

Impact of ERP System Using on the Accounting Information Relevance: Evidence from Saudi Arabia

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Abstract— Nowadays Enterprise Resource Planning System (ERP) plays a vital role in the business environment. It could be considered as a competitive advantage for firms. On the other hand, the quality of accounting information is a critical issue for the decision makers. In this study, we investigate whether ERP Systems Implementation has effects on the relevance of accounting information by measuring timeliness, feedback value, and predictive value of accounting information. The analysis shows that ERP System's existence has a positive effect on the relevance of accounting information. This finding has been achieved by distributing questionnaires to the decision makers in 115 firms consisting of 90 ERP system adopters and 35 non-adopters.

Keywords: ERP Systems, relevance, feedback value, predictive value, and timeliness.

I. INTRODUCTION

In the era of globalization, major market changes occur; market becomes more open. This leads to increase companies' size and establish Multinational Corporations (MNCs). These MNCs have huge transactions and face the requirement of increasing in the amount of data to be processed. On the other hand, open markets create a highly competitive environment. These two factors push the business to search for new ways that process the data more effectively. One of these methods is electronic data processing (EDP) which could be adopted by an accounting information system as mentioned by Hsueh et al, (2012). They stated that in today's competitive environment, the fastest and most effective way to achieve the competitive advantage is to introduce a new information system. They also add that ERP is considered as one of the most important information systems. Also HassabElnaby et al, (2012) mentioned that in a highly competitive global business environment, firms seek to improve or maintain their competitiveness by using

information system. Kin (2005) and Al Fawaz, et al. (2006) also indicate that successful ERP project achieves many advantages for the organization including increased financial performance through efficiency of data processing, improved competitive standing, and the breaking down of barriers between departments that allow an easy interchange of critical data. In order to obtain these benefits, ERP system becomes widely used in firms. Selchert (2004) stated that the early stage of adoption of ERP system was used only in manufacturing sectors, but today ERP system is used broadly in non-profit organizations, governmental and non-governmental organizations. Based on the above studies, we noticed that ERPs have become vital strategic tools in today's competitive business environment.

Business community avowed that accounting is "the language of business" as clarified by Diaconu and Coman, (2006). One of the accounting objectives is to support external and internal users with useful information that reflects the actual status of the organization's operations. This accounting information helps both internal and external users in decision making in the highly competitive market as confirmed by Salhi and Torabi (2012) when they stated that the general purpose of financial reporting is to provide clear picture for internal and external users about the financial and operational of the firm status. Users are using accounting information to communicate the existence and the evaluation of the financial situation and also of the performance for the economical entities. Yusof et al, (2012), and Chenay (2011) agreed that accounting information is essential for users to make their decision, and enable the managers to plan, control, and evaluate business operating performance. Moreover, shareholders can make their right decision if they use this accounting information in an effective way.

In this respect, the objective of the present study is to examine the impact of ERP System on the usefulness of accounting information by examining the effect of ERP on the relevance of accounting information which covers the timeliness, predictive, and feedback value of the accounting information. The study will be focused on Saudi Arabia market which is considered as a leading economic force in the Middle East. This is due to petroleum and petrochemical industries. Therefore, performance evaluation of its industries and organizations is an important issue to be studied and analyzed. (Al-Turki, et al, 2006).

RELATED LITERATURE & HYPOTHESES

Definition of ERP system is not a simple job. Many researchers have their own view. The basic definition of ERP: is an enterprise-wide information system that integrates and controls all the business processes in the entire organization.

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Al-Fawaz et al., (2006). According to Nah and Lau (2001), ERP is "a packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total, integrated solution for the organization's information-processing needs". Al-Turki, et al, (2006) Generally, ERP system implementation is a challenging and time consuming process that needs large financial resources. However, the benefits they yield, if properly implemented, are far more substantial.

According to Kieso (2009), in order to make accounting information more useful to the decision maker, Financial Accounting Standard Board (FASB) identifies a qualitative characteristic of accounting information. In addition, the FASB identify constraints for accounting information such as considering cost and benefits of this information, and relevance. These qualitative characteristics are divided into two categories: primary and secondary characteristics. Since our study concerns the relevance, it could be known as the information that is expected to affect the decision. So any information that does not affect the decision is considered as irrelevant information. The relevant accounting information should help the decision maker to evaluate the past, estimate the future, and the information should be presented to the decision maker in a studied time. That is consistent with Obaidat (2007), when he clarified that relevant accounting information is capable of making a difference in a decision by improving user's ability to make decisions by predicting the outcomes of events or to confirm or correct prior expectations.

Mahdi et al. (2010), Nicolaou (2004), and Sutton (2006) declared that using new information technology such as accounting information system or ERPs takes out the financial transactions from the traditional paper – based activity environment to the electronic environment which affects the way of gathering, classification, reporting, and analysis of financial data. This new process way provides tangible and intangible benefits such as saving of time and reducing accounting reporting cycle. It also increases reporting quality which leads to increasing in the efficiency and effectiveness of decision making. The users' expectations from accountant professionalism have also been increased.

Givoly and Palman (1982); Wang et al., (2004), stated that timeliness is one of the most important qualitative characteristics of accounting information, and it is considered as a determinant of the usefulness of annual reports. The availability of information on the exact time gives decision makers an advantage to take their decision before the competitor. In order to achieve this, researchers should pay attention to the relevance of accounting information and study the factors which may have impact or affect the relevance of accounting information. Dyer Iv and McHugh (1975); Whittred (1980) both studied the effects of companies' size and accounting period, and they found out that reporting lag was negatively affected by these factors.

Besides, Jaggi and Tsui (1999) provide that the financial condition and auditing opinion affected the reporting lag significantly. Obaidat (2007) found that auditing period, size of the accounting firm, profitability and size of corporation all have significant effects on the reporting lag. Recently in (2005) Spahis and Ananiadis agree that using ERP could improve the financial reports quality based on timely and reliable accounting information.

Joseph et al., (2005), examine whether ERP system implementations have affected the usefulness of accounting information or not. They found that ERP adoptions led to a trade-off between increased information relevance and decreased information reliability. For external users of financial statements, firms concurrently experienced both a decrease in reporting lag, and an increase in the level of discretionary accruals. Trott and Hoecht (2004) found that the principal benefits that can arise from ERP system are linked to expected gains in the efficiency and effectiveness of business processes that come with the availability of more accurate and timely information. This leads us to generate main and sub hypotheses as follows:

-Main hypothesis is:

H0: There are no significant differences in relevance of accounting information due to the use of ERP systems.

- Sub hypotheses are:

H1: There are no significant differences in predictive value of accounting information due to usage of ERP system.

H2: There are no significant differences in timeliness of accounting information due to usage of ERP system.

H3: There are no significant differences in feedback value of accounting information due to usage of ERP system.

II. RESEARCH METHODOLOGY

Sample and Data Collection:

Our sample consists of two types of firms, ERP adopter and non-adopter. These firms are working in different sectors: industry, services, trading, and financial sector.

The survey was administered manually and by E-Mail to the participants. A total of 90 ERP adoptions were approached. Out of them, 69 responded to the questionnaires. We also approached 35 non ERP adopters out of which 21 responded to our questionnaires.

Instrument:

In order to test the hypotheses, the researchers developed a questionnaire for ERP adopter and non – adopter. The questionnaire is divided into three parts: each part consists of a number of questions which are based on theory related to the relevance of accounting information as the characteristics of accounting information relevance contain the feedback value, timeliness, and predictive value. Obaidat (2007).

III. RELIABILITY AND VALIDITY

In order to check the validity after the preparation of the measurement tool of the study, the researchers presented it to a number of experts with a view to ascertaining the veracity of the content of questionnaire paragraphs and relevance of the objectives of the study.

Reliability means that the measurement tool gives a reliable and free of systematic error results, Erikson & Paul, (2001), so the researchers used Cronbach Alpha model to indicate how well the items are positively correlated to one another. The Cronbach Alpha percentage is 0.97, which is considered good for the research.

IV. ANALYSIS AND RESULTS

[1] Descriptive statistics:

In order to explain the main question of the research for the effect of using ERP system on the relevance of accounting information, descriptive statistics were used consisting of the mean and standard deviation for the adopter and non – adopter of ERP system.

Table (I) shows that the descriptive statistics related to first part of the questionnaire which is predictive value; as mentioned in item number four which states that “Your system using increase the accuracy of reporting, which help to rationally forecast the future” has the highest mean (4.41) for ERP adopter and items number one at the same table (I) which is stated “Your system using helps the decision makers to forecast the future events” has the lowest mean (2.62) for the non-adopter of ERP system.

These results indicate that the using of ERP system increases the predicative value of accounting information related to increase the accuracy of financial reporting which leads to rational forecast decisions, that is agreed with (Chen et al, 2011) as they mentioned that the ERP system implementation increases the quality and accuracy of data, they also add that ERP system can participate in management decision making. At the same time, if we have a look at another side of the non – adopter related to the predictive value, we found that other systems could not help the decision maker to predict the future events when we compared it with ERP systems adopter. Thus, if we consider the mean of all items related to predictive value for ERP adopter and non-adopter and compare them with each other we find that the total average mean for the adopter is (4.21) and non – adopter is(2.79) which can lead us to conclude that the using ERP system improve the predictive value of accounting information.

TABLE I

Descriptive statistics for Predictive value

| A. Questions related to predictive value | | | | | |
|--|---|---------|------|-------------|------|
| No | Item | Adopter | | Non Adopter | |
| | | Mean | S.D | Mean | S.D |
| 1 | Your system using helps the decision makers to forecast the future events. | 4.12 | 1.07 | 2.62 | 1.24 |
| 2 | Your system using helps to decrease the errors in future. | 4.07 | 1.08 | 2.95 | 1.16 |
| 3 | Your system using helps the decision makers by effectively analyzing the financial data. | 4.23 | 0.75 | 2.63 | 1.20 |
| 4 | Your system using increases the accuracy of reporting which helps to rationally forecast the future | 4.41 | 0.79 | 2.95 | 1.60 |
| Predictive item average | | 4.21 | 0.88 | 2.79 | 1.26 |

Table (II) shows the descriptive statistics related to the timeliness which indicates that item number six which states that “Your system using gives competitive advantage to the decision makers, so they can take their decision before the competitor” has the highest mean for ERP adopter among other questions which is (4.36). On other hand, the lowest mean for non-adopter of ERP is item number one which states “The accounting information which is processed by your systems is relevant for the time lined decision” with mean of (2.14). The above results indicate that ERP system adoption gives advantage to the decision makers, so they can take their decision before the competitor. These results are consistent with (Henri, 2006) when he stated that using of ERP system is essential to the survival of firms in this highly competitive environment.

This leads to obtain benefits and gain better return, that’s consistent with other studies which examine the effect of ERP system on making profit and financial performance as Wongsim and Gao (2010) mentioned that firms should obtain data from accounting information system to improve work performance and help the firm to make money. (Hunton, et al., 2003, and HassabElnaby, et al., 2012) also conclude that ERP system could improve the financial performance for the firms.

We can also see that the non-adopters suffer from the delay in data processing which is negatively affecting the relevance of accounting information. We can clearly observe in the total results of table (II) that the total average mean for ERP adopter is (4.1) and for non-adopter is (2.44), that means that using of ERP system reduces the time lag of financial reports, the time of data processing and generate financial reports.

This is in accordance with many researchers when they said that ERP system shortens financial reporting cycle HassabElnaby, et al., (2012). (Tsai, et al., 2011) also agreed that the ERP system adoption helps to increase accounting information timeliness.

TABLE II
Descriptive statistics for timeliness

| B. Questions related to timeliness | | | | | |
|------------------------------------|--|------------|-------------|-------------|-------------|
| No | Item | Adopter | | Non Adopter | |
| | | Mean | S.D | Mean | S.D |
| 1 | The accounting information which is processed by your systems is irrelevant to the time lined decision. | 4.33 | 1.05 | 2.14 | 1.01 |
| 2 | Your System using decreases the time lag for preparing accounting reports. | 4.09 | 0.74 | 2.71 | 1.35 |
| 3 | Your System using increases the timelines of accounting information for the decision makers. | 4.03 | 0.82 | 2.52 | 1.25 |
| 4 | Your System using helps to avoid the delay in presenting the annual reports. | 3.99 | 1.19 | 2.33 | 1.11 |
| 5 | Your System using helps to decrease the time to correct or adjust any mistakes in the financial reports. | 3.8 | 1.15 | 2.52 | 1.29 |
| 6 | Your System using gives competitive advantage to the decision makers, so they can take their decision before the competitor. | 4.36 | 0.64 | 2.38 | 1.16 |
| Timeliness item average | | 4.1 | 0.88 | 2.44 | 1.17 |

Table (III) talking about the descriptive statistics of feedback value, the highest mean for ERP adopter is item number one “Your System using helps to evaluate the previous events” with value of (4.48), and the lowest mean for non-adopter of ERP is item four “Your System using gives useful feedback value to the managers and decision makers” with mean around (1.81). That’s mean ERP adoption could help in evaluating past events and by providing accurate feedback about the previous performance, that’s will be helpful in predict the future more efficiently. On other hand the non-adopter of ERP cannot obtain this benefit in same of efficiently.

TABLE III
Descriptive statistics for feedback value

| C. Questions related to feedback Value | | | | | |
|--|--|-------------|-------------|-------------|------------|
| No | Item | Adopter | | Non Adopter | |
| | | Mean | S.D | Mean | S.D |
| 1 | Your System using helps to evaluate the previous events. | 4.48 | 0.96 | 2.14 | 1.062 |
| 2 | Your System using helps to get feedback about the past performance of the firm. | 4.41 | 0.52 | 1.81 | 0.68 |
| 3 | Your System using helps to correct the wrong forecasting. | 3.62 | 1.07 | 2.29 | 0.845 |
| 4 | Your System using gives useful feedback value to the managers and decision makers. | 4.25 | 1.01 | 2.43 | 1.028 |
| 5 | Your System using helps in gathering and classifying the past information and economic events. | 4.28 | 0.59 | 2.14 | 1.108 |
| Feedback item average | | 4.21 | 0.76 | 2.12 | 0.9 |

From Table (IV), we can observe that the average mean for ERP adopter is (4.16) and for non-adopter of ERP is (2.44). From the above results, we conclude that using ERP system improves the ability of a firm to analysis past events, predict the future, and reduce time lag of financial reporting which could be employed for the firm benefits.

TABLE IV
Descriptive statistics summary of all characteristics

| Descriptive statistics for all items | | | | | |
|--------------------------------------|-------------------------|-------------|-------------|-------------|-------------|
| No. | Item | Adopter | | Non Adopter | |
| | | Mean | S.D | Mean | S.D |
| A. | Predictive item average | 4.21 | 0.88 | 2.79 | 1.26 |
| B. | Timeliness item average | 4.18 | 0.88 | 2.44 | 1.17 |
| C. | Feedback item average | 4.20 | 0.76 | 2.12 | 0.9 |
| Total of all items | | 4.16 | 0.83 | 2.44 | 1.09 |

[2] Hypotheses test:

In order to test the hypotheses, we have conducted the analysis by dividing the sample into adopter and non-adopter firms. Then, we have compared the two means with each other.

Panel A of table (V) presents results on the differences of mean between adopter and non-adopter firms. We noticed that the calculated t value is equal to (5.84) and the P-Value is (0.000), and the mean differences reached (1.42) which is on the favor of ERP adopter. Thus, the null hypothesis we have stated "There are no significant differences in predictive value of accounting information due to using ERP system" related to the predictive value is rejected and the alternative hypothesis has been accepted.

Panel B of table (V) shows the results related to timeliness. The test compares mean differences between ERP adopter and non-adopter. We have found the calculated t-value is (5.84) and the P-Value is (0.000); where the mean difference is (1.66) for the ERP adopter versus the non-adopter. That leads to reject the null hypotheses "There are no significant differences in timeliness of accounting information due to using ERP system" and accept the alternative hypothesis.

Panel C of table (V) shows the information related to the feedback when we have a look at the calculated t-value which is (10.4) and the P-Value is (0.000) and compare the mean difference for the same event is (2.04) for the ERP adopter and non-adopter which is on the favor of ERP adopter. Thus, the null hypothesis mentioned by researchers which says that "There are no significant differences in the feedback value of accounting information due to using ERP system" is rejected and the alternative hypothesis has been accepted.

TABLE V
Test on mean differences

| T test table | | | | | | | |
|--------------|------------------|-------------|------|------|-----------|------|---------|
| P | Description | | Mean | S.D | Mean Dif. | T | P-Value |
| A | Predictive value | Adopter | 4.21 | 0.88 | 1.42 | 5.84 | 0.000* |
| | | Non adopter | 2.79 | 1.26 | | | |
| B | Timeliness | Adopter | 4.1 | 0.88 | 1.66 | 7 | 0.000* |
| | | Non adopter | 2.44 | 1.17 | | | |
| C | Feedback value | Adopter | 4.16 | 0.83 | 2.04 | 10.4 | 0.000* |
| | | Non adopter | 2.16 | 0.9 | | | |

* P-Value ≤ 0.05

V.

CONCLUSION

This study has tested the effect of ERP system adoption on the relevance of accounting information. In general, the most important result reached by the researchers is that ERP system adoption has great influences on the relevance of accounting information. We can touch this result in all aspects which were measured. The firms which adopted ERP system has a priority over non-adopted ERP system related to the predictive value which enables them to have better future forecasting and give the management eligibility for having rational and wise decisions. Furthermore, the results related to timeliness show that ERP system adoption shortens the time lag of financial reporting which improves data processing and affect positively the relevance of accounting information to the decision makers.

The results confirm that the feedback value has been improved in ERP system environment, so the decision maker can know the veracity of their previous decisions, so they can improve their decisions in the future, and the firm's financial performance will also be improved.

All of previous conclusions are consistent and competent with many studies which emphasized that ERP system improves the relevance of accounting information in all of its aspects, timeliness, feedback value, and predictive value. Spahis and Ananiadis (2005) indicate that ERP system increases the availability of more accurate and timely information.

Joseph et al, (2005) shows that ERP system leads to trade -off between increased information relevance and decreased information reliability. Trott and Hoecht (2004) reached that the ERP system increases the decision making quality based on timely and reliable accounting information. Moreover, we can find that Mahdi et al (2010), Nicolaou (2004), and Sutton (2006) clarify that the ERP system using takes out the data processing from traditional way to a new way that can help to save time, reduce accounting reporting cycle, and it increases reporting quality.

The researchers summarize that ERP system improves decision making efficiency by increasing the relevance of accounting information in all aspects: timeliness, feedback value, and predictive value.

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