

# The Impact of an ERP (Enterprise Resource Planning) System on Decision Making Processes in Some Middle East Companies

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## **Abstract**

*After a long walk, under the heat of the scorching sun when someone shows you the bed of roses to rest for a while, you tend to get excited by the very sight of it however, you are unaware of those thorns that lies beneath them, such is the case with when an ERP software is introduced to you with nice presentations. After all you are very well aware about the hard and tedious work which you need to perform to make a presentation. As you start to jot down the figures several doubts emerges on the authenticity, accuracy of the data used and it keeps bothering you of the argumentative debates after presentation. Now if you are invited to attend an ERP presentations you will immediately co-relate your problems with the rosy picture shown to you as its solution , you will see that by a mere click on the mouse you will get the desired information in your required formats with all the graphs, charts of comparisons and with meaningful interpretations.*

*In this study, I have evaluated various aspects of ERP Selection and the challenges which a company faces right from selecting implementation partner till support services after implementation. Also, to some extent I have touched upon the results of successful/ unsuccessful implementation of an ERP system.*

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## **Introduction**

An ERP system is a software program that pulls together all business information with the goal of facilitating the flow of this information easily to all its users. ERP provides an integrated view of core business process mostly in real-time, using common databases maintained by a database management system covering all business areas. An ERP system often reduces the amount of redundant data, saves time and cuts down the opportunity for errors. Information is also more easily accessible when needed also data is more easily turned into organized information that management can analyze and use for decision making.

ERP provides multi-platform, multi-currency, multi-facility, multi-mode and multi-lingual facilities. ERP provides complete integration of systems not only across departments but also across companies under the same management.

ERP merges very well with common business management issues like Business Process Reengineering, total quality management, mass customization, service orientation, and virtual corporation etc. The basic objective of implementing an ERP program is to put in place the applications and infrastructure architecture that effectively and completely support the Enterprise's business plan and business processes. (O'Leary, 2000) (1)

## LITERATURE REVIEW

The journey to ERP system began in 1960's when business world came up with Inventory control system and by 1970's MRP came into existence followed by MRP II in 1980's and eventually the ERP emerged to cater to the business world the solution it provided covers Men, Machine, Money, Material, Market and materiality which means Human Resource, Production system, Finance, Purchasing, Sales and Quality Control system all in one and this integrated all business areas in one software package.

Another driving force behind ERP evolution was that large number of enterprises unstintingly established ERP systems with the hope of regaining control over their scattered separated systems and saving their company from the potentially devastating Y2K (millennium) bug.

Also, ERP standardizes processes and data within an organization with best practices. The company also streamlines data flow between different parts of a business by creating a one-transaction system. As Hitt, Wu, and Zhou (2002) (2) stated, "the standardized and integrated ERP software environment provides a degree of interoperability that was difficult and expensive to achieve with stand-alone, custom-built systems." Standardization and integration of processes and data allows a company to centralize administrative activities, improves ability to deploy new information system functionality, and reduces information system maintenance costs.

According to Guo, X., Chang, M., Dong, Y., & Zhang, L. (2012) (3) ERP systems have become a means to support and speed up the whole process to satisfy orders, including product distribution. By registering changes in computer storage, ERP systems monitor resources - material, facilities, and workers, which are typically used in financial management, production, and distribution. These systems are increasingly viewed as a source of additional decision support system, which uses the memory - based processes to perform "what if" simulation, or so-called Data Warehouse, which uses OLAP technology for ad-hoc analysis.

Research conducted by Madapusi & D'Souza in 2012 (4) has examined the impact of (ERP) implementation on operational performance of the organization. This research by offering a model is trying to discover the relationship between the operational performance of the organization and the enterprise resource planning system. The authors believe that if in any planning managers examine changes in the operational performance of the organization; they can gain better understanding from the system performance.

Kou in 2014 (5) examined the impact of (ERP) system on the organization performance. He used the interview to collect information about intangible benefits. He also used financial data

gathered from 1999 to 2010, financial ratios, and T score to collect information about tangible benefits. The results showed that the implementation of (ERP) system can improve efficiency, increase the quality of decision making, improve work quality, and also increase revenue. From financial perspective, by comparing the benefits before and after the implementation of (ERP) system using inferential analysis of Likert Scale and T Tests, it can be observed that the greatest difference which was really the same revenue increase occurred three years after the implementation of (ERP) system.

## Research Hypotheses

In this study my focus was to establish and conclude whether an ERP implementation is effective in decision making by the company and its key personnel or not.

**Hypothesis H 1.** ERP Implementation is effective in providing information for decision making for the top, middle and lower management of the company.

**Hypothesis H 2** ERP Implementation is not so important and effective in decision making of the company by its key personnel due to faulty implementation, inappropriate data or other reasons.

**Sub Hypothesis H 1 a)** Establishing integrated resource planning system (ERP) in terms of internal processes perspective improves managers' decision-making.

**Sub- Hypothesis H 1 b)** Establishing integrated resource planning system (ERP) in terms of creating an environment for learning and growth perspective improves managers' decision-making.

## Research Methodology:

### Universe of Study:

The Middle East is a loosely defined geographic region; the countries listed are generally considered part of the Middle East. These Middle East countries are part of the Asian continent with the exception of Egypt, which is part of Africa.

**The universe of study was the Middle East region consisting of KSA, Qatar, Kuwait, Oman, Bahrain and UAE Only.**

- A) Sampling – Primary Data collected from the employees of the construction companies with at least 2 companies from each country as mentioned above.
- B) Sampling Design – Sample survey conducted by canvassing pre designed questionnaire to the respondents.
- C) Data Collection – convenience quota sampling was adopted for primary data collection. The sample size will be divided as under :

Top Management included: CEO, CFO, CIO, COO, OWNERS

Middle Management: Managers (Procurement, Sales, Finance, HR, Warehouse, Garage, RMA/RMC, IT, Construction, Bidding, Planning, Execution)

Supervisory Level: Quantity Surveyors, Assistant Managers, Supervisors from all departments.

Officers and End Users: Document Controllers, Bidding officers and other officers from all departments and Data entry operators.

Sr No	Description	KSA	UAE	Qatar	Kuwait	Oman	Bahrain
1	Number of Companies	5	5	5	5	5	5
2	Number of Respondents	50	44	56	75	40	35

Around 350 questionnaires were distributed out of which only 305 questionnaires were collected with response. The data of 305 questionnaires were then compiled to analyze the research hypotheses. The questionnaire were distributed by e-mails, post mails, printouts , in doing so the help of IT Managers/ IT team of the organization was taken wherever needed, to explain the need & purpose of the survey and to circulate and explain the questionnaires to every participants/respondents. Most of the questionnaires were sent by e-mails with a cover letter including all necessary clarifications. IT managers were selected as the key respondents, due to their experience and expertise. Questionnaires were sent only after telephonic contact with the IT managers.

Questionnaires had different sections to collect the information such as, about the organization, about the employees (Designation, Departments etc.) about which ERP , How the evaluation of the ERP was done, who were key decision makers for selecting the ERP system. Which ERP System was implemented in your Organization, How the implementers were selected , What/which all areas were covered in implementation, How did you find integration with other areas useful , Level of trainings provided, User friendliness of the ERP system and Finally the Results of ERP Implementation together with key Reports, Analysis sheet and KPI's.

In the mentioned questionnaire 5 points Likert scale was used to records and evaluate the views of the respondents. Use of some of the very common types such as ( Very Poor, Poor, Average, Good, and Excellent) ( up to 25%, 26% to 50% , 51% to 75% , 76% to 90% and (0% and above) ( Least Important, Average Imp, Important, Very important & Must) were used for different sets of questions.

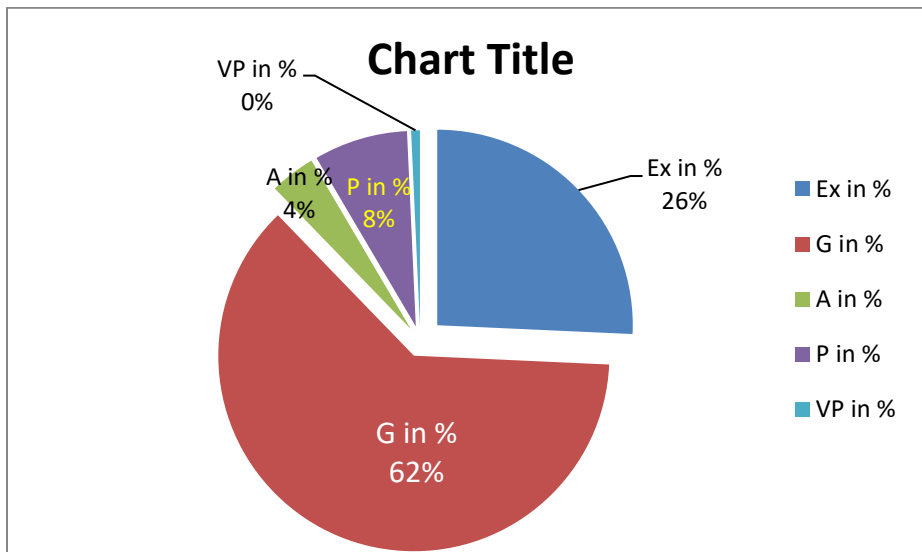
A graph as show in Pic 1 below is prepared based on the 25 questions circulated via questionnaire to 350 participants of which 305 responses were received, data was compiled in tabular form in excel using 5 points Likert scale. The questions were posed to find out the effectiveness of the ERP system in terms of selection, implementation, change management,

Data Entry, Internal controls, response time, accuracy, BPR and reporting, some sample 10 questions are hereunder:

**Likert Scale: 1 Very Poor VP, 2 Poor P, 3 Average A, 4 Good G, 5 Excellent Ex**

- 1) How would you rate the ERP System in terms of selection?
- 2) How would you rate the ERP System in terms of Implementation?
- 3) How would you rate change in work culture after implementation?
- 4) How would you rate decision-making improvement for your reporting purpose?
- 5) How would you rate response time with respect to Data Entry and Data processing?
- 6) How would you rate the improvements and standardization of procedures and internal controls after ERP Implementation?
- 7) How would you rate the reduction of paperwork, administrative and accuracy of ERP system?
- 8) How would you rate ERP systems in terms of reduction of the routine work undertaken by you?
- 9) How would you rate improvement in work performance and organizational achievement after ERP implementation?
- 10) How will you describe the satisfaction with ERP and Business Process Restructuring in the organization?

**Chart showing ratings by the participants for 25 sample questions in %.**



**Figure 1. Pie Chart showing ratings in % by the respondents.**

The Results of the processed data are as under:

<b>Mean</b>	<b>3.76</b>
<b>Standard Error</b>	<b>0.18547237</b>
<b>Median</b>	<b>4</b>
<b>Mode</b>	<b>4</b>
<b>Standard Deviation</b>	<b>0.92736185</b>
<b>Sample Variance</b>	<b>0.86</b>
<b>Kurtosis</b>	<b>0.7707403</b>
<b>Skewness</b>	<b>-1.108856727</b>
<b>Range</b>	<b>3</b>
<b>Minimum</b>	<b>1</b>
<b>Maximum</b>	<b>5</b>
<b>Sum (Participants)</b>	<b>305</b>
<b>Question Count</b>	<b>25</b>

**Sample Mean (n) is 3.76.**

**Hypothesis :**

**Hypothesis H 0** ERP Implementation is not so important and effective in decision making of the company by its key personnel due to faulty implementation, inappropriate data or other reasons. (Null Hypothesis) (**Figure 2**)

The Null Hypothesis mean which neutralizes the effect of ERP implementation (Neither favourable nor unfavorable) is Equal to 3.

$H_0 : \mu = 3.0$

And the alternative hypothesis where the mean does not equate to 3

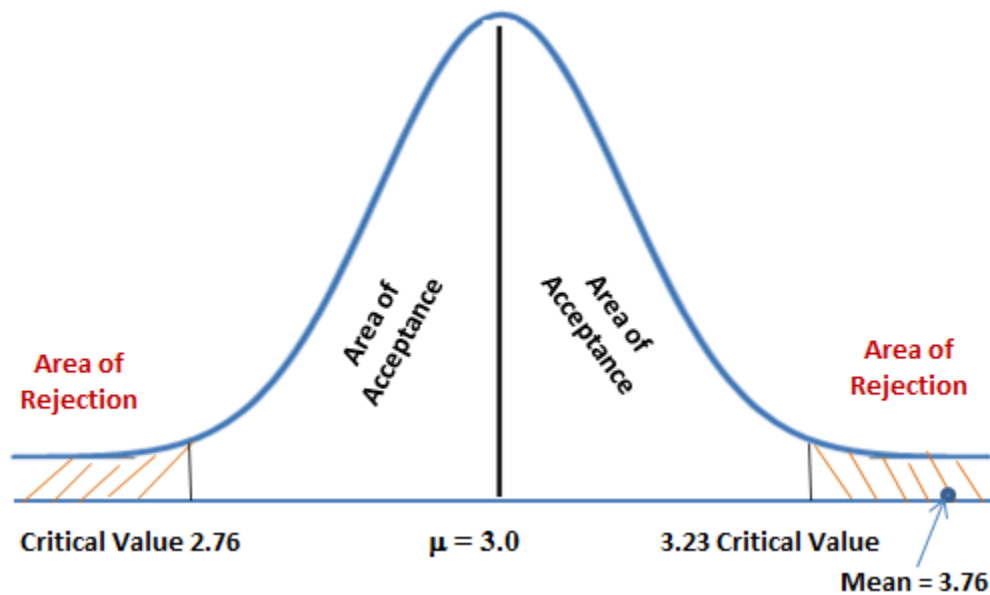
$H_1 : \mu \neq 3.0$

At 95% Confidence level with 5% significance level

Now, with Z value of 2.55 with confidence level 95% , by referring to standardized Z Table there comes the probability of 0.025 in each two tails , the sample mean will lie above 1.96 standard error :  $\mu = 3.0$

Critical value for lower limit  $\mu = 3.0 - 2.55 (1.6 / \sqrt{305}) = 2.76$

Critical value for upper limit  $\mu = 3.0 + 2.55 (1.6 / \sqrt{305}) = 3.23$



**Figure 2 : A Two Tailed Hypothesis Test**

### Conclusion

It is very much evident from the above test that the sample mean is 3.76 which falls under the area of rejection hence the Null hypothesis is rejected and alternate hypothesis is accepted.

### Alternate Hypothesis

ERP Implementation is effective in providing information for decision making for the top, middle and lower management of the company.

My above conclusion adds to the various conclusions of studies done in other parts of the world which emphasized on ERP implementation leading to online and real-time information data entry and data sharing with key decision makers. These findings are also in keeping with studies that have suggested that ERP have positive impact on organizational culture (Garg, 2010; Nah et al, 2001). The empirical analysis undertaken in this study also provides support for the findings that a successfully implemented ERP system enhances organizational capabilities including process improvement (Dowlatshahi, 2005; Ravichandran and Rai, 2000; Peng et al., 2008; Garg, 2010; Hwang, 2011).

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