European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.9, No.24, 2017
www.iiste.org

The Impact of Using Enterprise Resource Planning (ERP) Systems on organization's Performance In Jordanian Industry Companies

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Abstract
This study aimed to investigate the effects of using ERP system on organization performance in Jordanian industrial companies.
To achieve the objectives of the study, (100) questionnaires were distributed among employees at all managerial levels (upper, middle and lower) at Jordanian industrial companies, operating in Amman. The number of returned and valid questionnaires for the purposes of the analysis was (72). The results of the study showed that there was a high level of using ERP system Jordanian industrial companies, and existence of a high level of organization's performance, and Existence of a statistically significant impact of using ERP system on organization's performance at Jordanian industrial companies from employees' perspective. In light of these results, the study recommended to promote using ERP system at Jordanian industrial companies, and establishment of a permanent training courses for employees to inform them of the modern information systems in the world and how to apply.
Key words: Enterprise Resource Planning system, organization's performance, Jordanian industrial companies.

Introduction

In a highly competitive global business environment, firms seek to improve or maintain their competitiveness by using information systems to improve customer service, shorten cycle times, and reduce cost. ERP systems provide many benefits to companies so they can meet changing expectations by providing accurate, timely, and integrated information to improve decision making (Trott and Hoecht, 2004).

Enterprise Resource Planning (ERP) systems are a new class of software that tends to streamline organizations' processes and support their decisions making. This concept is not new in information management though and ERP systems themselves are an extension for a series of enterprise systems that primarily concerned in inventory and materials management such as Material Requirement Planning (MRP) then Manufacturing Resources Planning (MRP). Shanks, Seddon and Willcocks (2003) indicated that "ERP systems are different from legacy systems in that organizations use ERP to integrate enterprise-wide information supporting financial, human resources, manufacturing, logistics, sales and marketing functions".

The implementation of the enterprise resources planning systems can contribute to improve organization's performance and achieves many advantages for the organization as a reducing period of process cycle, raise the efficiency of the organization, and generating information quickly, and gives managers the ability to adjust and monitor business operations, thus it helps to speed up the decision-making process (Tsai; Chen; Hwang; and Hsu, 2010). Organization Performance reflects the outputs and targets that departments seek to achieve within a specific period of time, it reflects the extent of achieving the goals that the organization seeks to them whether those associated with the goals relating to profitability, growth of sales or market share, or those associated with mental impressions that relate to satisfaction, loyalty and brand awareness (Shoucair, 2005).

The importance of the research

The importance of the study comes from the impact of the enterprise resources planning systems on the activities and operations of business organizations, because of its important role in the success or failure of the organization in achieving its goals. Where the importance of this study in two ways:

- **Theoretical significance:**

This study contains theoretical literature supplies the Arab managerial library with new knowledge about enterprise resources planning system and its impact on the organization's performance, it is expected that previous studies and theoretical background will contribute in bridging the gap of the lack of published studies about this subject.

- **Practical significance:**

The importance of this study comes from the population in which it applied on it, the Jordanian industrial companies, where these companies play an important role in the economic life in Jordan, because of link their products with many aspects of economic activities in Jordan.

Research problem and questions

ERP is a very promising system that tends to integrate and streamline all organization's processes. Indeed, studies record many outstanding b e n e f i t s of ERP systems in terms of inventory, planning, revenues, lead time, information accuracy/timing, decision support …etc.
The importance of this topic lies within the wide-spread of ERP systems while there are clearly many examples of unsuccessful ERP effects on business performance. For examples see Gupta et al. (2004, 599-600). Investing into ERP systems which are very costly and which don't return business value will waste business resources. Therefore, it is important to clarify the vagueness surrounding the relationship between ERP and business performance.

Accordingly, the problem of the study can be summarized in the following question *"to what extent the using of ERP system effects on organization performance?"*
Hence, this study attempts to answer the below questions:

1. What is the level of using (applying) ERP system in Jordanian industry companies as viewed by employees?

2. What is the level of organization's performance in Jordanian industry companies as viewed by employees?

3. Is there a significant relationship between the using of ERP system and organization performance?

Research objectives

The main object of the study is to investigate the effects of using ERP system on organization performance in Jordanian industrial companies.
In light of the questions and problem that have been discussed above, this study will aim the followings:

1. To identify the level of using (applying) ERP system in Jordanian industry companies as viewed by employees.

2. To identify the level of organization's performance in Jordanian industry companies as viewed by employees.

3. Examining the effect of using of ERP system on organization performance.

Research Model

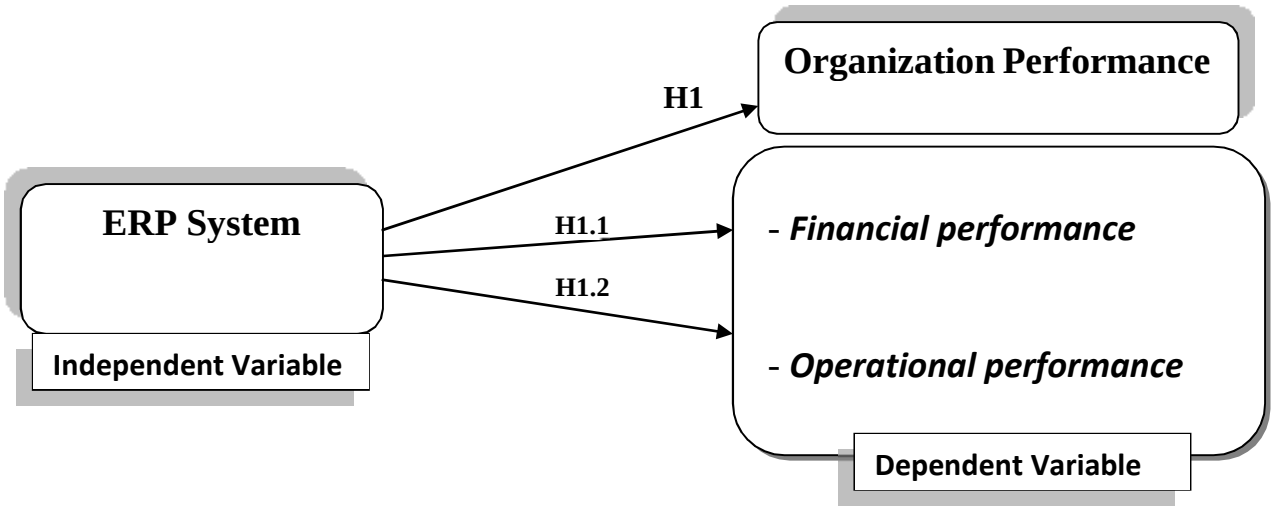

Figure 1.1 Conceptual Framework (Source: Author)

Research Hypotheses

Based upon the study problems, the following hypothesis is proposed.

Hypothesis 1

Ha: There is significant impact of using ERP system on organization's performance.

The following sub-hypotheses emerge from the main hypothesis:

Hypothesis 1.1

Ha: There is significant impact of using ERP system on organization's financial performance**.**

Hypothesis 1.2

Ha: There is significant impact of using ERP system on organization's operational performance**.**

Method of the Research (Methodology)

Secondary Sources:

They are the data from the literature related to enterprise resource planning systems and organization's performance, which are available in books, articles, previous studies, and published researches, in order to configure the theoretical framework for the study.

Primary Sources:

They are the data that were collected from the field through the questionnaire which will design and distribute to the sample of the study in order to cover surveyed areas and studied dimensions.

Instrument

Questionnaire Design: Cross-sectional, self-reported survey was employed as a main research instrument in this research. With two exceptions (the variable "Perceived employer obligations" and demographic information), variables measured with a 5-point Likert scale. Where 1, “strongly disagree” and 5, “strongly agree” .The questionnaire consists of two sections. As most of measure items were taken from its sources, the questionnaire was initiated in English language and translated into Arabic language before the fieldwork step. After the questionnaire had been developed and translated, we included an introductory paragraph; the purpose was to explain the main objective and the importance of the study to the respondents and to encourage a high response rate and also ensuring the respondents that the information will be confidential and will not be used for any purpose other than research purpose.

Scales Reliability

Reliability test: the internal consistent of research scales were tested using Cronbach‟s Alpha coefficient, results of reliability test are presented in table (1-1)

Table (1-1) Scales reliability

Variable measured	Dimensions	Number of items	Cronbach’s Alpha
ERP		22	0.90
Organization’s performance	Financial performance	11	0.87
	Operational performance	11	0.85

As illustrated in table (1-1), all the scales show satisfactory value of reliability.

Idiomatic Definitions of the Research terms Organization’s performance:

The organization's ability to use resources efficiently, and produce outputs consistent with its objectives, and appropriate to its users (Perterson; Gijsbers; & Wilks, 2003). It is integrated system of production of the organization business in light of its interaction with the elements of its internal and external environment (Mukhaimar et al, 2000). And (Morgan; Douglas; & Charlotte, 2009) referred that Organization’s performance expresses the long-term results which the organization seeks to achieve them.

Enterprise Resource Planning (ERP) Systems:

Customizable Standard applied software package, includes integrated solutions for key positions at the organization, starting from the supply chain management ,inventory control, customer relationship management, financial accounting, and personnel, these systems were designed to enhance and improve the competitiveness of the organization by generating high characteristics of information such as accuracy and providing those such information in a timely manner. (Kennerely & Neely,2001).

The limits of the Research

Spatial boundaries: The present study will confine to the Jordanian industries company operating in the capital, Amman, and therefore there is difficulty in generalization the results of this study to the rest of the industrial companies operating in the same field.

Temporal boundaries: This study will conduct in 2014.

Human limits: This study will apply to employees at the upper, middle and lower managerial levels at Jordanian Industry company under functional title (general manager, manager deputy, director of a major department, the head of department, employee).

Organization's Performance

Performance is the end result of activities, it includes the actual outcomes of the strategic management process. The practice of strategic management is justified in terms of its ability to improve the organization's performance (Wheelen and Hunger, 2010).

Performance Measurements

Previous studies indicated many performance measurements aspects like (Salaheldin, 2008): corporate performance, business performance, operational performance, financial performance, non-financial performance, innovation performance, and quality performance.

Others measure performance by two dimensions:

1. Operational performance: which reflects the performance of the internal operations for the organization in terms of cost reduction, improving the quality of services, flexibility, and productivity?
2. Organizational performance: which is measured by financial measures and non-financial measures?
    - Financial measures such as: revenue growth, net profit, and return on assets.
    - Non-financial measures such as: investments in research and development, capacity to develop a competitive profit, new service development, and market orientation.

Previous Studies :

Njihia (2014), This research discusses the issues of introducing ERPs into small and medium enterprises with the aim of finding the best ways to manage the change process to get a competitive advantage over its rivals. The study had five objectives of finding out how the financial resource availability, organizational complexities, employees perceptions, regulatory requirements, and having a top management support affects the effective implementation of an ERP system which in turn will affect the firm's performance. The research

adopted a descriptive design employing the use of mainly questionnaires as the primary data collection tool. This study found that financial resource availability, organizational complexities, employee's perceptions, regulatory requirements, and having a top management support all affects the effective implementation of an ERP system which in turn will affect the firm's performance.

Ivo De Loo et al. (2013), in this paper they try to assess the impact of ERP- implementations on the development of non-financial organizational performance, They assess this impact for Dutch small and medium-sized enterprises, using a small but unique dataset. Several aspects of the performance of organizations are compared before and after the introduction of an ERP-system, taking into account a three-year period, and controlling for several influential factors (like organizational size, financial health and sectoral differences). They conclude that by and large, organizational performance increased significantly more for organizations that implemented an ERP-system in the last three years than for organizations that did not implement such a system. They also conclude that organizations that implemented an ERP-system at most three years ago did not have significantly lower non-financial performance than organizations that did not implement such a system.

Lodhi *et al.* (2012), The aim of this study is to develop a proposed model to identify the impact of ERP System on performance of different activities and their impact on overall financial performance of the organization. After the extensive review of literature this study developed a proposed model showing the relationship of ERP System with financial performance. The stance of this study shows that ERP System implementation not directly changes the financial performance of the firm. Model shows that ERP System implementation first change reporting system, organizational environment, production, marketing and HR performance and then the change in reporting system, organizational environment, production, marketing and HR performance affect the overall financial performance of the organization. This model will contribute a new horizon in the body of knowledge.

Spano and Bello (2011), This article reports the results of a research aimed at investigating the impact of an ERP system on organizational processes and individual employees in a public sector organization (Italian Regional Council). Through a qualitative method (Focus Groups - FG) interesting results have come out: system introduction planning, organizational and technical aspects seem to be relevant issues to be addressed in order to improve ERP system's effectiveness. Through a structured questionnaire, a larger sample of employees will be involved in the second phase, aimed at testing the constructs which emerged with the FG analysis and the relationships among them.

(Crowston & Treacy, 2010) under the title "The Impact Of Information System On Enterprise Level Performance", reviewed researches that had been conducted on is impact on enterprise level performance with a particularemphasis on the research that had attempted to measure level of impact, and on surveys of articles published within the last ten years. Finding of this paper focused on IS as strategic tools, and is can have impact on industry structure by altering the production efficiencies and transaction cost of market.

(Al-Ajmi, 2011) under the title "The Effect of Analytical Strategic Orientation on the Firm's Performance within the Available Marketing Capabilities: An Applied Study on Kuwait National Petroleum Company"

This study aimed to exam the effect of the strategic direction of analytical performance of the organization in light of the marketing capabilities available and the application on the Kuwait National Petroleum Company, the study sample included all directors and heads of departments in the Kuwait National Petroleum Company, who are (200), was recovered (188) to identify suitable for analysis and a rate (94%).

The results showed that the analytical strategic orientation has an positive direct effect on the performance of the Kuwait National Petroleum Company (the sales growth rate) , and the analytical strategic orientation has an positive direct effect on the marketing capabilities available to the Kuwait National Petroleum Company (pricing , product , distribution, promotion), also the analytical strategic orientation has an indirect effect on the performance of the Kuwait National Petroleum Company (the sales growth rate) by existence marketing capabilities available to the Kuwait National Petroleum Company (pricing; product; distribution & promotion) as a moderate variable.

(Abu-Alwafa , 2012) under the title " Effect of Quality Orientation and New Services Development on Organizations' Performance-An applied study on Commercial Banks in Amman -". The study aimed to study the effect of quality orientation and new service development on organizations' Performance in commercial banks in Amman. The researcher designed a questionnaire consisting of (28) statements to gather the primary information from study sample which consisted (360) individuals. The study showed that there is direct and indirect effect for quality orientation and new service development on organizations' performance on commercial banks in Amman.

Statistical Analysis

Introduction

The objective of this chapter is to present the statistical analysis results. The results are divided into two sections: 1) Descriptive analysis used to provide a summary about the respondents‟ demographic characteristic and to answer the first and the second questions in this study, using means, frequencies, and standard deviations of responses. 2) Simple regression employed to test the main effects (Hypothesis 1, 1.1 & 1.2) and to answer the fifth question.

Initial data screening

One hundred questionnaires were distributed for two Jordanian industries companies in Amman. Seventy seven questionnaires were completed and returned. The researcher excluded 5 questionnaires that have missing information, thus, we remained only 72 analyzable questionnaires which represents a 72% response rate.

Descriptive analysis

This part of analysis focuses on providing an overview of descriptive analysis; we presented the respondents‟ characteristics that will help prepare for a better understanding of advanced analysis in this study.

1. Demographic Analysis

Five demographic elements were included in this study (Gender, Age, Educational level, Position, and years of experience). The descriptions of demographic statistics are shown in Table (1-3):

Table (1-3): Sample descriptive characteristics (n= 72)

Variable	Category	Frequency	Percentage (%)
Gender	Male	40	55.6
	Female	32	44.4
Age	Less than 25	21	29.2
	25- less than 35	31	43.1
	25- less than 45	18	25.0
	45 years and more	2	2.8
Educational level	High School	3	4.2
	Diploma	6	8.3
	Bachelor	53	73.6
	Graduate	10	13.9
Position	Manager	8	11.1
	Assistant Manager	6	8.3
	Head of Dept	13	18.1
	Employee	45	62.5
Years of experience	Less than 5	26	36.1
	5- less than 10	29	40.3
	10- less than 15	7	9.7
	15 years and more	10	13.9
Total		72	100

2. Description of study variables

The data were analyzed separately according to the research questions stated earlier. The following sections present the findings as related to each research question independently.

Results related to the first question: The first question is: ***"What is the level of using (applying) ERP system in Jordanian industry companies as viewed by employees? ".***

In order to answer this question, standard deviation and mean scores for ERP statement were used, the test results are presented in Table (2-3) as follow:

Table (2-3): standard deviation and mean scores for ERP statement (n=72)

ERP Statement (Questions)	Mean	Std. Deviation	Rank
Item 1	4.32	0.78	1
Item 2	3.93	0.97	9
Item 3	4.18	0.83	4
Item 4	4.12	0.96	5
Item 5	3.76	0.97	17
Item 6	3.82	0.94	15
Item 7	4.07	0.88	6
Item 8	3.64	1.08	21
Item 9	3.81	1.13	16
Item 10	4.26	0.65	2
Item 11	4.25	0.73	3
Item 12	3.97	1.01	7
Item 13	3.72	1.05	19
Item 14	3.88	0.86	12
Item 15	3.68	0.96	20
Item 16	3.82	0.97	14
Item 17	3.86	0.97	13
Item 18	3.89	0.78	11
Item 19	3.96	0.64	8
Item 20	3.89	0.97	10
Item 21	2.9	1.17	22
Item 22	3.75	0.96	18
ERP	3.88		High

Table (2-3) illustrates that the level of using (applying) ERP system in Jordanian industry companies as viewed by employees was high, where overall mean scores of ERP was 3.88. Mean scores of ERP statements ranged between 4.32 up to 2.9. Item 1 came first with a mean score of 4.32. Item 10 came second by means of a mean score of 4.26. Item 11, then, came third by a mean score of 4.25. Finally, item 21 came at last rank by a mean score of 2.9. The results of the standard deviations ranged between 0.64 – 1.17, where items (8, 9, 12,

13,21) referred to a diverge in the participants' answers, whereas rest of items referred to a rapprochement in the participants' answers.

Results related to the second question: The second question is: ***What is the level of organization's performance in Jordanian industry companies as viewed by employees?***

In order to answer this question, standard deviation and mean scores for financial statement were used, the test results are presented in Table (3-3) as follow:

Table (3-3): Standard Deviation and Mean scores for Financial Performance (n=72)

Financial Statement	Mean	Std. Deviation	Rank
Item 23	4.14	0.74	9
Item 24	4.19	0.55	6
Item 25	4.35	0.63	3
Item 26	4.11	0.74	10
Item 27	4.38	0.68	2
Item 28	4.21	0.80	5
Item 29	4.31	0.73	4
Item 30	4.17	0.67	7
Item 31	4.17	0.67	8
Item 32	4.04	0.78	11
Item33	4.39	0.62	1
Financial performance	4.22		High

Table (3-3) illustrates that the level of financial performance in Jordanian industry companies as viewed by employees was high, where overall mean scores of financial performance was 4.22. Mean scores of financial performance statements ranged between 4.39 up to 4.04. Item 33 came first with a mean score of 4.39. Item 27 came second by means of a mean score o f
Item 25, then, came third by a mean score of 4.35. Finally, item 32 came at last rank by a mean score of 4.04. The results of the standard deviations,
which ranged between 0.55 – 0.80 referred to a rapprochement in the participants' answers.

The following table shows standard deviation and means scores for operational statement:

Table (4-3): Standard Deviation and Mean scores for operational performance (n=72)

Statement	Mean	Std. Deviation	Rank
Item 34	4.36	0.59	1
Item 35	4.03	0.71	11
Item 36	4.19	0.71	5
Item 37	4.14	0.70	6
Item 38	4.22	0.63	3
Item 39	4.21	0.63	4
Item 40	4.24	0.68	2
Item 41	4.08	0.65	8
Item 42	4.08	0.67	9
Item 43	4.08	0.73	10
Item 44	4.12	0.71	7
operational Performance	4.15		High

Table (4-3) illustrates that the level of operational performance in Jordanian industry companies as viewed by employees was high, where overall mean scores of financial performance was 4.15. Mean scores of operational performance statements ranged between 4.36 up to 4.03. Item 34

Came first with a mean score of 4.36. Item 40 came second by means of a mean score of 4.24. Item 38, then, came third by a mean score of 4.22. Finally, item 35 came at last rank by a mean score of 4.03. The results of the standard deviations, which ranged between 0.59 – 0.73 referred to a rapprochement in the participants' answers.

Results related to the third question and main hypothesis:

-The third question is: Is there a significant relationship between the using of ERP system and organization performance?

-Main hypothesis: There is significant impact of using ERP system on organization's performance.

-In order to answer this question and test main hypothesis, simple regression test was used; the test results are presented in Table (5-3) as follow:

Table (5-3) Simple regression test for the impact of the using of ERP system on

organization's performance (n= 72)

Independent variable	B coefficient	T value	Sign. Of T	R		F value	Sign. Of F
ERP	0.29	3.15	0.002	0.352	0.124	9.92	0.002

Dependent variable: Organization's Performance

Table (5-3) shows existence of a statistically significant impact at the significance level (α≤ 0.05) to the impact of the using of ERP system on organization's performance. The table also shows that is (0.124), it means that ERP interpreted 12.4% of organization's performance as a whole. This result refers to main hypothesis acceptance.

Results related to the first sub- hypothesis:

The first sub-hypothesis hypothesis: There is significant impact of using ERP system on financial performance.
In order to test this hypothesis, simple regression test was used; the test results are presented in Table (6-3) as follow:

Table (6-3) Simple regression test for the impact of the using of ERP system on financial performance (n= 72)

Independent variable	B coefficient	T value	Sign. Of T	R		F value	Sign. Of F
ERP	0.28	2.88	0.005	0.325	0.106	8.29	0.005

Dependent variable: Financial Performance

Table (6-3) shows existence of a statistically significant impact at the significance level (α≤ 0.05) to the impact of the using of ERP system on financial performance. The table also shows that is (0.106), it means that ERP interpreted 10.6% of financial performance. This result refers to the first sub hypothesis acceptance.

Results related to the second sub- hypothesis:

The second sub-hypothesis hypothesis: There is significant impact of using ERP system on operational performance.
In order to test this hypothesis, simple regression test was used; the test results are presented in Table (7-3) as follow:

Table (7-3) Simple regression test for the impact of the using of ERP system on operational performance (n= 72)

Independent variable	B coefficient	T value	Sign. Of T	R		F value	Sign. Of F
ERP	0.30	2.97	0.004	0.335	0.112	8.84	0.004

Dependent variable: Operational Performance

Table (7-3) shows existence of a statistically significant impact at the significance level (α≤ 0.05) to the impact of the using of ERP system on operational performance. The table also shows that is (0.112), it means that ERP interpreted 11.2% of operational performance. This result refers to the second sub hypothesis acceptance.

The Results and recommendation

Summary of the study results: The present study reported the following results:

1- The results illustrated that the level of using (applying) ERP system in Jordanian industry companies as viewed by employees was high, where overall mean scores of ERP was 3.88.

2- They showed that the level of organization's performance as a whole in Jordanian industry companies as viewed by employees was high, where mean scores of organization's performance was 4.185.

3- The results reported that the level of financial performance in Jordanian industry companies as viewed by employees was high, where overall mean scores of financial performance was 4.22.

4- They illustrated that the level of operational performance in Jordanian industry companies as viewed by employees was high, where overall mean scores of financial performance was 4.15.

5- Impact of age in organization's performance as a whole and in operational performance, whereas there are no statistically significant differences in financial performance. The results reported existence of statistically significant differences (α≤0.05) due to the impact of (position, years of experience) in organization's performance as a whole and in financial performance, whereas there is no statistically significant differences in operational performance.

6- Existence of a statistically significant impact at the significance level (α≤ 0.05) to the impact of the using ERP system on organization's performance, where it was showed that using ERP system has impact on financial and operational performance.

Recommendations

1- Promote using enterprise resource planning system at Jordanian industrial companies, Due to its positive implications for overall performance.

2- Project team and managers should be qualified in both, technical and managerial wise.

Furthermore, it's recommended to employ personnel who are common with ERP systems' implementation. It's anticipated that such qualifications would enhance the team's performance and cut some training costs/time.

3- Balance between official and unofficial ways is a key factor for ERP projects success. Encouragement and smooth communications on an inter-personal level side by side with mandatory training courses and official policies maximize employees' cooperation and grant a perfect environment for ERP projects success.

4- Attract competent talents in the field of management information systems to enhance the development of the organization's performance.

5- With the increasing number of ERP systems' vendors worldwide, organization should take the chosen system's vendor in consideration. ERP systems required a periodic maintenance and upgrading.

6- Despite the outstanding recorded benefits and fascinating success stories for many cases, organizations should always be reasonable in setting their expected benefits from an ERP system.

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