ERP IN SYRIA

A Propositions for ERP success

By Eng. Hasan Shammout
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Abstract
The adaptation of enterprise resource planning ERP solutions appeared in Syria approximately in 2000 when large scales organizations in both public and private sector start to adapt the ERP solution and the request for proposals RFP start to request ERP systems
ERP promises many benefits and opportunities and enhancement for the organizations including enhancing the integration among the different organization's subsystems and also the streamline processes [1] within the organization and as a result enhancing the productivity and the financial state [7]
The transition to ERP systems is always combined with business process reengineering (BPR)[1] the BP is embedded in the ERP system and usually ERP implementation is also combined with radical changes in the workflow [1]
Some organizations chose to purchase its ERP system from the global market as customized software and others chose to purchase from western vendors which also required a lot of customization to fit the Syrian environment
Unfortunately many of these experiments didn’t operate well according to the Syrian Software Industrial Forum SIF Many of these organizations didn’t achieve the desired opportunities they were promised to get
There were significant costs unsuccessfully implementing ERP systems
These organizations have paid more for the implementation than they would pay to improve the system
Different organizations invested in ERP projects without gaining the benefits they expected because the ERP system contracts were particularly implemented
This was caused due to some factors that took place
This research will perform a survey about the ERP failure factors in Syria related to the following components
– Software
– Organizations
– Software vendors
– External environment
– Culture issues
In addition this research will suggest several propositions to help in making ERP projects success in the Syrian environment.
1. Chapter 1: Introduction:

1.1. ERP definition:

ERP system as shown in figure [1] is a set of integrated sub-systems or packages each package or module presents a single complete function such as: Purchase, sales, inventory management and control, finance, manufacturing, human resource management ...[1]

the idea was initiated when large scales organization which already had implement a set of a subsystems try to figure out some way to integrate these systems together in way that enhance integration among these systems and in order to create one central database for the whole organization.

SAP was one of the first ERP systems as a solution for such problem .ERP systems were usually refer to as of-the-shelf products [2] but still it needed some customizations during its implementation

The act of implementing ERP systems is similar to BPR because both transform the organization from being a function oriented to become process oriented [9]

And both recreate the processes within the organization but the ERP transition require hard radical changes as the one in the BPR

ERP systems can be applied incrementally in order to avoid big bang

However its always necessary before implementing an ERP system to predefine all business processes within an organization [1]
1.2. ERP benefits

If it's implemented successfully ERP system promises many benefit and gains for productivity and speed [1, 7] and the process and data quality. Because it enhances streamline processes and increase cost saving [10] and enhance the process quality because it's similar to BPR

On the other hand the success of ERP will produce better integration among business units [1] which lead to more consistent and accurate data

The top management also will have online access on the full information of the organization [1]

The ROI is very high usually Dr. Scott Hamilton had preformed a very long study on hundreds of organizations in order to justify investment on ERP and this research shows that successful implementation of ERP systems have a very powerful impact on financial situation of the organization including the balance sheet, income statement, key ratios, and stock price [7]

For example in the inventory the study shows reductions of 20 percent or better

On the other hand ERP successful implementing lead to many intangible profits such as better integration and reduce data redundancy and better decision making

- **Common benefits**

  - **Inventory loss reduction:**
    
    One of the most important ERP benefits as ERP system integrates the inventory system with other subsystems related such as maintenance and purchase and finance …
    
    In this way ERP organize and regulates the process of supplying and providing material from the stock [7]
    
    Not mentioning that the ERP implementation reduce time reduction for the different assets in the stock (Assets deprecation)
    
    In addition cost reduction can be provide by saving the carrying and shipping costs to the warehouse [7] because the stock system is linked to the procurement system
    
    The monitoring that ERP provides on the inventory warehouse gives the organization the exact material amount needed and prevent overstock or materials vanishing [7]

  - **Materials cost reduction:**
    
    By integrating the procurement system with the other subsystem in the ERP system this will leads to the best selection for the prices and better negotiations with the suppliers
    
    The streamline process embedded in the ERP system provides better visibility for supply chain process and improve it [7]

  - **Labor reduction**
    
    The integration among the ERP subsystems reduce so much time of "donkey work" in data entries and most of the data entries are generated automatically from one sub-system to another [7]
    
    For example the financial feeder (Journal Entries generator) in the ERP system automates all the financial effects for all the processes that have one
    
    This guarantees more data accuracy in the general ledger and much more less labor for the accounting system employees
    
    Not mentioning that this gives the top management more time for planning to develop and improve the financial state of the organization
d. Improve customer satisfaction and sales
As ERP system integrates the sales system with the production system this will helps the production system to coordinate with the sales to improve the customer satisfaction by decreasing the order and shipping time
This will also help the organizations which work on the "Demand - pull" selling strategy
By providing the ability of take action earlier such as order priority and also keeping the customer noted of delivery states or change
As a result ERP enhance customer satisfaction and eventually enhance the sales [7]
e. Improve accounting control
By integrating the general ledger system to the different sub-systems related ERP system organize and control the available cash in the organization as a result provide a better cash planning
An accurate supply and sales invoice can be created from the transactions
Integration also reduce the problems in the accounts as most of the financial effected and automated and generated by the ERP system [7]

1.3. ERP failure:
The success of ERP system like any other software is measured by the solid triangle of cost, time and customer satisfaction
Unfortunately some statistics shows that 40% of software vendors didn’t achieve their original business goal 20% of project managers shut down their projects before completion[10]
But on the other hand it's very important to know that it's not a white or black area the degree of success varies.
The degree of ERP success from the organization's perspective measure the degree of how much the top management depends on the ERP system and to which degree the ERP covers the organization processes and data.
An interesting type of classification was proposed by Dr. Scott Hamilton[7] as shown in Table [1]
Class A users use the system in a very formal and effective way to run the whole tasks in the company
All the subsystems are integrated together and the whole business process is embedded in the system which provide a very realistic reports for the top management which are fully depending on the system with very small number of exceptions
Class B in this class the system is particularly effective but lack to company-wide agreement and completeness this make it some times difficult to relay on
The numbers of exceptions in the formality of the system make people question the effectiveness of the system
Class C this types is defined when the system is only implemented in part of the company in this case the ERP system losses the benefits of the integration and doesn’t reflect a real picture of the current system
Class D the system is not used or run on any part on the company informal methods are used to manage the business
Table [1] describe the four categories of ERP success from the organization perspective
<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>Management team uses ERP system to run the business</td>
</tr>
<tr>
<td></td>
<td>Complete and accurate data 99% ++ one set of numbers</td>
</tr>
<tr>
<td></td>
<td>Using latest versions of ERP software</td>
</tr>
<tr>
<td></td>
<td>Company gains the full benefits of an ERP system</td>
</tr>
<tr>
<td>Class B</td>
<td>Management team not fully using the ERP system</td>
</tr>
<tr>
<td></td>
<td>Mostly complete and accurate 90% to 95%) data</td>
</tr>
<tr>
<td></td>
<td>Some informal or non-integrated systems</td>
</tr>
<tr>
<td></td>
<td>Company gains partial benefits of an ERP system</td>
</tr>
<tr>
<td>Class C</td>
<td>Partial use of ERP system, such as sales orders and accounting</td>
</tr>
<tr>
<td></td>
<td>Incomplete and inaccurate (&lt;90%) data</td>
</tr>
<tr>
<td></td>
<td>Many informal or non-integrated systems</td>
</tr>
<tr>
<td></td>
<td>Not gaining the integrative benefits of an ERP system</td>
</tr>
<tr>
<td>Class D</td>
<td>System not used by anyone</td>
</tr>
<tr>
<td></td>
<td>System only running on the computer</td>
</tr>
</tbody>
</table>

Table [1]

There are so many factors that must be considered when implementing an ERP system. The factors of ERP failure vary sometimes these factors are related to the software company, for example. Sometimes the software company takes advantage of the lack of knowledge in the organizations in two ways: one is by adverse selection [3] by pretending that the company have some certain abilities that they don’t have and some times its hard for the organization to discover another way is by moral hazard [3] during the implanting of ERP system as the ERP system is very complex sometimes the organization can’t determine if the software vendor is working probably or not. Other failure factors are related to the Organization the need to implements ERP system for example some organization resist the embedded new business process in ERP systems and some times some departments resist the integration with other department which raise the question about the benefits of the system? Other factors are related to the culture or the external environment for example poor IT lows or no consulting firms. Some organizations don’t get enough support from the government to implement ERP systems. However the failure and success factors are going to be discussed in details later on in Chapter 3 and Chapter 4.
1.4. Research Problem and Objective:
This research will perform a scientific survey on some of the current ERP projects in Syria in order to find out the failure reasons attach to the way ERP projects are being implemented and related to the types on the business process in the public sector and the types of its data and employees and contractual issues
This research will also analyze the problems related to the software companies in Syria and the most critical problems they are facing
In addition the research will set light on the problems related to software industry external environment
This research will perform technical and social study of the ERP projects in Syria and compare it with other countries and Analyze ERP projects success/failure factors in the public sector in Syria to find out methods to improve the opportunities of ERP success in the public sector

1.5. Research Importance:
The importance of this research comes from the fact that successful ERP implementation has direct effect on inventory, material costs, and labor and overhead costs, as well as improvements in customer service and sales as it was earlier mentioned in this chapter. This research will provide assistance for IT managers in order to help them in making the right decisions by showing how to take technical and management decision in the different public sector organization during project lifecycle:
   a) Identification
   b) Selection
   c) Implementation
   d) Maintenance
This research will provide a set of proposition to be considered related to the software companies and the ERP customers.
It will also provide a guide line on what steps should be taken before selecting and implementing an ERP project
It will also show a vision on the Common characteristics of ERP and wide enterprise software projects in Syria.

1.6. Research Methodology:
The research objective will be achieved by collecting data from analyzing similar studies in the same areas
Afterward ERP projects information will be collected from the software vendors by conducting Syrian software industrial forum which represent a nongovernmental union for the biggest software companies in Syrian
Also this research will perform a scientific survey on some of the the ERP projects by conducting ERP customers and analyzing these case studies
This study will describe the experiment of three organizations which have implemented ERP systems using Oracle financial and local ERP system made by a local software vendor. These organizations are listed in the table [2] as follow:

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the organization</td>
<td>Public Syrian Company for communications</td>
</tr>
<tr>
<td>Nature of business</td>
<td>telecommunication services</td>
</tr>
<tr>
<td>Estimated Number of Employees</td>
<td>3000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ERP System Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Oracle financial</td>
</tr>
<tr>
<td>Cost</td>
<td>1000000$</td>
</tr>
<tr>
<td>Branches</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated time</td>
<td>3 years</td>
</tr>
<tr>
<td>Actual time</td>
<td>3,5 years</td>
</tr>
<tr>
<td>BPR</td>
<td>Non</td>
</tr>
<tr>
<td>Management usage of the system</td>
<td>Non</td>
</tr>
</tbody>
</table>

Table [2]
2. Chapter 2: ERP Overview in Syria

2.1. Organizations types in Syria

ERP is well known and establish in the advanced countries such as the US, Germany, Scandinavia and the Netherlands.

The beginning of ERP in the developing countries such as India, Brazil, China has just recently started [5]

In Syria There are 284 medium and large scale public organizations in Damascus only

Before the appearance of ERP in Syria the large scales organizations in Syria which are approximately about 400 organizations were using separated systems or packages for separated purposes specially for accounting systems and human resource management

There was no integration among these subsystems along the organization departments or at the branches level

The benefits of these systems were limited on the employees which are using these systems mainly to reduce paper work labor

The ERP word appeared for the first time in Syria by the year 2003 in a RFP for the Department of Public Health – Tartous

But still according to Syrian software industrial forum there were some exceptions related to the military sector similar to ERP system as wide enterprise applications

Nowadays in Syria many organizations are spending considerable amount of money each year to purchase and maintain enterprise-wide software solutions, including ERP recently

Common characteristics of the Syrian organizational environment:

1- BPR is so limited as any change in the business process request a top management decision and high responsibility

2- Financial feeder (the integration with the general ledger) cant be automated because the financial effect for the same transactions can take many possible financial effect (journal entry)

3- All the tasks and job descriptions must be kept after implementing the ERP system as no cut out is allowed

4- lack of dynamicity in the different Governmental processes (paper work)

5- The lack of computer knowledge in the public sector

2.2. Software vendors & Software types:

The software industry in Syria is still in the beginning there are currently no official statistics about the exact number of the software vendors in Syria.

Software Industries forum http://www.sif-syria.org/ is "a non profit organization that was established in 2003 to help and support the software industry in Syria and to effectively represent, promote, and advance the Syrian software and IT services industry in the global market."

This forum includes more than 50 software companies now most of them concentrate on producing accountancy and financial systems and recently some of them start to move to web applications the new technology

Only 3 companies specialized in building ERP systems

Intelecom, NSCC and Transtec are currently working in this field
The common characteristics of the software industry in Syria are:

- No formal standard classification for the software vendors
- There are only 3 ERP vendors in Syria
- Most of the software vendors are heading to implement accountancy systems (money is the king) and web applications recently (The new technology)
- High competition due to the lack of large size organizations projects
- The software vendors are not being supported by the government instead they are treated like the companies in any other fields financially (taxes and financial issues)
- The Syrian copy rights lows protects the local software vendors

2.3. Common Characteristics of Syrian environment:
The most popular customer of ERP system in Syria is the public sector large scale organizations and the most popular official consulting agency for ERP projects is the Syrian universities
Although the number of the software companies in Syria has increased in the past few years
The software industry is still facing many problems such as any other industry in Syria
The Syrian lows doesn’t support the software industry on any rate this industry is treated like any other industry in Syria
On the other hand the public Syrian company for telecommunication which is responsible of the internet and telecommunication services still blocks many important services such as ftp and CVS
Also the low salaries of programmers and different IT positions salaries specially in the public sector (The approximate salary for an engineer is about 150$ per month) have caused them to seek jobs in other countries instead of working in Syria which lead to poor computer skills in the public sector and this caused some companies some times to take opportunism of them in two types [3]:
There are two main types of opportunism:
1- Adverse selection:
when the software company claims to have certain skills that they don’t has (technically mostly and financially some times ..)
2- Moral Hazard:
when the software company doesn’t act for the project and because the project is very complicated the organization cant determine what is he doing
The research will come on these problems in details in Chapter 3
3. Chapter 3: ERP Problems:

Before discussing the ERP problems in Syria and how these problems can be solved this chapter will discusses the common problems of ERP in general by analyzing similar researches in this area and then comparing them with the Syrian environment in the next chapter.

In addition to common software problems ERP has other problems and risks due to the following reasons [5]:

- The high complexity of ERP systems
- The high cost of ERP systems
- The problems of implementations (BPR, integration among subsystems…)

3.1. Implementation problems:

- **Radical Change:**
  
  As ERP implementation is always combines with BPR [1] and radical organizational changes these changes can some times be very risky because radical change is discontinues [1] and revolutionary
  
  Radical change is “so great that it must be considered a fresh start rather than an extension of what preceded it”[1]
  
  This problem can be resolve by using incremental change or punctuated change (a mix between radical and incremental change) a form of patchwork rather than planned change[1]
  
  By using incremental change instead of radical change the timeline of the implementation may be delay but the risk of radical change will be decrease

- **Customization:**
  
  Although ERP systems are suppose to be of-shelf products practically during ERP implementation some customizations are required to fit to the projects requirements and some times the project manger starts to loss control specially in the following cases[2]:
  
  - The degree of customization is very high
  - No standard process to check the quality (poor documentation)
  - poor database administration
  - Poor management for the scope of the project
  
  There for the following recipe is very important to follow [2]:
  
  - limit customization as much as possible
  - Documentation should be very important
  - The involvement of the implementing team (executive support) are very important
  - The scope of the project should be precisely determined
  - The fixed fee does not means that the implementer will do any thing for a fixed cost
  - the consultant must stick to the project to the end
3.2. Problems related to the software vendors:

- **Opportunism by the software vendors:**
The ERP projects are classified as large scale projects.
In such projects some times the software vendors may take the opportunity [3] of the lack of knowledge of the customer in such projects mainly in two ways:

- **Adverse selection:**
When the agent claim to have certain skills that he doesn't has (technical, financial...) [3]
The software vendor skills can't be completely verified by the customer because of the lack of the customer knowledge of ERP systems this will some times lead the software company take advantage of the customer in such way and eventually will lead to ERP failure.
Therefore the prequalification efforts are very important before the initiation of ERP system.
There are certain ways for prequalification [3] such as:
Requesting the software vendor to present a financial statement to determine the real financial size of the software vendor.
Investigating previous projects state for the selected software vendor.
Investigating the number of the project team and the technical support employees.
The second way that opportunism may occurs is moral hazard[3].

- **Moral hazard:**
Occurs when the software vendor claim to be working for the project while they are not by taking advantage of the lack of technical knowledge of the customer in the software field.
Some times its difficult to monitor the work of the software vendor therefore its very important to determine a clear milestones by consulting agency and usually relate the projects payments to these milestones.

3.3. Problems related to culture issues:
ERP problems and risks are highly effected by the culture of the country in which it is been implemented.
This comes from the fact that overall goal of implementing an ERP system will verify from one country to another and the government lows will verify from one country to another.
In China [6] for example most ERP projects are not delivered on time but nearly all of them doesn’t pass their budgets the budget in this case the most important factor Unlike some other countries where the budget can be much more flexible and the time will become the critical factor.
Also in China ERP systems are not concern with enhancing the processes cycle or customer satisfaction as other socialist countries instead the main concern is to reduce the cost and obtain control on the inventory system.
This problem has no appearance in the Syrian environment because all business processes and functions stay the same after implementing ERP systems and no changes are allowed afterward.
ERP systems are not concerned with enhancing the processes cycle or customer satisfaction instead the main concern is to reduce the cost and obtain control on the inventory system and reduce labor work. As a result, researches [6] show that “AN AWARENESS OF CULTURAL DIFFERENCES IS CRITICAL TO ERP SUCCESS.”

4. Chapter 4: ERP problems in Syria:

4.1. Computing in Syria

**Introduction**

The important role of IT in Syria was largely ignored or misunderstood before the year 1999 [8] with very small exceptions in the military field. This was due to the special circumstances of this country related to the economic situation mostly and some social problems and conflicts on many levels in the whole region (e.g., Arab/Israel, Iran/Iraq, Iraq/U.S.A, Lebanon, Somalia …) Syria had no international email links and limited international phone services. The importation of fax machines or wireless phones was illegal [8]. There was no mobile service company and only two ISP (both in the public sector). Not all the IT problems were due to local reasons some came from the outside. The unilateral U.S.A export controls on items that considered as high technology stuff related to IT such as personal computers and microprocessors and microcomputers. The American companies have been operating this low since 1952 [8]. Syria as all the Arab countries in the Middle East have no computer hardware industry therefore these items are usually imported from Far East. [8] Although Syria had a very good universities and send large number abroad for technical and managements training, but the Syrian universities had no computer since department only one faculty in Aleppo University had a computer engineering branch. However by the end of the 90's dozen's of computer since private institutes which provided hundreds of computer specialist and computer trainers. As a result the computer specialist were either studied over seas or trained in a computer institute. Unfortunately many of these skills are not working in Syria due to high income differences.

**Status of IT in Syria**

The role of IT has expanded after the year 2000 many private and public company are using different computer information systems. The government reduced tariffs on computer importation by 1/7/ 2006 from 14-1 % These efforts were made to increases in the use of IT. The existent of PCs became very common in the different government organizations. Two mobile companies invested in the Syrian market by the year 2000 and the number of ISP private companies is increasing daily still some services that are used in the software industry are still forbidden such as FTP and CSV and POP mail. People became more and more familiar with the computer work. In spite of that the computer specialists salaries has increased, however Syria still suffer from the phenomenon of brains bleeding many engineers and computer expert...
chose to work outside Syria because of the low income (approximately 160$ per month for engineer)
The most important software consumer in Syria is the public organizations
As there were no government firm that represent the software companies in Syria, by
the year 2003 a group of software companies owners in Syria established a
nongovernmental forum called Software Industrial Forum SIF in order to help and
support the software industry in Syria and to effectively represent, promote, and
advance the Syrian software and IT services industry in the global market.
This forum also aimed to set standards for software industry as there were no
standards to organize the craft of the software industry
By the year 1999 Damascus University opened a computer engineering branch and by
the year 2003 the first batch of graduators was ready to work in the software field

4.2. The major problems of ERP projects in Syria
The purpose of this study is to develop a better understanding of the major failure
factors associated with implementing ERP systems in the Syrian environment.
These case studies will examine the major failure factors mentioned earlier in Chapter
3 against 3 wide Syrian companies (mentioned in Chapter1) experiments
Each case study was developed by using in depth interviews with the senior manager
responsible of planning and implementing the ERP system

4.2.1. Implementation problems:

- **Resisting the change**
  No BPR was performed or even required in all these case studies there were no
  improvement in the business process lifecycle
  Which raises the question of the value of ERP implementation with no business
  process enhancement?
  This final goal of ERP implementation was more flexibility and efficiency in each
  unit individually

- **Customization**
  This problem appeared mostly in the case study of the Syrian centralize bank
  The large size or customization required was due to the poor description of the
  requirements in the identification and selection stage and in some cases the
  requirements specifications were changed during the implementation
  This problem also appeared in the Public Syrian Company for communications
  Its was so obvious that the complexity of ERP systems from one hand and the lack of
  skills due to low salaries and the lack of computer experts on the other hand made the
  mission of identifying the requirements more difficult than it should be

- **Data Inconsistency:**
  One of the most common problems that occurred during the implementation was the
  inconsistency of the organization's data.
  In the case study of the Public economy for tobacco in the inventory system this
  organization approximately 500 stores contained more than 100000 different products
  Each store had different name and part number for most of the products.
  Which raised questions about how these huge inventory data can be organized in a
  way that can be transformed to ERP system?
This problem is very common as many of the organizations that had the well to transform to ERP systems doesn’t have a pre-computer based system to transform data from there fore an addition the data preparation (Specially in the inventory system) may be a problem

4.2.2. Problems related to the software vendors:

- **Opportunism by the software vendors:**

The lack of computer knowledge in some organizations which had heard about the benefits of implementing ERP systems and wanted to implement one seduced some software companies to take advantage of these organizations. In the case of the Syrian centralized bank the software company tried to convince the centralized bank to purchase the GL model only to solve their problems.

![Diagram]

Figure [2]
Figure [2] shows the impact of the lack of computer knowledge on the success of ERP project. In the pre-initiation and initiation stage the impact of the lack of knowledge enabled the software company to hide information about itself or the software or the project by eliminating important parts of the system. In the delivery and the post project stage the impact is poor monitoring. Monitoring is referred to as "the application of a feedback system to provide information to the principal regarding the actions of the agent" [3]. As a result to poor monitoring and poor prequalification effort the chance of ERP success becomes less.

4.2.3. Problems related to culture issues:
As mentioned earlier in this chapter poor of knowledge in the software field and lack of skills is the mother of many many problems that occurs and causes to ERP failure in addition to some others special governance and social characteristics. In this research these problems are related to the current Syrian environment. The culture problems related to environment issues will answer the question why the same software success in some countries and fail in another.

- **Lack of dynamicity in government paper work**
  A problem that occurred in the three cases the study included is the lack of dynamicity in the different governmental paper work. For example in the case of the Syrian centralized bank the project was delayed many times because the complex procedures of ordering new computer devices took so much more time than it suppose to take. The lack of dynamicity in the different governmental processes makes it almost impossible to stick to the time schedule of the project and eventually affect the success of the whole project.
  There was no case in this study in which the product was delivered on time.

- **Employees fear of accepting the software**
  The public sector employees are usually afraid to sign the acceptance papers for the software contracts and even some times for the hardware contract due to the huge lack of knowledge in this field (mentioned earlier in this chapter). It's hard to take responsibility of contracts with high amount of money and accepting the software and especially for ERP system when there are no standard ways for testing and when the software is too complex and needs many tests to pass. The hardware some times face such problems but no as much as the software as it remains the intangible product.

- **Low ERP projects budget**
  The Syrian organizations expects high quality ERP product for a very low price specially when they deals with local software company in the case of the Public economy for tobacco the total contract amount was 120'000 $ including a year of free technical support for the project and customizations and free updates. Comparing to the case of the Syrian centralized bank with an amount of 1000000 $ for oracle financial with no customization and no support. The local companies' contracts are like crumbs comparing with the western ERP contracts.
Surprisingly the employees in the Syrian centralized bank said that they wish they had deal with a local company because they are more aware of the Syrian lows and the Syrian environment. However the low budget software project will eventually affect in a way or another the work of the software company and the quality of the product and will effect the success or failure of the ERP system success. Some times the software company accepts such contracts due to miscalculating the implementation costs and so during the implementation after the project costs reach a certain limits they try to limits the technical support and customization and different implementation activities to keep the project in success from the perspective of the software company but these kinds of projects cant count as success.

- **No classification for the software vendors**
Due to the lack of knowledge in the computer field in the government's organizations the only current rule to determine the best proposal to implement an ERP is from the price of the contracts. Usually the lower price takes the contract in the case of the Public economy for tobacco the IT department sign the contract with the lowest proposal. This came from the fact that Syria has no official classification or standard to classify the software companies.

- **No consulting firms**
There are no consulting firms in Syria. The only reference available that the organizations can't relay on during the different stages of their project and trust is the universities as in this research case study the case of the Public economy for tobacco. This chapter mentioned earlier the current situation of the Syrian universities. This raised questions about the ability of these universities to fully consult wide enterprise applications such as ERP project technically and business issues consulting due to lack of experiences in this area.

- **The lack of computer companies**
In spite of that the number of the software companies has increased in the past few years according to the SIF. Mr. M.Al-Jurf the chief of the SIF sees that there are only two software companies in the software market that produce what can considered as ERP systems. However this phenomenon leave limit options for the organizations which don't have enough budgets to implement a western ERP system and chose to implement a local ERP system. Figure [3] describe the cultural problems related to the Syrian environment which was analyzed depending on the case studies of the three Syrian organizations and how each of these problems affected the success of the ERP project.
ERP in Syria: Propositions for ERP success

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Figure [3]

Syrian Organizations problems

- Employees fear of accepting the software
- Lack of computer knowledge
- Low ERP budget
- Data Inconsistency
- No ability to perform Radical change
- Low IT people's salaries
- Delaying the project schedule
- Less prequalification efforts
- Poor monitoring
- Less benefits of ERP features
- Difficulty in transforming the organization's data to the ERP system
- Low implementation service quality
- Lack of professional computer skills

Software vendors Problems

- No classification for the software vendors
- The lack of computer companies
- Less choices for ERP local resources
- The organizations chose the software company depending on the product price

Governance Problems

- Lack of dynamicity in government paper work
- No consulting firms
- Greater chance for moral hazard and adverse selection
- Delaying the project time line
Chapter 5: A propositions for ERP success in Syria:

After describing the different cultural problems related to ERP projects in Syria in Chapter 4 This chapter develops a set of propositions for applying in the Syrian environment related according to similar researches in the same field.

5.1. Implementation problems

- **Resisting the change**
  
The IT department in the public sector organizations needs to make a fully description to each process and streamline process before implementing an ERP system process.
  
The best and safer way of change [1] is the incremental form of change some researches refer to as evolutionary [1] change a form of patchwork instead of planned change each patchwork include a degree of change.
  
This form takes a lot more time than the radical change but its much safer and much more suitable for the Syrian organizations.

  Also this approach gives the organizations employees a certain time to understand and adapt with the change.

- **Customization**

  One of the most important failure factors is the huge amount of customizations during ERP implementation.

  Documentation during the customization is very important for Software Company and the organization to control the product version.

  In addition the requirements in the analysis stage must be described very clearly and should be fully tested.

- **Data Inconsistency**

  As it was motioned the Chapter 4 this problem is very common in the large scales organizations especially in the inventory system.

  According to some researches "The most significant quantifiable benefits involve reductions in inventory, material costs, and labor and overhead costs, as well as improvements in customer service and sales"[7].

  The saving cost can reach 10-30% only in the inventory systems.

  The state of the data cant be transformed to ERP system therefore a stream line committee which much included IT technical and expert in the business field in the organization must prepare the data before transforming it into the systems.

  Data cleaning is required for Correct and complete data by which means data with best possible quality.

  Problems can occur when dealing with data for single branch organization or multi branch at the department level or the whole organization level.

  When dealing with single branch organization data, problems can be at the organization level such as missing constraints for example uniqueness, domain ranges and invalid references.

  At the department level problems of data entry errors for example spelling mistakes, lexical errors.

  On the other hand when dealing with multi branch organization new type of data inconsistency can found.
Issues due to conflict in data integration along the organization branches also conflicts in naming and structure among the organization branches can be found Therefore the implementation of ERP system can't be started unless this step is completed and approved

5.2. Problems related to the software vendors

Opportunism by the software vendors

Chapter 4 mentioned two common types of opportunism that occurs during the initiation and implementation stage of ERP project which are moral hazard and adverse selection

These two types of opportunism affect the success of ERP project[3]

The main reason that opportunism occurs is that the goal of the project differed from the organization perspective and software company

The main concern of the software company is to take its payments and stick to the project time schedule

On the other hand the organization is concern with achieving maximum benefits of ERP system including inventory reduction, material cost reductions, labor cost reductions, sales increasing, improvements in customer service …[7]

Vedabrata Basu and Albert L. Lederer [3] studied the impact on incentive alignment on the behavior of the software company

Incentive alignment refer to designing the software contract in a way that make the goals of both the organization and the software company similar to each others

For example linking the project payments to the acceptance of the project deliverables

The result of the study shows that the greater the incentive alignment the less the moral hazard

The SIF suggested a full incentive alignment by making the payment for the software a percent of the cost reduction

For example the software company can implement an inventory system and take a percentage of the total inventory system reduction in the organization

In such way moral hazard will be totally eliminated

As for the adverse selection researches and observers [3] suggested a several ways to perform a fully prequalification tasks before selecting the software company that public sector organizations must require a certain proposal, and then carefully review each consulting firm’s proposal [3].

Also the organization must investigate each software company based on its prior ERP implementation experience, its request financial position description, the vendor certification of its individual employees, and its implementation experience in the same field as that of the organization. They can also look into the reputation of the software company.

Finally, the organization can inquire about the software company expertise and commitment in terms of technical skills, business process knowledge, infrastructure, technical support services, sticking to the projects timeline, and different after sales service in prior implementations
The organization must visit other customers for the software company and ask for their opinion to avoid adverse selection as much as possible.

5.3. Problems related to culture issues
   - Lack of dynamicity in government paper work
     The government must take some responsibility in facilitating the work of the software company if it really wanted to gain the benefits of the ERP projects that they purchase.
     The software company can't be blamed for the delaying in the project schedule that is related to the lack of dynamicity in the different paper work and government procedures.
     It's enough to know that Syria didn’t witness any lows related to the software industry area until now.
     The Syrian government must give IT field more priority.
   - Employees fear of accepting the software
     This problem is related for two reasons:
     a. Lack of knowledge in the computing field
     Training the employees is one of the most important propositions to make ERP a success and this training must include two phases.
     The organizations should first train their employees on computer basics including operating systems basic and computer usage afterward comes ERP training.
     ERP Training must focus of three levels of knowledge [11]: command-based, tool procedural, and business procedural.

![Diagram](https://example.com/diagram.png)

Figure [4]

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*ERP in Syria: Propositions for ERP success*

*E. Hasan Shammout*
Command-based level includes training on the commands in each task this training usually include the ERP end users.

Tool procedural includes training on the tools used to build the ERP system (ex. Oracle, SQL server …) these types of training is detected to the IT department employees.

Business procedural training includes the overall ERP functions and the integration among different departments this training includes the head chief of the organizations departments and the IT department employees.

b. Contractual problems

This problem is related to the type of milestones in the contract

The milestones should be specifically determined and the organization must develop a certain way to ensure that the milestone was fully tested and approved and determine the payment for each milestone in the project by consulting a professional external consulting firm.

This chapter talked earlier about incentive alignment [3] it strongly recommended that the contract should specify incentives and penalties related to the software company.

- **Low ERP projects budget**

Although the government started recently to support wide enterprise computing projects by increasing the budget amount for different computing projects.

Unfortunately most of this money is still spending on computer equipment and building informatics infrastructure (networks, computer devices …)

The software should be given the same priority that is given to the hard because there is no benefit of the hardware without a successful software implementation.

- **No classification for the software vendors**

Syria until now don’t have any government union for the software industry craft.

SIF is the only non-government union that includes the software companies in Syria, this forum is still in the beginning and still trying to organize this craft.

This non-government firm should be supported by the government or the government itself should organize this craft.

Taking Tunisia as an example

In Tunisian [8] the government had organized the software industry craft by officially making informatics a "privileged sector."

The government Informatics Plan was formulated by the Council for Computing and Telecommunications, which is chaired by the Prime Minister and whose membership consists of a small number of cabinet ministers and other "key players."

The National Informatics Center in Tunis has been Tunisia's lead IT organization since 1975.

The National Informatics Center tried with its 250 member staff to do everything from overseeing the implementation of the plan to playing a major role in the design and construction of a national data transmission network.

The Tunisia government also cut tariffs on computer imports from 50% to 10%. They provided many efforts in order to increase the use of IT.

As a result computers are heavily used in banks and public organizations, and during 1987- 91 Tunisia had a 31.5% average annual rate of increase in the value of its computer equipment stock, to a current value of over 200 million Dinars.
The classification is a very important step to help ERP success and to avoid adverse selection and to encourage the software companies to developed itself to get new contracts.

- **No consulting firms**
  Most projects are implemented without the required consulting and detailed studies which are a very important in succeeding these projects.
  This role is very important especially in the Syrian environment where insufficient internal expertise is very obvious.
  It is very important to obtain consultants who are specialists in every specific application modules [4].
  The proposition here is to use external consultants and integrates their knowledge and technical expertise with existing organizations IT.
  The lack of computer companies
  Before implementing an ERP system the organization must identify and implement strategies to re-skill the existing IT work and acquire external expertise through vendors and consultants when needed.
  Table [3] summarized the propositions mentioned in this chapter.

<table>
<thead>
<tr>
<th>Propositions</th>
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<tbody>
<tr>
<td>Apply incremental form of change during ERP implementation</td>
</tr>
<tr>
<td>Focus on documentation during customization in order to keep the project under control</td>
</tr>
<tr>
<td>Use consulting agency to define the requirements and ERP exact scope</td>
</tr>
<tr>
<td>Perform data cleaning &amp; organizing to ensure best data quality at the organization level</td>
</tr>
<tr>
<td>Include incentive alignment in the ERP contract</td>
</tr>
<tr>
<td>Inquire about the software company expertise and commitment in previous projects</td>
</tr>
<tr>
<td>Insure that ERP users training must focus of three mentioned levels of knowledge</td>
</tr>
<tr>
<td>The government must support ERP project financially</td>
</tr>
<tr>
<td>Organized the software industry craft by making informatics a &quot;privileged sector.&quot;</td>
</tr>
<tr>
<td>Use external consultants and integrates their knowledge with existing organizations IT</td>
</tr>
<tr>
<td>Come out with new lows to support the software industry</td>
</tr>
</tbody>
</table>

Table [3]
5.4. Conclusion
This research had tried to set some light on the state of computing and wide enterprise applications specially ERP systems in Syria.
This state is still very far from the different western company's state
The software industry in Syria is still in the beginnings and needs to be developed and organized and supported by the government.
Syria has many software companies unfortunately most of them lack to the software engineering standard
These companies should keep cooperating with each others to survive
The software Industrial Forum was a very important step but it need to be supported and nursed by the government and have some privileges to suggest new lows in the software industry area to help and support the software industry in Syria and to effectively represent, promote, and advance the Syrian software and IT services industry in the global market.
The Syrian organizations are the most important software consumer in Syria but most of the times these organizations frustrate the software projects by always blaming the software company for the different projects failure
These organizations should take some responsibility and get the required consultant and training and start to spare some efforts to solve their problems that are usually under their control
The bright side which wasn’t mentioned is the openness of the different IT departments included in this study and the eager to discuss the different types of problems that occurs and finding solutions for them
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