

A proposed model guidelines frame work to improve the applicability of ERP in pharmaceutical industry

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ABSTRACT

Progress in the ERP software systems has led to a greater need to learning how to assess its performance; because there are many factors that contribute to working through these systems. In this research, the usability of these systems was identified in pharmaceutical plants; and their advantages and disadvantages, as well as devising a system by which the possibility of success in using the ERP software systems could be evaluated.

Keywords: ERP, ERP applicability, system evaluation, pharmaceutical industry

1. INTRODUCTION

Reference to the importance of integrating resources of environment to enhance decision making; ERP offers an efficient environment to enhance both operational and managerial decision in many ways (S I M H A R . M A G A L, 2012). In order to achieve success, in enterprise resources planning, must be compatible between¹ the ERP system and the business processes in the organization, through the relationship between the information system and the organization.

The ERP applications are systems of integrated systems management, and could be implemented through the whole business functions in the organization; these systems are designed in a manner that allows dealing with different types of business.²

2. Research importance

2.1. According to the fast spread of ERP concept in the last few years it is recognized that:

- 1 - Successful application of the systems is accompanied by a comprehensive overview from the management to the whole business functions so that they can be integrated (Koupaei, 2011).
- 2 -Contributes to business survival, considering the changing competing environment of business.
- 3 - Helpful to analyze and assess various vital aspects of ERP planning.
- 4 - Assists to assess the requirements for the correct selection of the appropriate ERP systems.
- 5 - Meeting business processes to the ERP system that has been selected (Vorst, May 10 - 12, 2012).
- 6 - Understanding regulatory requirements, economic and strategic application of the ERP system.

2.2 Importance of the research subject

The software system provides integrated solution to the needs of the information system in the organization, where the use of the program for the integration of different functions, which is required to follow up operations carried day by day, as well as to identify the characteristics and system tools that can be utilized to increase the productivity and quality of business processes; and profitability as a result of the use of the program; and therefore it draws a general framework to assess the possibility of implementing the program.

3. Problem Identification

¹ Wenhong luo and Diane M. Strong - a framework for evaluating implementation choices -IEEE transactions on engineering management, vol. 51, No. 3, August 2004

² M. M. Movahedi and M. Nouri Koupaei- a framework for applying" ERP in effective implementation of tqm - middle-east Journal of scientific research 10 (4): 489-495, 2011

3.1 Nature of the problem

There are many companies that have implemented the ERP program, but failed as a result of the use of unnecessary functions which made work through the program costly, though the program succeeded in other companies (E.M. Shehab, 2004)

Most of the problems are attributed to the lack of equal support to the functional units, or to the poor coordination between of functions, in addition to the resistance to change on the part of users, which differs according to the levels of various regulatory and stages of manufacturing, that requires to understanding of the new requirements for the application of the system such as coordination between the departments and the different functions, and to understanding of the functions and tools available through the program, which cannot be exploited through a system, to assess the possibility of implementing the program.

3.2 The research problem

There is diversity in the number of the software used in the ERP, (Helmut Klaus, 2000) which vary according to their capabilities and the value added by them, which makes it difficult for evaluating and determining the suitability of the software for the place in which they are used, as well as determining the services available through program providers and finding how these services are offered to meet the needs of users.

3.2.1 Research challenges

Despite the addressed success of ERP in many organizations, there are a number of negative issues regarding its applicability in a cost- effective evaluation approach.

3.2.2 Research objectives

This research aims to develop a general framework to support the decision-making management regarding the selection and capabilities required to achieve full utilization of the ERP system; and the statement of the objectives of the research can be as follows:

- 1 - Identification of the activities for the evaluation of the potential of the ERP software.
- 2 - Analysis of the business environment surrounding the use of the ERP programs in pharmaceutical factories.
- 3 - Arrangement of priorities to be taken into account when evaluating the ERP software.
- 4 – Proposing an information system for the evaluation of programs for the ERP.

3.2.3 Research limitations

Research items were determined mutually with pharmaceutical factories in Egypt, in order to study the applications of ERP in them, where they depend mainly in all their operations on the use of ERP programs; regarding that the pharmaceutical industry is one of the high tech industries in Egypt; which companies are keen to the application of all new techniques in their work. Inquisition forms (shown in the appendix at the end of this report) had been distributed to adequate pharmaceutical companies included in the following list:

Table (1) list of the pharmaceutical companies' names

No.	The name of the company
1	SACO pharmaceutical Pharma company
2	Osroviah Egypt Industries Company
3	Global pharmaceutical industries Nabi Pharmaceutical
4	Good pharmaceutical pharmaceutical company
5	The Tenth of Ramadan Industries Pharmaceutical (Ramida)
6	Arab Company for Pharmaceuticals industries chemical
7	Arab company for medical supplies (Acma)
8	Amon Pharmaceutical Company
9	Inc. Aventis Pharma
10	October Pharma company
11	Alvakim Advanced Pharmaceutical Industries Company (akaby)
12	Commercial Ttravarm Co. (Top Co. for Pharmaceutical and Chemical Industries)
13	Chemical Industries Development Corporation
14	Glaxo Smith Kline Company
15	Alkan Pharma pharmaceutical company (Lilly Egypt)
16	Egyptian Company for Chemicals and medicines (Adwia)
17	medical profession Company of veterinary products and feed additives
18	Company Egyptian International Industries Pharmaceutical (EIPICO)
19	Al-Nasr Pharmaceuticals and Cosmetics company
20	Upper Egypt Company for Pharmaceutical Industries (SEDICO)
21	Pharco pharmaceutical company

3.3 Case study

3.3.1. Data collection method

After collecting the answers to the inquisition of the survey from the companies mentioned in the previous table, which comprises 21 pharmaceutical companies; each company received ten forms, which were distributed to employees in the management information technology, as well as those staff using the program; the survey forms were distributed to IT workers and users who have differences in their experiences with the system; in order to determine the advantages and disadvantages of the program, and to obtain suggestions to improving the method of evaluating the potential use of the program; thereafter, the necessary adjustments in some parts and questions were done and the inquisition was redistributed randomly to ERP users in a personal way. More focus was on the distribution of the survey to IT workers in middle management because it became clear from the study that they are the users who deal more with the system.

3.3.2. The survey Form

The survey forms were employed to test and investigate the research hypotheses and to find the relationships between the variables of the study

3.3.3. Research sampling

210 survey forms were distributed for the research investigation to the factories mentioned in the table. The answers were only to 86 forms. The sample represented various organizational levels and departments in pharmaceutical factories, comprising production management, materials, marketing, and human resources.

3.3.4 Data Analysis

Based on investigation answers that were collected from the survey, data were analyzed to test the research hypothesis using multiple regression model. The criteria used to evaluate the success of using the program, are:

- 1- User satisfaction.
- 2- Productivity.

Personal interviews were held with many officials of the information technology management in the following companies:

- 1 - Good pharmaceutical company.
- 2 - Arab company for medical supplies (Acma).
- 3 - Egyptian International Pharmaceutical Industries company (EIPICO).

Case studies had been implemented to the previous three companies, such as to cover all the activities that are carried out through the ERP.

3.3.5 Research methodology

The research is designed by the use of questionnaire, observations and semi-structured interviews.

The descriptive analytical method was used to study the possibility of applying the ERP system in pharmaceutical plants, and how to take advantage of its potential, through:

- 1 - Designing a survey form covering the activities of the ERP software that is needed by the organizations under study.
- 2 - Carrying out personal interviews and surveys to collect data for research.
- 3 - Analysis to the data through the statistical analysis program SPSS.
- 4 - Designing a conceptual framework to assess the applicability of the system in pharmaceutical factories based on the result of the statistical analysis of data.
- 5 - Providing an information system to develop a general framework for the evaluation of the programs used in the ERP system.

4. Literature review

4.1. Evaluation standards of the ERP programs

Most providers of ERP software design their products (Elisabeth J Umblea, 16 April 2003) so as they are compatible with customer's needs, so that it can compete with competitors' products; thereafter, the units can be combined from multiple suppliers, then integrating the functions with the different units from more than one provider in a single system.

Programs are evaluated according to the following:

- 1 - The purpose of the use.
- 2 - Functions available through the program.

3 - The cost of the program.

4.2 The integration of the functions and activities through the different ERP programs

The ERP program can lead to the integration of all activities within the various departments of the organization through the application (Matys, July 20th, 2012) of a single program, so the program allows the flow of work through the different categories of business activities and reduce operational costs in the organization; and to facilitate the process of tracking the manufacturing stages, which may also lead in some cases to duplication of data via using it by many individuals and systems.

The ERP systems consist of many independent units that work jointly to enter and post a public database; each unit performs different function within the organization and is designed to be installed on the device alone or integrated with other units.

4.3 Advantages and disadvantages of ERP Software

4.3.1 Advantages of ERP Software³

Some advantages of ERP software could be stated as follows:

- 1 - Providing real data about the business information system through which levels of profitability can be increased.
- 2 - Supports administration through the corrective action and follow-up staff commitment during work according to performance standards.
- 3 - Improving production planning processes.
- 4 - Controlling the movement of inventory in a convenient manner.
- 5 - Provide forecasts about possibilities of the future and setting expectations for production early.
- 6 - Providing high quality products by monitoring the movement of materials starting from entering to the factory and during transmitting it in the various stages of manufacturing.
- 7 - Providing a comprehensive view of the whole business processes and information needed to make effective decisions.
- 8 - Following -up records of patients who have used the drugs to see its performance, and side effects and impact on the patient.
- 9 - The program has a centralized database system.
- 10 - Managers can enter easily on any sub-system of the software system which helps in quick and better decision-making.
- 11 - Data can be converted to form of a single unit.
- 12 - Providing flow of the work from department to another, or from one job to another to ensure a smooth transition process to complete operations
- 13 - It can provide a reporting system and a single view through the work of the necessary statistics of the production and account numbers required to assess the performance in the time needed in all functions in all departments.
- 14 - It can avoid buying a special program for each department because the program serves all categories of the organization.
- 15 - The program can enhance business intelligence capabilities.
- 16 - The program can integrate the e-commerce activities, which can follow the results of business operations across the internet.
- 17 - There are many models available through the program, such as accounting, financial management and human resources management, manufacturing, marketing, sales and warehouse management, supply chain management, project management, customer relationship management.
- 18 - The program contains many units so it is possible to apply a few of these units, or many of them in accordance with the requirements of the work within the organization, which will result in the better integration among several departments.
- 19 - It is the only database software that could be applied to store all the required data through the system by allowing the central storage for all data within the organization.
- 20 - The ERP programs are safer due to following the policies of centralized insurance for all transactions that can occur through the program and can be traced.
- 21 - The use of a database program and a single infrastructure can enable supplying more and updated information and allowing management to make better decisions.
- 22 - The program can provide the information at the same time it is needed , and thus facilitates the processes of communication between the various departments and operational track changes in different business activities.
- 23 - The program can reduce the cost of inventory in the supply chain as a result of the full vision of all departmental activities, and by tracking the movements of materials.
- 24 - The program helps in good planning and delivery of the product to the consumer in a better way.
- 25 - By the use of the ERP program it easy to develop criteria for monitoring manufacturing operations.

³ Through the first open question in the survey form

26 - The program can reduce duplication of data.

27 - Through the program some of the steps in the manufacturing process could be automated, and therefore eliminating of extra resources and increase productivity.

28 - Through the program the performance of workers through specific standards and criteria could be tracked

29 - The program can keep track of all errors during the manufacturing processes and correct them, as well as take action about collecting of the used tools to ensure that such mistakes are not repeated again and to overcome any new errors immediately discovered.

4.3.2. ERP software disadvantages⁴

Some of the ERP software disadvantages could be stated as follows:

1 - It is considered very expensive, particularly for small production volumes

2 - The process of compiling the data involves some difficulties.

3 - The integration among data in different sections of the factories are important, imperative and should be pursued

4 - It is at variance with the centralization of administration in the factory.

5 - Reliance on data from every part of the supply chain.

6 - The length of the volume of data and plentiful in this program.

7 - Implementing the program takes a great time.

8 - The process of applying the new system could take months and requires training for system users.

9 - The organization may need to hire new workers who can deal with the program to get benefit from it, otherwise it may be costly.

10 - Many companies failed in successfully implementing the program due to its complexity.

11 - The program needs to train every employee on the part of the program according to his specialty and function.

12 - Quantitative data in the program lies in the possibility of entering a larger number of users of the program, which carries with it many insurance problems even after the successful implementation of the program; which may lead to system failure or exposure to the risk of viruses and wasting time in addressing them.

13 - The system may be exposed to overlapping or wasted data.

14 - The program can change the entire system of work organization, which could affect the final product of the organization, as well as the employees comfort level or make them dissatisfied with the work.

15 - The time and cost are not taken into account when evaluating the ERP software applications

16 - There is a need to train workers after buying the hardware and software in order that the users of the system can deal with it.

17 - The ERP software systems are very complex and have proven difficult to apply, particularly in organizations where there are many large business units.

18 - The basic problem in the program is that it is designed according to the specific business model.

19 - Despite the possibility of modification in business operations in accordance with the best practices in the industry, the organization needs to change its business model, as well as the processes associated with individuals who can even be in line with the business model designed in the software system.

20 - It is required to work with the program management restructuring operations corresponding with the new ERP software system.

21 - Because of changes in the business processes according to the capabilities and functions of the program, it is obvious that the program user is the one who determines the business applications and processes that must be applied by the organization, to be in accord with what is in the program; which is designed to support business applications and processes in the organization.

22 - In spite of the widespread use of the ERP software in large-sized companies, the use of the program requires a re-engineering processes in accordance with what is in the program.

23 - It is difficult to change the program if it is installed in a business environment that is decentralized and includes separate processes.

4.4. The use of the ERP program in pharmaceutical factories

4.4.1. The ERP program is used for capturing steadily all the possibilities confront the management at various activities of business operations, namely:

- Samples for work.

- Submitting reports.

- Statistical evaluation.

- The user interface that allows for both experienced users or regular users to work in a comfortable manner.

- Follow-up security system on several levels.

⁴ Through the second open question in the survey form

- Identifies and follows the movement of each raw material that is supplied to the factory and through manufacturing processes up to the stage of packing, shipping and distribution to the expected consumer.
- Follow-up many activities such as:
 - 1 - The workflow of the production lines.
 - 2 - Sales activities.
 - 3 - Follow-up inventory.
 - 4 - Quality Assurance.
 - 5 - Management Requirements.
 - 6 - Accounting and financial management.
 - 7 - Providing reports.

4.4.2. Capabilities of the ERP program

- 1 - It provides greater transparency while conducting (Joseph R. Muscatello, 2003) business operations.
- 2 - Allowing workers to record data on the activities of business processes in a more effective manner, as well as to predict the future and get more profit.
- 3 - The program provides connectivity between all activities within the different forums in the factory continuously leading to facilitate the coordination of activities among various divisions of the department.
- 4 - Following the movement of raw materials through various manufacturing stages.
- 5 - Adjustments in the manufacturing processes in accordance with the needs of users.
- 6 - Following-up every area of work without the need to separate programs from each other.

4.4.3. Special characteristics for the pharmaceutical industries

Management of providing medical restrictions and precautions on the drug product

Some of its activities are as followings:

- 1 - Joint work with chemists, physicians and pharmacists to provide the pharmacological appropriate solution.
- 2 - Following the flow of information on medication such as the effect of the active substance and the warning of contraindications and permitted dose for each patient.

Distribution Management

It is an integrated system to follow up the activities of sales, marketing. Senior management team deals with this system through following up consumers' survival and loyalty.

The following activities can be performed:

- 1 - Product development.
- 2 - Pricing.
- 3 - Promotion of the products.
- 4 - Following-up sales orders.
- 5 - Predicting future sales.

Manufacturing Resource Planning (MRP)

The following activities can be performed:

- 1 - Covering all the resources required for a drug factory.
- 2 - Recording batches via production lines, where batches are up to factory production, starting from the demand for raw materials until the implementation of the command for the manufacturing, as well as quality assurance.

Inspection

Where the following activities can be performed:

- 1 - Following -up inspections of raw materials and equipment before starting work to ensure suitability for use.
- 2 - Monitoring manufacturing processes.
- 3 - Following -up the performance during the manufacturing operations and correcting errors that may occur during operation.

Total Quality Management

Where the following activities can be performed:

- 1 - Reviewing the implementation of quality standards and following -up the action plans in purchasing and manufacturing activities.
- 2 - Making rapid monitoring of the activities that have been in business processes.
- 3 - Providing support for every stage of the production processes from receiving and acceptance of raw materials to manufacturing and inspection of finished products to be shipped and distributed to consumers.

Configuration management of the drug product

Where the following activities can be performed:

- 1 - Dividing medicine to several levels of the pharmaceutical configuration.
- 2 - Following-up the conversion of raw materials and mixing of raw materials components of the drug product in a proper manner and acceptable.
- 3 - Action measurements of the product to ensure the safety of the mixing process, as well as the availability of sufficient flexibility to meet the specific needs of each product, no matter what kind of pharmaceutical product is manufactured.
- 4 - Determining the appropriate method of mixing of raw materials and processes transformation for each product in the best way.

Following-up production lines

Where the following activities can be performed:

- 1 - Maximizing the utilization of production capacity.
- 2 - Following-up the maintenance of equipment and the factory as a whole.
- 3 - Following-up preventive maintenance of the equipment and machinery in the factory
- 4 - Making the task of sudden or emergency maintenance in case of any sudden malfunction.

Materials and inventory management

Where the following activities can be performed:

- 1 - Providing flexible set of features to assist in the management and delivery of inventory reports.
- 2 - Reporting on the movement of stock.
- 3 - Facilitating follow-up inventory levels in warehouses.
- 4 - Reducing wastage, damaged, or out of stock.
- 5 - Identification of out of stock targets.
- 6 - Examining the various alternatives available for storage operations.
- 7 - Continuing to use the units.
- 8 - Recording the movement of handling process.

Procurement management

Where the following activities can be performed:

- 1 - Following-up the management needs of raw materials and required inputs.
- 2 - Determining the requirements of raw materials, production inputs, and packaging materials.
- 3 - Materials Filling.
- 4 - The assembly or conversion of raw materials.
- 5 - The processes of determining and assessment of suppliers.
- 6 - Making purchase orders.
- 7 - Paying operations bills.
- 8 - The integration of acquisitions with production planning processes.
- 9 - Following -up the use of raw materials.

Financial Management and Accounts

Where the following activities can be performed:

- 1 - Management of financial resources.
- 2 - Preparation of financial statements required by the various departments.
- 3 - Recording sale or purchase transactions.
- 4 - Follow-up payroll of employees.
- 5 - Receiving cash from customers.
- 6 - Following-up the financial policy of the Organization.
- 7 - Making financial reports such as Balance sheet.
- 8 - Making the necessary financial analyzes.
- 9 -Evaluating depreciation of assets.
- 10 - Following-up taxes.

Human Resources Management

Where the following activities can be performed:

- 1 - Recruitment of staff.
- 2 - Training.

3 - Evaluation of the performance of employees.

4 – Retirement.

Department of Legal Affairs

Where the following activities can be performed:

1 - Management of contracts for transactions that occur in the management of the purchase or sales management.

2 - Following-up whether the activities of business processes are in accordance with the laws and regulations.

3 - Following-up the situation of local and foreign workers and their access to legal entitlements.

The possibility of success in the use of the ERP program

Which depends on:

First: familiarity with the program

There are many guidelines that must be followed when using the program to achieve familiarity of it with the use. The way of planning to use the software and training users must be understood. Anyhow, there must be flexible renewable realistic terms which enables to achieving the objectives of the organization, as well as the capability to work according to the program lines, can work and refer to them in time of need, so that they can make a detailed description of how to deal with the program.

The familiarity with the program may depend on the actions that take place within the work itself, which vary from one place to another, and therefore must determine the specific procedures to produce the results of a pre-defined activities step through the use of the program in the form of an integrated information system through which integration between all activities of the business processes could be done.

Second: the use of applications and tools and functions of the ERP software

According to the complex and changing environment surrounding business processes, which is due to globalization and technological development and the emergence of new markets; the need for an integrated system and more specialist program has become a necessity to ensure the success and growth of organizations.

Anyhow, the use of tools and techniques and functions of the program is an essential component of the planning process for business processes.

Third: management involvement in the process of adopting the use of the ERP software

Management's role in the formation, understanding and continuing to use the integrated system available through the ERP software has a significant impact on the successful use of the program, as well as providing the necessary ideas and proposals to optimize the program so that it could increase the possibility of success in the use of the program.

5. SELECTION AND FUNCTIONS

System selection and functions

Choosing the system is due to the following factors:

1 - The ability to support all functions in the organization with basic information on business functions such as:

- Marketing and sales.

- Production.

- Finance and Accounting.

- Human Resources.

2 - Emphasis on the support of the various systems to work, such as decision support systems and transaction processing systems and executive information systems.

3 - Flexibility in the ability to adjustment in accordance with the system in which it is applied.

4 - Emphasis on the quality of the resulting output from the system.

5 - The program's ability to work alone in the sense that all functions that can support business processes are available as much as possible, as it can bind them to support the functions of the organization.

6 - The program's ability to integrate internal business operations and removing all barriers between the administrative levels.

5.1. System Selection Criteria

There are some Standards for measurement and comparison of several ERP systems such as:

1 - Economic benefits.

2 - The use of standards and the most important of it is usage motivation.

3 - User satisfaction.

4 - Organizational benefits.

- 5 - Quality systems.
- 6 - Performance.
- 7 - Other criteria such as obtaining the software provider's to the ISO certificate.

5.2. Testing the model

This study is to investigate

- 1- The relationship between Efficiency of using ERP program and User satisfaction with the use of ERP program.
- 2- The relationship between achieving the organization objectives through ERP program and Meeting the needs of the information system in the organization

Hypothesis 1: User satisfaction with the use of ERP program leads to improve Efficiency of using ERP program.

Hypothesis 2: Achieving the organization objectives through ERP program leads to meeting the needs of the information system in the organization.

First hypothesis test

Null hypothesis

There is no significant relationship between User satisfaction with the use of ERP program and improving Efficiency Use of ERP program

The alternative hypothesis

There is a significant relationship between User satisfaction with the use of ERP program and improving Efficiency Use of ERP program.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. Change	
1	.686 ^a	.471	.465	3.42713	.471	74.795	1	84	.000	1.507

a. Predictors: (Constant), x1

b. Dependent Variable: y1

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	878.484	1	878.484	74.795	.000 ^a
	Residual	986.597	84	11.745		
	Total	1865.081	85			

a. Predictors: (Constant), x1

b. Dependent Variable: y1

The significance is .000^a Therefore we accept the alternative hypothesis and reject the null hypothesis.

Second hypothesis test

Null hypothesis

There is no significant relationship between Achieving the organization objectives through ERP program *and* Meeting the needs of the information system in the organization.

The alternative hypothesis

There is *significant relationship between* Achieving the organization objectives through ERP program *and* Meeting the needs of the information system in the organization.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. Change	

1	.855 ^a	.731	.727	2.74817	.731	227.866	1	84	.000	1.485
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a. Predictors: (Constant), x2

b. Dependent Variable: y2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1720.944	1	1720.944	227.866	.000 ^a
	Residual	634.405	84	7.552		
	Total	2355.349	85			

a. Predictors: (Constant), x2

b. Dependent Variable: y2

The significance is .000^a Therefore we accept the alternative hypothesis and reject the null hypothesis.

1.1.1 Integrative conceptual model

5.3. Model building

Mapping ERD into relations

ERP user

<u>ERP user ID</u>	ERP user name	specialty	phone number	shift
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ERP provider

<u>ERP provider ID</u>	ERP provider name	e-mail	phone number
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ERP user/ ERP provider

<u>ERP user ID</u>	<u>ERP provider ID</u>
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ERP product

<u>ERP product ID</u>	ERP product name	functionality	documentation	Technology involved	<u>ERP provider ID</u> FK
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Criterion

<u>critierion ID</u>	usage	objectivity	name	<u>Value added ID</u> FK	<u>ERP product ID</u> FK
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Value added

<u>Value added ID</u>	Value added name	benefits
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Capability

<u>capability ID</u>	capability name	functions	<u>ERP product ID</u> FK
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Performance

<u>performanc e</u>	performanc e	Date evaluated	type	amount	improvement	speed	<u>capability ID</u>
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code:	01
trade name:	SAP® R/3® Enterp
category:	A
expiry date:	12/03/2016
product typ	software
price:	\$15,000
adverse effect:	good
technology involve	datbase
indication:	#Name?
active constituent:	involved
functionality:	functional
documenttior	manual
price to wholesaler:	\$12,000.00
price to retailer:	\$10,000.00
id interact:	01
id replace:	11
id prepare:	60

Figure no. 2 shows ERP product form in the proposed ERP evaluation system

id:	011
name:	Samy mara
med organization:	health care
address:	9,boul street
tel no:	25245252
specality:	system analyst
schedule code:	06

Figure no. 3 shows ERP user form in the proposed ERP evaluation system

6. Results

- 1- Results of the study showed that the use of the ERP software can affect the organizational performance of business processes as a whole since pharmaceutical plants systems depend on it greatly
- 2- Therefore it was necessary to assess the susceptibility of success using the program and How to try to reduce errors and complaints arising from the use of the program as much as possible.
- 3- Based on the results of a study of the relationship between success in the use of the program and the dimensions achieved through it and made this success possible could be identified
- 4- A general framework for assessing the ability to use the program's success was established.

6.1. Conclusions

ERP Systems are essential programs for the compatibility and integration between the activities of the organization and some of them, but there are many restrictions that limit the possibility of using this program successfully, including the lack of awareness of many of the users about functions and tools available through it, making it expensive without the benefit of potential and made necessary in each organization

6.2 Recommendations

- 1 – Focusing on system requirements when evaluating and selecting the ERP software
- 2 – Making a clear definition of what can be achieved through the use of the ERP software
- 3 – Developing a framework for how to apply the program and the emphasis on compliance with the requirements of the system.
- 4 - Making good assessment of the internal processes within the plant to ensure the success of the system
- 5 - Making continuous evaluation of the system through the proposed system can even reach the final shape of the ERP software system
- 6 – Identifying the expectations of the best users of the system about the system and determining the disadvantages that can be avoided in the future.
- 7 - Training on the use of the program and make a full use of its potential.

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AUTHOR



DR. Maha Talaat received the M.S. and PhD degrees in Management information systems from faculty of commerce Aim Shams University in 2000 and 2004, respectively. During 2004/2007), she worked as a teacher at workers University, the industrial relations division, Cairo branch. She is now working as a teacher of Information systems at Sadat Academy for managerial sciences till now.

APPENDIX

Questionnaire oriented to employees in the pharmaceutical factories in Egypt

Note: Data on this Questionnaire is confidential and used only for the purposes of scientific research

Gender: Male Female

Age: 20 -30 30-40 40-50 50 and above

Employment: IT worker Researcher administrative Other

Please draw a circle on the selected number note that each number corresponding equivalent item in the following table

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Efficiency Use of ERP program

1 - Planning for the work environment by the use of ERP program Includes Working in the organization as a whole.	1	2	3	4	5
2 -the good design of the work environment using the ERP program Helps to develop business processes.	1	2	3	4	5
3- Maintaining the organization's resources is a prerequisite when working in a work environment-using ERP program.	1	2	3	4	5
4 - Work procedures and activities Can accelerate completion If good planning of the work environment using ERP program in the Organization are enabled.	1	2	3	4	5
5 - seeking to improve the ways and methods of work In the manufacturing stages Facilitate completion of business processes activities by the Use of the ERP program	1	2	3	4	5
6 - IT workers try To increase their utilization from the possibilities of the ERP program by training and self-learning.	1	2	3	4	5
7 - The Use of ERP Program Has a basic role in achieving the organization's goals.	1	2	3	4	5

User satisfaction with the use of ERP program

1 - Organization workers prefer to use ERP program from all other programs.	1	2	3	4	5
There is self-sufficiency from the ERP users of the software functions available in the ERP program.	1	2	3	4	5

3 - ERP program Includes a comfortable Work interface that is convenient for the IT user.	1	2	3	4	5
4-There is stability in the way of working through ERP program.	1	2	3	4	5
5 - There is a speed in the completion of work activities through working with the ERP program	1	2	3	4	5
6 - There is a rapid response to the changing business needs through the ERP program.	1	2	3	4	5
7 - working through the ERP program is featured by Simplicity in use	1	2	3	4	5
8 - There is no complaints from the ERP users about the way of using it	1	2	3	4	5

Achieving the organization objectives through ERP program

1 –the use of ERP program provides the suitable environment to work in the organization.	1	2	3	4	5
2 – Work activities is done to avoid any error affects the work environment through ERP program.	1	2	3	4	5
3 – Employees and IT Workers in the Organization tries To improve the ways and methods of work to ensure their success in achieving its objectives by the use of ERP program.	1	2	3	4	5
4 - Following-up the tracking process for materials through the ERP program During the manufacturing stages Reduce the likelihood of errors in production.	1	2	3	4	5
5 - the added value of the product could be increased through the ERP program	1	2	3	4	5
6 - The total cost of the products can be reduced through the ERP program.	1	2	3	4	5
7 - The benefits generated from the system could be increased through the ERP program.	1	2	3	4	5
8 – It is easy to accomplish various business activities through ERP program.	1	2	3	4	5

Meeting the needs of the information system in the organization

1 - Technology involved in the ERP program is Commensurate with the needs of the information system of the organization.	1	2	3	4	5
2 - the software providers provides Well documented manual for the way to use the system	1	2	3	4	5
3- There is a Compatibility between the ERP program And the information needs of the organization.	1	2	3	4	5
4 - Functions available through the ERP program Meet all the business requirements of the organization.	1	2	3	4	5
5 - Good planning for monitoring the process of creating the appropriate ERP program environment reduces the risk of system failure.	1	2	3	4	5
6 - There are always follow-up from the program providers about the usage of the ERP program Before and after installing it in the computers of the organization.	1	2	3	4	5
7 - the of ERP software enables handling a huge amount of data	1	2	3	4	5
8 - the of ERP software enables ease of rendering or displaying data results	1	2	3	4	5

1) What are the advantages provided by the use of ERP Program?

-
-
-
-
-
-

2) What are the disadvantages of the ERP program?

-
-

3) What are the policies and procedures that must be followed by the organization to overcome the disadvantages of the ERP program?

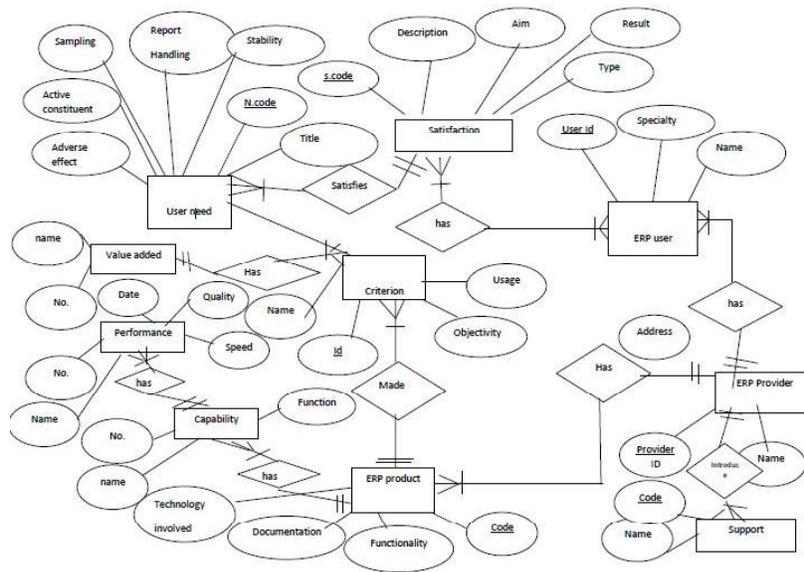


Figure no. 3 shows The ERD of the proposed system for evaluating ERP program applicability

ERP evaluation system Inputs

ERP user				
ERP user ID	ERP user name	specialty	phone number	shift
022345	Ahmed Esmail	Data editor	01286677321	10pm:3am
023545	Emad Adel	System analyst	01003266870	9am:9pm

ERP provider			
ERP provider ID	ERP provider name	e-mail	phone number
3256	Mohammed Ali	mohali@yahoo	01213886733
3655	Sami Mahmud	samimah@gmail	01098420016

ERP user/ ERP provider	
ERP user ID	ERP provider ID
022350	2352
022490	3352

examples ■

Outputs examples of an ERP software

Customer invoice for pharmaceutical factory

Dr .Ahmed Esmail		Mr. waleed sayed	
Prescription no.:1230		prescription date :2/2/2013	
Drug no.	Trade name	Dose	price
0.001	nor adrenaline	0.5ml of 1/1000 solution	13000 LE

Consulting document

Dr .Ahmed Esmail		pharmacist : Mohammed Ali		
About patient : Mr. waled sayed		date :2/2/2013		
Drug no.	Trade name	Dose	Indication	Contraindication
0.001	nor adrenaline	0.5ml of 1/1000 solution	Added to local anesthetic	Hypertension Cardiac arrhythmia