S. P. Reddi, and M. C. Row, "The Impact of Information Technology on the Organization of Economic Activity: The "Move to the Middle" Hypothesis," *Journal of Management Information Systems*, vol. 10, no. 2, pp. 9-35, 1993/09/01 1993.
- [33] B. L. Buhr, "Traceability and information technology in the meat supply chain: implications for firm organization and market structure," *Journal of Food Distribution Research*, vol. 34, no. 856-2016-57148, pp. 13-26, 2003.
- [34] K. Nikoloski, "The role of information Technology in the Business Sector," *International Journal of Science Research*, vol. 3, no. 12, 2014.
- [35] J. Eatock, R. J. Paul, and A. Serrano, "A study of the impact of information technology on business processes using discrete event simulation: a reprise," *International Journal of Simulation Systems, Science Technology*, vol. 2, no. 2, pp. 30-40, 2001.
- [36] J. C. Henderson and H. Venkatraman, "Strategic alignment: Leveraging information technology for transforming organizations," *IBM systems journal*, vol. 38, no. 2.3, pp. 472-484, 1999.
- [37] N. Venkatraman, J. C. Henderson, and S. Oldach, "Continuous strategic alignment: Exploiting information technology capabilities for competitive success," *European Management Journal*, vol. 11, no. 2, pp. 139-149, 1993.
- [38] T. K. Pham, C. H. Pham, and L. Pham, "Top Management Support, Organizational Learning, Innovative Behavior, Employee Commitment and Organizational Performance of Manufacturing Companies in Hai Phong," *International Journal of Financial Research*, vol. 7, no. 3, p. p54, 2016.
- [39] E. M. Al Shaar, S. A. Khatlab, R. N. Alkaied, and A. Q. Manna, "The effect of top management support on innovation: The mediating role of synergy between organizational structure and information technology," *International Review of Management Business Research*, vol. 4, no. 2, p. 499, 2015.
- [40] E. Bazhenova, V. Taratukhin, and J. Becker, "Impact of information and communication technologies on business process management on small and medium enterprises in the emerging countries," in *Proceedings of the 11th International Conference on perspectives in business informatics research*, 2012, pp. 65-74.
- [41] G. P. Huber, "A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making," *Academy of management review*, vol. 15, no. 1, pp. 47-71, 1990.
- [42] J. Worley and T. Doolen, "The role of communication and management support in a lean manufacturing implementation," *Management decision*, vol. 44, no. 2, pp. 228-245, 2006.
- [43] S. U. R. Khan, C. S. Long, and S. M. J. Iqbal, "Top Management Support, a Potential Moderator between Project Leadership and Project Success: A Theoretical Framework," *Research Journal of Applied Sciences, Engineering Technology*, vol. 8, no. 11, pp. 1373-1376, 2014.
- [44] C. Ringle, S. Wende, and J. Becker, "SmartPLS-Statistical Software For Structural Equation Modeling", ed. Smartpls. com: Smartpls. com, 2017.

- [45] J. F. Hair, C. M. Ringle, and M. Sarstedt, "PLS-SEM: Indeed a silver bullet," *Journal of Marketing theory Practice*, vol. 19, no. 2, pp. 139-152, 2011.
- [46] J. C. Anderson and D. W. Gerbing, "Structural equation modeling in practice: A review and recommended two-step approach," *Psychological bulletin*, vol. 103, no. 3, p. 411, 1988.
- [47] W. W. Chin, "The partial least squares approach to structural equation modeling," *Modern methods for business research*, vol. 295, no. 2, pp. 295-336, 1998.
- [48] M. Obeid, Z. Salleh, and M. N. M. Nor, "The mediating effect of job satisfaction on the relationship between personality traits and premature sign-off," *Academy of Accounting Financial Studies Journal*, 2017.
- [49] J. C. Nunnally and I. H. Bernstein, *Psychometric theory*. New York: McGraw-Hill, 1994.
- [50] C. Fornell and D. F. Larcker, *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Los Angeles, CA: SAGE Publications Sage CA, 1981.
- [51] M. Si Shbail, Z. Salleh, M. Nor, and N. Nazli, "Antecedents of burnout and its relationship to internal audit quality," *Business Economic Horizons*, vol. 14, no. 1232-2019-871, pp. 789-817, 2018.
- [52] J. F. Hair Jr, G. T. M. Hult, C. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications, 2016.
- [53] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *Journal of the academy of marketing science*, vol. 43, no. 1, pp. 115-135, 2015.
- [54] C. Nitzl, "The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development," *Journal of Accounting Literature*, vol. 37, pp. 19-35, 2016.
- [55] Abdel Rahman El Dalabeeh; Seif Obeid ALshbiel, "The Effect Of Enterprise Risk Management In The Relationship Between The Balanced Scorecard And Organizational Performance In Jordan," *International Journal of Scientific & Technology Research*, vol. 8, no. 9, pp. 1899-1906, 2019.
- [56] M. O. Al Shbail, Z. Salleh, and M. N. M. Nor, "The effect of ethical tension and time pressure on job burnout and premature sign-off," *Journal of Business Retail Management Research*, vol. 12, no. 4, 2018.
- [57] J. Henseler, C. M. Ringle, and R. R. Sinkovics, "The use of partial least squares path modeling in international marketing," in *New challenges to international marketing*: Emerald Group Publishing Limited, 2009, pp. 277-319.
- [58] J. F. Hair Jr, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research," *European Business Review*, vol. 26, no. 2, pp. 106-121, 2014.
- [59] M. Sarstedt, C. M. Ringle, D. Smith, R. Reams, and J. F. Hair Jr, "Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers," *Journal of Family Business Strategy*, vol. 5, no. 1, pp. 105-115, 2014.
- [60] J. Cohen, *Statistical power analysis for the behavioral sciences*. Routledge, 2013.
- [61] K. J. Preacher and A. F. Hayes, "Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models," *Behavior research methods*, vol. 40, no. 3, pp. 879-891, 2008.
- [62] C. Nitzl, J. L. Roldan, and G. Cepeda, "Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models," *Industrial management data systems*, vol. 116, no. 9, pp. 1849-1864, 2016.
- [63] C. Nitzl and B. Hirsch, "The drivers of a superior's trust formation in his subordinate: The manager-management accountant example," *Journal of Accounting Organizational Change*, vol. 12, no. 4, pp. 472-503, 2016.