



Faculty of Graduate Studies

Applying Enterprise Resource Planning at the Palestinian
Large-scale Private Organizations

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Thesis Abstract

As technology expands, so must business. Organizations realize the need for computer systems that will help them achieve their strategic and competitive goals.

They are implementing the information technology to gain financial performance and to support their business strategies (Andreas, 2004). In recent years, applying ERP has played an important role in business integration. This system ensures efficient and effective information. Enterprise resource planning is a software that attempts to integrate all developments and functions across a company on to a single computer system that can serve all those different departments needs. Therefore, this study attempts to find out whether the Palestinian large-scale private organizations are aware of the ERP system, its advantages and how the ERP system can improve their business performance.

Furthermore, it tries to identify the barriers that prevent local private companies from moving forward towards ERP implementation. In addition, it discusses the reasons of failure of the ERP system within companies that attempted to implement the ERP system .

The study is descriptive and exploratory as it seeks to measure the degree of awareness to ERP systems, its benefits and its drawbacks. The two main instruments that were used to collect and analyze data, and as a result form the conclusions and recommendations, were the questionnaire survey and the interviews. The interviews were carried out personally or by telephone to clarify some points of the questionnaire. The data collected was analyzed by the SPSS program (version 12). Frequency tables, pie and bar charts were

mainly used to answer the research questions in chapter one. Finally conclusions and recommendations were formed.

The findings of this study indicate that the Palestinian large-scale private organizations are not aware of technological developments, especially the ERP system, its benefits and how they can improve their performance. However, the majority wishes to implement such systems. This suggests that there is a pressing need for performing a number of workshops that are carried out by universities in cooperation with solution providers for the top management of the Palestinian enterprises to increase their information about the latest innovations and their importance.

ملخص الدراسة

اليوم يشهد العالم تطور تكنولوجي سريع. مع هذا التطور بدأت مؤسسات الأعمال تعي حاجتها الملحة لأنظمة الكمبيوتر لمساعدتها في تحقيق أهدافها. لهذا بدأت المؤسسات بتطبيق أنظمة تكنولوجيا المعلومات من اجل الوصول إلى الأهداف و تحقيق الأرباح و كذلك دعم الأنظمة المتبعة داخلها. ففي كل يوم تزداد أهمية الإنترنت للأشخاص كما للمؤسسات. و هذه الحركة تجاه التكنولوجيا الحديثة في المؤسسات ليست فقط من اجل بيع المنتجات عبر الشبكة إنما أيضا من اجل ربط أقسام المؤسسة الداخلية مع بعضها البعض و مع زبائننا وكذلك مع شركائنا.

خلال السنوات الأخيرة تم تطوير نظام يدعى (ERP) حيث لعب دور مهم في ربط المؤسسة مما يؤدي إلى تأمين معلومات مهمة و كفوة. نظام (ERP) عبارة عن نظام يقوم بربط كل العمليات التي تتم من خلال المؤسسة إلى نظام واحد بحيث يستطيع خدمة مختلف الأقسام و تلبية جميع الاحتياجات.

إن هذه الدراسة باختصار تسعى لمعرفة ما يلي:-

- إذا كانت المؤسسات الفلسطينية كبيرة الحجم في القطاع الخاص على علم بالتطور الحاصل في تكنولوجيا المعلومات و بشكل خاص نظام (ERP).
- إيجابيات تطبيق نظام (ERP) داخل المؤسسات.
- مدى مقدرة هذا النظام على متابعة و تطوير أداء هذه المؤسسات.
- كذلك تحاول الدراسة تعريف المعوقات التي تمنع المؤسسات الفلسطينية في القطاع الخاص من الحركة باتجاه تطبيق مثل هذا النظام فيها.

بالإضافة إلى مناقشة أسباب فشل نظام (ERP) في بعض المؤسسات التي قامت بتطبيقه. حاولت الدراسة استعراض وضع المؤسسات كبيرة الحجم في القطاع الخاص في الضفة الغربية. و مدى اتباعها للتطور التكنولوجي السريع الذي يشهده العالم، مبينة الحاجة لنظام يربط المعلومات التي تستخدمها هذه المؤسسات و يسهل عملية تبادلها مع كل من تتعامل معه. و قد اعتمدت هذه الدراسة المنهج الوصفي التحليلي لدراسة و تحليل البيانات من اجل استخلاص النتائج و الوصول إلى الأهداف المرجوة منها.

تم تجميع البيانات الخاصة بهذه الدراسة من خلال توزيع استبانته صممتها الباحثة نفسها على المؤسسات في الضفة الغربية.

بعد تحليل البيانات، تم استخلاص النتائج التالية:-

- لا يوجد إلمام كافي من قبل المؤسسات كبيرة الحجم في القطاع الخاص في الضفة الغربية بالتطورات التكنولوجية الحديثة و خاصة نظام (ERP).

- عدم إطلاع المؤسسات الفلسطينية على فوائد نظام (ERP) و مدى تأثيره على أداء العمل.

بالرغم من ذلك فان أغلبية المؤسسات على استعداد لتطبيق مثل هذا النظام، لكن بعد معرفة إيجابيات تطبيقه و الفائدة التي ستعود على المؤسسة بعد تطبيق مثل هذا النظام، مما يؤدي إلى نتيجة واضحة و هي الحاجة الماسة إلى توفير عدد من الورشات و الندوات من قبل الجامعات و الشركات التي توفر حلول في مجال تخطيط موارد المنشآت بحيث تكون هذه الندوات موجهة إلى إدارة المؤسسات، من أجل تعريفها بنظام (ERP) و تزويدها بجميع المعلومات الضرورية من أجل تشجيعها على ملاحقة أهم التطورات و تطبيقها مما يؤدي إلى زيادة كفاءتها و إنتاجيتها.

Chapter One

1.1 Overview

Today, in the dot.com world, the companies' key to success is to provide the customers with the services they need or they will go elsewhere. Enterprise resource planning (ERP) can help the companies to offer their customers a more efficient and higher quality services, including the ability to order products on line and to ask about product pricing and the order's status (Kalakota and Robinson, 2001).

ERP is an enterprise-wide transaction framework that attempts to integrate all departments and functions of a company in a single computer system that can serve all those different departments' needs. The ERP creates a single software program that runs one database so that the different departments can share the information together and communicate easily with each other (Koch, 2001).

ERP improves the way a company takes a customer's order and processes it into an invoice. When the order is entered into an ERP system, all the information necessary to complete the order such as the customer's credit rating and the company's inventory status will be revealed to the customer service representative before fulfilling the customer's order.

All the employees in the different departments in the company can see the same information and can always update it. When one department finishes with the order, the

order will then be transferred automatically to the next department. To find out to which point the order has reached, the enterprise can log into the ERP system and track it down quickly.

Thus, applying the ERP system in the Palestinian organizations is essential in a competitive rapid changing environment. The ERP system will help them to offer the services needed by their customers and in a higher quality. This system will also integrate all the departments of each company, and so there will be better communication and better business performance.

1.2 Significance of the study

There are several reasons why the Palestinian organizations should apply the ERP system. They include:

1. The highly competitive rapid changing environment obliges the Palestinian organizations to apply the ERP system as it brings benefits to both the customers and the organization itself. And it enables them to handle change; as in order to survive, the companies must respond quickly to changes because we live in a very competitive rapidly changing environment.
2. The ERP system will replace the entire used legacy systems, which provide little integration since the companies that use these outdated applications spend large sums of money on maintenance and get little benefit.

3. The ERP system will help the companies to gain greater control over the business performance because the managers can easily identify how much has been sold, what's been shipped and the company's inventory level.
4. The ERP improves the integration of the departments across the enterprise, which will lead to better communication and better business performance.
5. The ERP also helps the enterprises to offer better services to satisfy the customers. The key to success of any company is being customer-centric; if the customer isn't satisfied, he/she will look for his/her needs somewhere else.

1.3 Purpose of the study

1) This study aims at finding out whether the Palestinian organizations are aware of the information technology developments that have taken place recently especially the ERP system, its advantages and how the ERP system can help improving their business performance.

2) Furthermore, it identifies the barriers that prevent local private companies from moving forward towards implementation of ERP system.

3) Finally this study discusses the reasons of the failure of the ERP system for those companies that tried to implement an ERP system.

1.4 Research Questions

This study seeks to answer the following questions concerning applying the ERP system in the Palestinian organizations:

- 1) What is the degree of awareness to the ERP system among Palestinian organizations?

- 2) What is the percentage of the Palestinian organizations, which have information technology departments that can build their own ERP system?
- 3) Is there a chance that an ERP system can be built internally and how would the implementation process take place?
- 4) Are there enough resources to implement an ERP system in the Palestinian organizations?
- 5) How can ERP improve the performance of the Palestinian organizations?
- 6) How long will it take to implement an ERP system?
- 7) How will the ERP system assist the Palestinian organizations?
- 8) How much does the ERP system cost and what are the hidden costs of applying it?
- 9) Why do some ERP projects fail?
- 10) What are the barriers that prevent the local private companies from implementing the ERP system?

1.5 Organization of the Study

The research will be presented in five chapters:

Chapter One: Introduction

The chapter will include an overview of the study, definition of the ERP systems, purpose of the study, significance of the study, and specific questions of the research related to applying the ERP system in the Palestinian large-scale private organizations.

Chapter two: Literature review

The chapter offers a review of the related literature that addressed the issues of an ERP system in particular.

Chapter Three: Methodology.

The study adopts the exploratory and descriptive methods. The two main instruments that were used to collect and analyze data were the questionnaire survey and the interviews. A representative sample of the population to which the findings will be generalized was determined by getting a list of the registered members as large-scale organizations from each chamber of each district in the West Bank, and snowball sampling in which organizations that were selected were asked to nominate other organizations in the population.

Chapter Four: Findings of the Study.

Major findings of the study are:

- 40% of the responding Palestinian companies have an ERP system, whereas 60% did not have an ERP system. Those, which did not have, were asked whether they intend to apply an ERP system in the future. Most of them agreed that they are thinking of applying an ERP system in the future.
- Several reasons were given by those companies which did not apply an ERP system, 38.24% were satisfied with their current system, 26.47% were not aware of the existence of an integrated system, 32.35% did not apply an integrated system because of its high cost while 2.94% feared to fail if they apply a new system in their enterprise.

- 84.62% of the responding companies that have implemented the ERP system were successful. The main reasons of success were due to top management commitment, step-by-step implementation of the system, user training good selection of the software and project management.

Chapter Five: Conclusions and Recommendations.

The findings of this study indicate that there is little awareness of technological developments, especially the ERP system, among the Palestinian large-scale private organizations, and the ERP's benefits and how they can affect the business performance. Nevertheless, the majority wishes to implement such systems.

Chapter Two: Literature Review

2.1 Introduction

The first part of the literature review gives a short introduction of e-business and its different components. The second part highlights the importance of integration and its challenges. Part three defines the enterprise resource planning system, explains what the organization needs to implement the ERP system and deals with the problems faced in implementing this system. Furthermore, the chapter presents the ERP concept, its history, benefits, costs and its drawbacks. Finally, this review discusses the reasons of why some ERP projects succeed whereas others fail, and it gives some tips to ensure the success of implementing the ERP system in any organization.

2.2 E-Business strategy definition and its importance

Every day, more individuals as well as worldwide companies are linked electronically to the web. Technology has become a very important driver and cause of forming any business strategy (Kalakota and Robinson, 2001). This move towards e-business is not just about selling products over the web, but it is about integrating the organization internally and with its customers, suppliers and business partners (Shaw, 2001; Skip, 2001).

E-business is not just about technology. Jack Shaw defined it as “a strategy for

integrating connectivity-based technologies and practices through the enterprise, its business culture and its sphere of operation within the knowledge Economy” (Shaw, 2001: p.1). The goal of any organization implementing e-business strategies is to improve its ability to process the information related to financial data, sales, production, distribution, human resources, project management and customer relationship management (Shaw, 2001).

Furthermore, Shaw (2001) added that when a company is transformed into an e-business, it makes a number of changes:

- 1) Technology-intensive functions will replace labor-intensive functions.
- 2) Electronic documents will replace paper documents.
- 3) Digital signatures will also replace written signatures.
- 4) Physical data security will be converted into electronic documents.
- 5) Data, graphics, audio, video and animation will be integrated.
- 6) The present environment will be replaced by new IT infrastructure.

Bartels (2000) defined e-business as a strategy that is complex and focuses on internal processes, such as production, inventory management, product development, risk management, finance, knowledge management and human resources. Nevertheless, Bartels (2000) stated that e-business and e-commerce are two terms that are sometimes used interchangeably; however, these two terms are different, as e-commerce only covers processes related to customers and suppliers such as, order taking, sales, delivery, marketing and customer service. As a result e-business includes e-commerce. McDermott

(2000) mentioned that e-commerce is any monetary transaction that is conducted online, whereas e-business is any monetary or non-monetary transactions that are conducted by the business online with its customers, suppliers or partners.

An e-business strategy is a very difficult strategy to execute; it needs four aspects of integration:

- 1) Vertical integration between web front and back end systems.
- 2) Lateral integration between the enterprise and its customers, suppliers and business partners.
- 3) Horizontal integration covering e-commerce, enterprise resource planning, customer relationship management, knowledge management and supply chain management systems.
- 4) Downward integration of new technologies and business processes through the enterprise (Bartels, 2000).

2.2.1 Basic components of e-business strategy

Mainly there are four basic components of any e-business strategy. These are e-commerce, customer relationship management, supply chain management and enterprise resource planning. ERP is considered the backbone of an e-business strategy. The following discussion emphasizes e-business components.

1) E-commerce is defined as using the web to sell the enterprise's products; the Internet will be here used as a distribution channel. Through e-commerce, the isolated information industry components will be integrated together. The e-channel will provide sellers with access to a huge global audience with greater economies of scale and reduced overhead.

It will also provide the customers with a broad selection and competitive pricing. Moreover, it will help the business enterprises to produce the right products in the right place and at the right time and price and will be delivered to the right customers. Using e-commerce can also help the business organizations to listen to their customers and provide the cheapest products, and this does not necessarily mean lower quality. Nevertheless, it helps the companies to become familiar to the customers; the customers know what they are getting (Kalakota and Robinson, 2001).

2) Customer relationship management (CRM) is defined as a process that is used to learn more about customers' needs and behaviors in order to develop stronger relationships with them. CRM software helps organizations by tracking customers' interactions in order to better manage customer relationships. CRM helps business enterprises to provide better customer service and to achieve more effective cross-selling and up-selling products. It helps discover new customers. Using CRM software will also help introduce consistent channels and will simplify marketing and sales processes (Kalakota and Robinson, 2001). Kotler (2003) added that CRM enables the companies to provide excellent service to their customers. The companies will customize their market offerings, services and programs according to what they know about their customers.

3) Supply chain management (SCM) is defined as a framework that helps sell products more effectively across all channels by establishing linkages between the company's sales processes which will integrate the whole sales cycle (Kalakota and Robinson, 2001). Whereas, Olson (2004) defined SCM as a number of organizations that work

together in order to provide raw materials that will be converted into finished products. These products will be delivered to the retail outlets where customers can obtain them. SCM will improve the company's existing channels and will help create new revenue channels. SCM software will help the business enterprises to simplify the ordering process for the customers. It will also add value for the customers, as a website will not stay around for a long time if it is only an order taker; companies must identify the customer's needs and then produce and deliver products that meet those needs. SCM strategy will make it easier for companies to produce customized products; this means that the customers' needs will be matched by the company's products, which will reduce unsold inventory and will eventually increase inventory sales. SCM will help improve the effectiveness of the sales force, which would mean increasing sales volume and lowering costs per sales; this will lead to an increase in the company's revenues. SCM will also coordinate team selling, as the customer information will be shared by different sales activities, which will help team members to work together to finish any deal (Kalakota and Robinson, 2001).

4) Enterprise resource planning (ERP) is defined as a software that integrates and automates manufacturing, distribution, management issues, projects and employees (Deitel et al, 2001). Having an ERP system will help the business enterprise to improve the customer order process. ERP will unify the business functions (Kalakota and Robinson, 2001). ERP will also integrate the company's functions on to a single computer system that will serve all those different departments needs. (Koch, 2001: p.1)

2.3 Importance of business integration

In today's dynamic business environment the organizations need to become globally competitive; thus, these organizations need to be closer to their customers and to deliver value added products and services in the shortest possible time. It means that there has to be greater interaction between the customers and the manufacturers. In order to produce goods tailored to customer requirements and to provide faster deliveries, the enterprise must be linked to both suppliers and customers. This, in turn, demands integration of business processes of an enterprise.

In recent years, corporate applications such as ERP, SCM and CRM have played a very important role in the integration of both the information system and business process. These applications are designed to ensure efficient, effective and integrated information. Working in conjunction with one another, corporate applications allow business organizations to minimize redundancy and inefficiency in information processing while improving effectiveness and customer satisfaction (Chou et al, 2003).

Baker (2004) believes that in order to run your organization very well you need a technology platform that has the capacity for storing the company's data and the ability to integrate its business processes. It is also believed that when ERP software is used appropriately it will integrate the information used by the accounting, manufacturing, distribution, and human resources departments into a seamless computing system (Johnson et al, 2004). Enterprise application integration is one of the biggest challenges that organizations face (Dalal et al, 2004).

2.3.1 Integration Challenges

Integration is challenging because it involves carrying out a range of services by a single process. Those services include performing multiple phases of work, accommodating various interacting partners and providing access to heterogeneous information resources (Davydov, 2000). It is believed that integration will help in saving cost and growing revenue (Brook, 2003).

2.4 Definitions of enterprise resource planning (ERP)

Enterprise resource planning (ERP) is such a strategic tool, which helps the company to gain competitive advantage by integrating all business processes and optimizing the resources available (Tuteja, 1999). ERP integrates data processed by various functional areas including sales, purchasing and others to provide faster response. ERP can also improve communication both between and within business units or organizations. However, ERP applications are normally limited to intra- organizational business units and typically do not address issues related to external entities like suppliers or customers (Chou, et al, 2003).

Enterprise resource planning is “a software that attempts to integrate all developments and functions across a company on to a single computer system that can serve all those different departments needs” (Koch, 2001: p.1). While, Deitel et al (2001) defined ERP as software that integrates and automates manufacturing, distribution, management issues, projects and employees. Kotwica (2003:p.6) defines ERP as “The practice of

consolidating an enterprise's planning, manufacturing, sales and marketing efforts into one management system.”

Enterprise resource planning can also be viewed as “information technology based solutions that attempt to integrate core business processes. ERP products are modular in structure and early offerings aimed to integrate logistics, financial planning, sales, order processing, production, and material resource planning processes. Over the years ERP has evolved and the new generation of ERP products promises to extend the reach of these systems by providing back-end technology components for supply chain management and front-end components for customer relationship management” (Bajwa, et al, 2004: p.2).

On the other hand, Al Doran (2004:p.1) defines ERP as “integrating all (or most) departmental information systems in a company onto a single computer system and in turn service all those department's individual needs.” Orton (2004:p.1) defines ERP as “software that allows the collection and consolidation of information across the enterprise. All data input at various locations, from finance and sales to human resources, is collated at a central location. The figures can be automatically slotted into record keeping or reporting files.”

As for Schneider, ERP means “ replacing dozens of legacy systems with a single integrated system for managing operations across every discipline-finance, human resources, procurement, materials management, sales and distribution, production, and

order management” (Schneider, 2001: p.1).

2.5 Importance of ERP

ERP can be regarded as the IT backbone that connects the internal plant and enterprise operations, while providing the catalyst for collaboration with external partners, and suppliers (Weirauch, 2004). From a functional perspective, ERP is a comprehensive system that carries out all sorts of operations from customer orders to post-sales service. It is designed to flawlessly integrate the processes and information it receives from a number of functional areas within an organization into a single system. This integrated system can then serve the information processing needs of various units in that organization that traditionally used proprietary specialty systems. (Chou, et al, 2003). The use of ERP software forces firms to become integrated enterprises, and it demands strong understanding of key business processes and very high levels of teamwork (Johnson, et al, 2004).

2.6 ERP Concept

The ERP system allows the company to share common data and practices across the enterprise and produces and accesses information in a real-time environment. These systems are designed to solve the fragmentation of information in large business organizations, and integrate all information flows within the company (Irani, et al, 2001).

The Enterprise resource planning system is regarded as one of the most innovative developments in information technology (IT) of the 1990's. ERP systems have

traditionally been used by capital-intensive industries such as manufacturing, construction, aerospace and defense; they have recently been implemented in the finance, education, insurance, and retail and telecommunication sectors. ERP systems are now considered as the standard technology on which many organizations are operating their business. From a historical point of view, the concept of ERP has advanced from Material requirement planning (MRP) systems in the 1970's and the material requirement planning (MRPII) systems in the 1980's (Al Mashari, 2002). Currently, SAP, Oracle, Peoplesoft, Baan and J.D Edwards are considered the top ERP vendors (Al-Mashari, 2002; Albright, 2004; Foley, 2004).

AL-Mashari (2002) also added that ERP systems are beneficial in providing support for all business practices, enabling the implementation of these practices with a view towards enhancing productivity and empowering the customer to modify the implemented business processes to suit their needs.

2.7 History of ERP

ERP is an outcome of 40 years of trial to improve the techniques available to manage businesses. Prior to the 1960's, the business had to rely on the traditional ways of inventory management mainly economic order quantity (EOQ) method. In this method each item is analyzed for its ordering and carrying cost. A tradeoff is established and the most economic ordering quantity is decided.

In the 1960's a new technique was used which was known as Material requirements

planning (MRP). MRP was defined as “a set of techniques that calculates requirements for materials by using material data, inventory data, and the master production schedule. It also makes recommendations to release orders for material replenishment and reschedules open orders when due dates are not in its time phase. Thus, MRP always determines the quantity of all components and materials required and the date these materials are required (Anderegg, 2000).

According to Tuteja (1999), MRP proved its effectiveness in:

- 1) Reduction of inventory.
- 2) Reduction in production and delivery lead times by improving co-ordination and avoiding delays.
- 3) Making commitments more realistic.
- 4) Increased efficiency.

MRPII is defined as a method for effective planning of manufacturing company's resources. It addresses operational planning in units and financial planning. It is made up of a number of functions, which are business planning, production planning, master production scheduling, material requirements planning and capacity requirements planning (Anderegg, 2000). The material requirement planning suffered from several drawbacks that led to the development of a total integrated solution, which was called enterprise resource planning (Tuteja, 1999).

2.8 The driving forces for the need of an ERP system

According to Kalakota and Robinson (2001), the key drivers forcing the migration from

MRP to ERP include the following:

1) Replacing creaky legacy systems

There were too many systems and too little integration. Companies with large volume of outdated software applications spent considerable sums on application maintenance but derived minimal benefit from their use, compared to the competitive advantages attainable using the recent technologies. Therefore, the main goal is to deploy modern application framework that reflects current business practices and that is capable of adapting to changes in the business environment of the future.

2) Gaining greater control

Managers always want to know how much their business has sold, what's been supplied and a complete inventory status. Most legacy applications cannot provide such information. Before the implementation of the ERP system, information used to be integrated manually and therefore was not reliable.

3) Managing global operations

In order to manage its local activities and to coordinate its worldwide operations the technology systems of a company must change.

4) Handling industry deregulation and regulatory changes.

The ERP system helps organizations to manage the changes in industry and in governmental policies.

5) Improving integration of decisions across the enterprise

ERP attempts to minimize the problems of information coordination by creating an

integrated core of administrative and financial applications that serve as a focal point of all enterprise applications (Kalakota and Robinson, 2001: pp 245-246).

Like all assets, ERP must be maintained, but its scope must be upgraded. Any upgrade of the ERP system must deliver business value, but the company must build upgrades into improvement processes that require similar change management, testing and training efforts (Swanton, 2004).

2.9 Major characteristics of a true ERP solution

Tuteja (1999) provides six characteristics for a true ERP solution. These include:

Flexibility: An ERP system should be flexible in order to respond to the changing needs of an enterprise.

Modular and open: ERP system should have open system architecture so that any module can be interfaced whenever required without affecting the other modules.

Comprehensive: It should support the different organizational functions and it must also be suitable for different business organizations.

Beyond the company: It should not be confined to the organizational boundaries; rather it should support the connectivity to the other business units of the organization.

Best business practices: It must have a collection of the best business processes that are applicable worldwide.

Simulation of reality: It must simulate the reality of business processes on the computer,

and it must be able to assign accountabilities to the users controlling the system. (Tuteja, 1999: pp 3-4)

2.10 ERP adoption and implementation

The critical factors in the adoption of ERP are identified as learning from the experiences of others, appointing a process innovator, establishing committees and project teams, training and providing technical support for the users, and implementing appropriate changes in the organizational structure and managerial responsibilities (Han, 2004).

One of the major challenges in ERP adoption is flexibility assurance. Organizations will always need to integrate newly acquired business functionalities into its data processing systems with the shortest time possible. However, one of the major drivers of implementing ERP systems is their competence of being designed based on the best practices and their ability to standardize business processes and systems (Al-Mashari, 2002).

Organizations view ERP standardization as a vital mean to integrate dispersed organizational systems, provide a seamless access to information organization-wide, and make informed decisions on strategic and daily business matters. However, several researchers point to the fact that standardization might be achieved at the cost of flexibility (Al-Mashari, 2002). ERP's value comes from its standardization (Al-Mashari, 2002; Millman, 2004).

Thus, it is very important to consider a balance between standardization and flexibility at the ERP package selection phase, based on a careful determination of industrial and organizational demands (Al-Mashari, 2002). The adoption of ERP system in an organization requires intense efforts focusing on both technological and business themes of implementation.

2.10.1 How long will the implementation of an ERP project take?

To do ERP right, the ways the company does business will need to change and the ways people do their jobs will need to change too. That kind of change does not come without pain. ERP efforts usually run between one and three years, on average but the most important thing is to understand why the company needs it and how it will improve its business (Koch, 2001).

2.10.2 The implementation strategies of ERP system

The implementation strategies of ERP systems:

- 1) The big bang. In this approach the company casts off its legacy systems at once and installs a single ERP system across the company. The companies do not use this approach a lot because it demands the entire company to change and mobilize at once.

- 2) Franchising strategy. This approach suits large companies that do not share many common processes across business units. Independent ERP systems are installed in each unit while linking common processes.

- 3) Slam-dunk. This approach suits small companies expecting to grow into ERP. ERP dictates the process design. The goal here is to ditch the fancy reengineering in favor of the ERP's processes. (Olson, 2004)

2.11 An integrative framework for applying an ERP system

Bajwa et al (2004) provide a framework for applying an ERP system that consisted of five phases. These include awareness, selection, preparation, implementation and operation.

1) Awareness.

Awareness refers to the initiation stage that eventually leads to the decision of adopting ERP technology. Key activities in awareness include gathering facts and information to identify possible reasons to change and evaluating the current situation both from business and technical standpoints. The outcome of the awareness process leads to the adoption decision. If the outcome is the decision to assimilate ERP, the next phase is initiated. In some cases, the decision to assimilate may be put on hold to be evaluated at some point in the future.

2) Selection.

While it is possible to undertake internal development of ERP, almost all organizations prefer to select a specific vendor package or a mix of modules by different vendors. In

most cases, an in-house team of key decision-makers, users, and internal IT specialists carry out the selection process. On the other hand, organizations can ask for the support of consultants in the selection process. Key activities in the selection process include: definition of project objectives, collection of vendor information, need analysis, evaluation of vendor alternatives, and evaluation of IT infrastructure, feasibility study, and finalizing of contracts.

3) Preparation

Preparing for a large scale ERP project prior to implementation is absolutely critical for success. Pre-project activities usually have a significant influence on the manager's performance and the team's effectiveness, both of which are critical for success in IT projects. In addition to definition of project scope, establishment of implementation teams and timetables, training of implementation teams, and initial prototyping, preparation activities also focus on determining the most appropriate approach to implementation. Because ERP is an enterprise wide activity, implementation teams need to learn about firm level issues that affect the design of the ERP interface to end users both inside and outside the organization. This leads to a much broader view than the view traditionally associated with IT implementation teams.

4) Implementation

This is the most critical phase in ERP assimilation. Many projects fail due to problems encountered during implementation. Implementation activities include: detailed gap

analysis, identification of solutions, and construction of prototype, data conversion, clarity of work procedures, full implementation, and user training. The outcome of the implementation phase is what is often termed as “going live”. In other words, the workable system is in place for operation.

5) Operation

This last phase in ERP assimilation entails system use, maintenance, and business integration. The maintenance focuses on enhancing technical efficiencies while business integration focuses on enhancing process efficiencies.

2.11.1 The major factors in the preparation stage of ERP implementation

According to Rao (2000), the major factors that have to be considered in the preparation stage of ERP implementation are:

Infrastructure resources planning, making sure that adequate infrastructure is planned for in a way that it becomes reliably available well in time both for pre-implementation and the post-implementation stages .

1. Local area network that will ensure network support for any ERP or other applications.
2. Servers deploying an adequate server/ network, even during the training/modeling phase. In addition to introducing new PCs that are adequate for most ERPs.
3. Training facilities that establishes adequate training center to work.
4. Human resources planning that focus on building a teamwork environment across

- the entire organization.
5. Education about ERP should be carried out across the organization.
 6. Commitment to release the right people, because ERP is a difficult project and needs the best people to work full-time on it.
 7. Top management commitment for the ERP project.
 8. Ability and willingness to consider an ongoing site.
 9. Well working manual systems that carry out audit exercise to find the current status and the corresponding corrective actions.
 10. Strategic decision on centralized versus decentralized implementation.

Gupta (2000) finds that ensuring successful implementation of ERP is related to securing top management commitment, forming cross-functional task forces to link project management with business units carrying out an assessment exercise of hardware requirements, making deployment in a step-by-step introduction rather than all at once, starting early planning on user training and support, streamlining decision making to move implementation quickly, and being patient as ERP implementation takes time(Al-Mashari,2002: p.3).

2.12 The costs of applying ERP system

The total cost of ownership of ERP including hardware, software, professional services, internal staff costs, and installation cost which include two years afterwards, can range from \$400,000 to \$300 million.

2.12.1 Hidden costs of ERP

The hidden costs of ERP might be found in those areas:

1) Training

It is the area that ERP implementers might underestimate. Training expenses are usually high because workers will have to learn a new set of processes not just a new software interface. Outside training companies may not be able to help, as they focus on telling people how to use the software, not on educating people about how a company does its business.

2) Integration and testing

Testing the links between ERP packages and other corporate software links to build on a case-by-case basis can also be underestimated.

3) Customization

Customization of the core ERP software should also be avoided. If the ERP software cannot handle one of the company's business processes and the company decides to mess with the software to make it do what it wants, it will affect all the modules of the ERP system because they are all very tightly linked together.

4) Data Conversion

It costs money to move corporate information, such as customer and supplier records, from old systems to new ERP systems. Most data in most legacy systems is of little use. Companies often deny their data is dirty until they actually have to move it. But even clean data may demand some overhaul to match process modifications necessitated by the ERP implementation.

5) Data analysis

The data from the ERP system must be combined with data from external systems for analysis purposes. Users with heavy analysis needs should include the cost of a data warehouse in the ERP budget.

6) Consultants and infinitum

When users fail to plan for disengagement, consulting fees run wild. To avoid this, companies should identify objectives at which its consulting partners must aim when training internal staff.

7) Replacing the company's with the best and brightest employees

ERP success depends on staffing the project with the best and brightest from the business divisions. The software is complex and the business changes are dramatic, so the project cannot be trusted to anyone. The company must be prepared to replace many of its employees when the project is over.

8) Implementation teams can never stop

Most companies usually treat their ERP implementation as they would with any other software project. Once the software is installed, they figure out that the team will be scuttled and everyone will go back to his/her job. But after ERP, one cannot go home again. Because implementers have worked intimately with ERP, they know more about the sales process than the sales people and more about the manufacturing process than the manufacturing people. Unfortunately, few IT departments plan for the post-ERP installation activity, and fewer still build it into their budgets when they start their ERP projects. Many are forced to beg for more money and staff immediately after the go-live date, long before the ERP project has demonstrated any benefits.

9) Waiting for ROI

One of the most misleading legacies is that the company expects to gain value from the application as soon as it is installed, while the project team expects a break. Neither expectation applies to ERP. Most of the systems do not reveal their value until after companies have had them running for some time and can concentrate on making improvements in the business processes that are affected by the system. In addition, the project team is not going to be rewarded until their efforts pay off.

10) Post-ERP depression

Many companies usually suffer a drop in their performance when their ERP system goes alive. The most common reason for the performance problems is that everything works

differently from the way it did before. When people cannot do their jobs in the familiar way and have not yet mastered the new way, they panic, and the business declines.

(Koch, 2001: pp. 5-7).

2.13 Justification for ERP investments

Applying the ERP system can ensure the company's financial data to be relevant and reliable. This system records the present and is indifferent to the past or the future.

(Hostetter, 2004). Furthermore, the ERP system provides built-in analytics, increases and enhances Internet integration capabilities (Choy, 2004). Gregory (2003) added that applying an ERP system would fill the gap between suppliers, customers and trading partners. ERP system also helps organizations to increase their productivity, and reduce waste (Bendoly and Kaefer, 2004). ERP also helps in driving collaborative business processes that stretch around the globe and through laws and regulations (Hashmi, 2004).

However, ERP vanquishes the old computer systems in finance, human resource, manufacturing and the warehouse, and replaces them with a single unified software program. Finance, manufacturing and the warehouse will still get their own software, but the software now is linked together so that the finance department can look into the warehouse software to see if the order has been shipped.

ERP can apply to business processes, such as employee benefits or financial reporting.

With ERP, the customer service representatives are no longer just typists entering

someone's name into a computer. The ERP screen makes them business people. Now they know the customer's credit rating and the company's inventory status, and according to this information they will decide whether they are able to ship on time or whether the customer pays on time.

The change is not confined to customer service representatives. People in the warehouse who used to keep inventory in their heads or on scraps of paper now have to put the information online. If they don't, customer service representatives will see how inventory levels on their screens are and will tell the customers that their requested inventory is not in stock (Koch, 2001).

The expected return on investment provides the cost justification and motivation for investing in ERP. There are quantifiable benefits as well as intangible benefits in the ERP investment decision. The quantifiable benefits have a bottom-line impact on profitability, asset turnover, and a potential effect on stock value.

The most significant quantifiable benefits include:

- 1) Improved planning and scheduling practices leads to inventory reductions. This provides not only a one-time reduction in assets, but also provides ongoing savings of the inventory carrying costs.

ERP systems lead to lower inventories because manufacturers can make and buy only what is needed. Deliveries can be coordinated to actual need dates; orders for unneeded material can be postponed or canceled. With fewer shortages and realistic schedules, manufacturing orders can be processed faster to completion and work in process

inventories can be reduced. Implementation of just in time philosophies can further reduce manufacturing lead times and the corresponding inventories.

2) Material cost reduction

Improved procurement practices lead to better vendor negotiations for prices, resulting in cost reductions of 5% or higher. Giving suppliers better visibility of future requirements helps them achieve efficiencies that can be passed on as lower material costs (Orton, 2004).

3) Labor cost reductions

Improved manufacturing practices lead to fewer shortages, and rework and overtime. Typical labor savings from successful ERP are 10% reduction in direct and indirect labor costs. Production managers will have better visibility of required work and can adjust capacity or loads to meet schedules. Supervisors will have more time for managing, directing and training people. Production managers will have more time to develop better methods and improve quality (Huber, 2004; Orton, 2004).

4) Improved customer service and sales

Improved coordination of sales and production leads to better customer service and increases sales. Improvements in managing customer contacts, in making and meeting delivery promises, and in shorter order to ship lead times, lead to higher customer

satisfaction repeat orders. Sales people can focus on selling instead of apologizing for late deliveries. Taken together, these improvements in customer service can lead to fewer lost sales and actual increases in sales can reach to 10% or more (Orton, 2004).

5) Improved accounting controls

Improved collection procedures can reduce the number of days of outstanding receivables, thereby providing additional available cash. This will help in taking advantage of supplier discounts and cash planning which will lead to lower requirements for cash-on-hand (Hamilton, 2004). Orton (2004) adds that an ERP system eliminates a paper-based setup. For example, financial data such as customer purchases, are entered and stored in a kind of data warehouse and can be retrieved when necessary.

2.13.1 The Effects of ERP system

The effects or the intangible benefits of ERP might be in those areas:

2.13.1.1 Effects on Accounting

With an ERP system customer invoices will be based on actual shipments (without duplicate data entry), which will help speed up invoice processing. As for the manufacturing transactions, the financial equivalents will be automatically generated updating the general ledger. This will ensure accurate and up to date financial information. Detailed transaction activity can also be easily accessed on line for answering account inquiries. Since manufacturing transactions automatically update the general ledger, time consuming manual journal entries can be eliminated. Period end

closing procedures can be performed in hours or days, rather than weeks. This reduces clerical accounting work, and improves the timeliness of financial reports.

2.13.1.2 Effects on product and process design

The product structure database offers engineers much greater control over product and process design, especially in terms of engineering change control. Planned changes can be phased in and emergency changes can be communicated immediately. ERP systems offer numerous analytical tools for the engineering function.

2.13.1.3 Effects on production and materials management

ERP systems help establish realistic schedules for production and communicate consistent priorities, so everyone knows the most important job to work on at all times. Visibility of future requirements helps production prepare for capacity problems, and it also helps suppliers anticipate and meet the enterprise's needs. As changes to demands or suppliers do occur, ERP helps identify the impact on production and purchasing. Finite scheduling capabilities in ERP ensure that production activities get scheduled based on capacity. Scheduling rules help minimize setup times and optimize sequencing. Changes in factory demands, as well as changes in available machine time, labor headcount and skill levels, tools, and material, can be immediately simulated to assess the impact on production and purchasing. ERP helps eliminate many crisis situations, so people have more time for planning and quality.

2.13.1.4 Effects on sales

Customer service can be improved by making valid delivery promises, and then meeting those promises. Delivery of products will also be shortened and customer inquiries on order status will also be answered immediately. E-commerce capabilities will enable customers to place orders and check status over the Internet at any time, in addition to customer convenience; this reduces the time requirement for sales and customer service personnel.

2.13.1.5 Effects on the MIS function

An ERP system implemented as an integrated software package offers several advantages to the MIS function. The software package can offer a growth path from simple to comprehensive applications. It provides an upgrade path to technology and functional enhancements supported by the software vendor. It can reduce the development time for and cost of software documentation and training classes. These costs would be incurred before the firm can start obtaining the benefits of an ERP system. It permits the MIS staff to focus their attention on organizational change and servicing user needs for customization and professional assistance (Hamilton, 2004).

2.14 ERP drawbacks

ERP systems capture a tremendous amount of data. The adoption of technology can be very complex and have several shortcomings:

- Legacy paper-based systems together with legacy computer systems used to collect and store information on things like purchasing or staff vacation schedules will take a long time to convert into a single enterprise-level program.
- Duplication of data is a common problem in every organization in public or private sectors. Information on staff vacation time, for example, will be filed with both human resources and with any particular department, division or section supervisors. For various reasons, the figures or dates might not line up. One person may have altered vacation plans or a scheduled start date falls through the cracks. Once the information is input into a single system, all that duplicated material, including misaligned figures, goes with it.
- An ERP program does not actually conduct analysis or management functions (Orton, 2004).
- ERP has some gaps in its functionality as it does not handle returns or reverse logistics very well. The actual level of integration within an ERP suite is not as straightforward as it seems (Albright, 2004).

2.15 Evaluating ERP success or failure

The goals and successes of ERP implementations extend beyond project schedules and budgets to include numerous organizational benefits. These benefits may include improvements in: software, financials, analytics, standardization, performance, service,

systems, and purchasing, ordering and personnel costs. At a higher level, categories of ERP benefits can be organized into general groups, such as operational, managerial, strategic, technological, and organizational.

One way to evaluate the success or failure of a development project is to consider it on a life cycle, stage-by-stage basis. This method is similar to and is complemented by a narrative approach to evaluating success and failure. The narrative approach employs a more descriptive method of documenting development issues so as to place the entire project into a perspective. As such, the progress and outcomes of a project can be placed into a more evolutionary context (Generci and Hull, 2004). It is also believed that that there are eleven critical factors to ERP implementation success:

- 1) ERP teamwork and composition.
- 2) Change in the management program and culture.
- 3) Top management support.
- 4) Business plan and mission.
- 5) Business process reengineering with minimum customization.
- 6) Project management.
- 7) Monitoring and evaluation of performance.
- 8) Effective communication.
- 9) Software development, testing and troubleshooting.
- 10) Project champion.
- 11) Appropriate business and IT legacy systems (Kuang, et al, 2001).

2.15.1 Classifications of ERP success

Several measures have been used to measure the successful implementation of an ERP system. The impact on business performance and bottom-line results provide the best measure of success. Another measure of success is the degree to which a formal ERP system is used to run the business.

According to Hamilton (2004) there are four classifications termed class A through class D which have been used to characterize success.

Class A

Management team uses ERP system to run the business.

Complete and accurate data (99 %+) ---One set of numbers

Use of latest versions of ERP software.

Company gains the full benefits of an ERP system.

Class B

Management team not fully using the ERP system.

Mostly complete and accurate (90%-95%) data.

Some informal or non-integrated systems

Company gains partial benefits of an ERP system.

Class C

Partial use of ERP system, such as sales orders and accounting.

Incomplete and inaccurate (<90%) data

Many informal or non-integrated systems.

Not gaining the integrative benefits of an ERP system.

Class D

System not used by anyone.

System running only on the computer.

Hamilton (2004) differentiates between the users of these classes as follows:

Class A user

The formal ERP system is effectively used to run the entire company. The manufacturing database defines the way products are built, and efforts have been undertaken to simplify factory layouts and business processes. The ERP system defines realistic agreed-upon sales plans that cover all demands, sales orders have realistic delivery promises, and the schedules are actually used to coordinate supply chain activities. Coordination efforts reflect action messages, with a manageable number of exceptions. The ERP system updates accounting and provides useful management information. The ERP system reflects the latest releases from the software vendor.

Class B user

The formal ERP system is partially effective in being used to run the entire company. Supply chain activities that do not reflect schedules from the ERP system are frequently initiated, and the action messages frequently make them difficult to use. Unrealistic delivery promises on many sales orders contribute to the problem, and also create a

larger-than-necessary volume of exception conditions. The manufacturing database provides a reasonably complete and accurate model of how products are built; there are just some exceptions.

Class C user

The formal ERP system is only used in part of the company, typically in recording information about sales orders, shipments, purchase order receipts and accounting applications. The manufacturing database provides incomplete or inaccurate model of how products are really built. Unrealistic delivery promises are made on many sales orders. Several information systems are required to coordinate procurement and production activities, typically with excessive expediting efforts and duplicate maintenance. The accounting applications are not closely coupled with the activities reported in production. The ERP system reflects an old version of the software package.

Class D user

The formal ERP system is not used to run any part of the company, and might be running only in the management information system (MIS) function. Informal and parallel systems are used to manage the business.

Over the last twenty-five years, field surveys about ERP success indicate that approximately 10% of firms achieve class A status, 40% are class B, 40% are class C and the remainder (10%) are failures.

Many manufacturers think that they need a “new system” when they really need to upgrade and re-implement their current ERP software package. They may be characterized as a “class b “or “class c” user. The costs of re-implementing an ERP system should usually be lower than implementing a new system. The users have familiarity with the system usage, and they should know the system strengths and weaknesses. External assistance from the software vendors and consultants will help develop solutions to shortcomings, and will be part of the continuous improvement efforts. Other manufacturers face the decision of replacing their current ERP system. The replacement decision can stem from a number of situations. The current ERP software package is no longer supported; is too expensive to maintain; is heavily customized and cannot be upgraded; runs on old technology; is too complex and expensive to implement; and so forth (Hamilton, 2004).

2.15.2 Why do ERP projects fail so often?

ERP is a set of the best practices for performing different duties in any company, including finance, manufacturing and the warehouse. To get the most of the software, people inside the company must adopt the work methods outlined in the software. If the people in the different departments that will use ERP do not agree that the work methods embedded in the software are better than the ones they currently use, they will resist using the software or will want IT to change the software to match the ways they currently do things. This is where ERP projects break down. People usually do not like to change and ERP asks them to change the way they do their jobs. The software is less

important than the change companies make in the ways they do business. Koch believes that in order to do ERP right, the company needs to change the way it does business and that kind of change does not come without Pain (Koch, 2001; Low, 2002; Al Doran, 2004). Change is always necessary because of the increased competition, the customers' continuous demand for higher standards and the need for growth and success (Bourne, et al, 2002).

Political fights also break out over how or even whether the software will be installed. Furthermore, customizations can make the software more unstable and harder to maintain when it finally comes to life (Koch, 2001). Another reason for ERP failure is not implementing a paradigm shift in operation areas before ERP implementation. The proper implementation procedure requires a sequence of careful planning and implementation (Kim, et al, 2003).

In a business climate where years of work are compressed into months, in a technology climate where leading edge wizardry is soon obsolete, and in a legal climate rife with litigation and uncertainty, businesses must make software choices. However costly the planning process may be, making the wrong choice could be more expensive (Grossman, et al, 2004).

2.15.3 Tips for successfully integrating Enterprise systems

Fedorowicz et al (2004) provided some tips to ensure a successful integration of the enterprise's systems. These include the following:

- 1) The company should go with what it knows.
- 2) The company should practice knowledge diffusion.
- 3) The company should engage in training approaches.
- 4) The company should outsource non-core competencies.
- 5) The company should develop and maintain helpful relationships.
- 6) The company should ask for help when needed.
- 7) The company should have realistic expectations.
- 8) The company should provide good customer support (Fedorowicz, et al, 2004: pp. 4-8).

2.16 Problems of implementation

The implementation of ERP system involves conflicts between different departments of an organization and sophisticated integration of all business processes. Furthermore, it costs the organizations a huge amount of money and manpower (Chen, et al, 2004).

Gupta (2000) also illustrates several common problems associated with ERP implementation. Among these is the resistance to change, when, for example, some employees become reluctant to learn new techniques or accept new responsibilities.

Another problem is related to unplanned cost associated with new requirements emerging after the freezing stage. A third problem is poor training of end-users, who, when the system is up and running, do not know how to use it and maintain it continually (AL-Mashari, 2002).

2.17 Conclusion

Organizations can improve their overall performance through their successful adoption of information technology, especially the recent wave of enterprise resource planning systems adoptions that have affected all business processes (Andreas, 2004). So a useful tool that businesses are turning to in order to build strong capabilities, improve performance, undertake better decision making, and achieve a competitive advantage is the enterprise resource planning. The ERP package aims to integrate all key business activities through improved relationships at all levels to achieve a competitive advantage (Al-Mashari, et al, 2002).

So ERP attempts to integrate all departments and functions across a company onto a single computer system that can serve all those different departments' particular needs. This integrated approach can have a tremendous payback if the companies install the software correctly (Kotwica, 2003).

ERP systems will help the companies to save money through inventory reduction, they will improve productivity, will reduce lead times, they will also help in avoiding shortages and overtime costs to meet orders and most importantly they will help in improving the customer service (Marz, 2000).

However, in order to ensure success, companies should be aware of several critical factors. These include top management commitment, teamwork and project management, effective communication between the enterprises' departments, efficient training and more user involvement, in addition to a good software choice, proper planning and a phased implementation of the new system.

Chapter three Research Design and Methodology

3.1 Introduction

The purpose of this research was to investigate the application of the ERP system in the Palestinian large-scale organizations. The first step in this research was to state the questions that needed to be answered; the second step was to collect the, the third step was to analyze the data gathered and finally answering the questions and taking the corrective measures.

This Chapter will start by defining research and its importance. Then, it will highlight the research methods. A description of the employed research methodology will follow, along with the research instruments, research design, sampling and the procedures of collecting and analyzing the data. Finally, this chapter will end with the limitations of the study.

3.2 Definition of research

Research can be defined as “ an organized, systematic, databased, critical, objective, scientific inquiry or investigation into a specific problem, undertaken with the purpose of finding answers or solutions to it” (Sekaran, 2000,p.4). However, Nelson defines research as “a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge” (Nelson, 2003,p.3). Furthermore, Ferguson states that research is “ one way of discovering knowledge through the systematic investigation of a problem” (Ferguson, 1999, p.1). According to Bruce et al (1993) research can be either survey or field research. Survey research is “the research that involves the application of questionnaires or interviews to

large groups of people. The main purpose of survey is to identify the presence of certain characteristics among groups.” Field research is “ a matter of immersing oneself in a naturally occurring set of events in order to gain of the situation” (Bruce et al, 1993, p.12).

Thus, research provides the needed information to help the managers to make the necessary decision to deal with problems. The information provided could be a result of a very careful analysis of data gathered for the first time or data already available (Sekaran, 2000).

3.3 Types of Research

Any research can be seen as one of two types:

1. Basic (fundamental) research: Research done to find solutions to certain problems that occur in the organizational setting (Sekaran, 2000).
2. Applied research: The research done with the intention to apply the results to certain problems experienced by the enterprise (Sekaran, 2000; Lutzker et. al, 2001).

The basic researcher can usually control the setting and conditions under which the research is conducted. On the other hand, applied research is usually conducted in natural setting (Lutzker et. al, 2001).

3.4 Types of Research Design

According to the purpose of the study, the research design can be divided into three categories:

- 1) Exploratory study: This study is undertaken when no information is available on such problem or when there is not much known about the situation. In such situations extensive preliminary work is needed to be familiar with the phenomena in order to be able to set up a design for a comprehensive investigation.
- 2) Descriptive study: This study is undertaken to be able to describe the characteristics of variables of interest in a certain situation. Hence, its goal is to describe the relevant aspects of the phenomena of interest.
- 3) Hypothesis testing: This study is undertaken to establish differences or to explain the relationships among groups. It can predict organizational outcomes and can explain the variance in the dependent variable (Sekaran, 2000).

3.5 Research Methodology Selection

The purpose of this study is to measure the degree of awareness to enterprise and resource planning systems, their benefits and their drawbacks. Furthermore, this study tries to find out how many Palestinian Organizations have implemented or tried to implement an ERP system; it identifies the factors that contribute to success or failure of

an ERP implementation, and the factors that hinder ERP implementation in those companies that have not tried to implement ERP.

But before taking the decision on the most appropriate methodology for this study, it is important to look at two methodologies of research.

3.5.1 Quantitative Methodology

The quantitative research involves a number of techniques: experimental technique, observation technique and the survey technique, which uses questionnaires or interviews. The questionnaire must be well designed and will be distributed to a random sample to provide numerical and predictable results on the target population (Sekaran, 2000).

3.5.2 Qualitative Methodology

Qualitative research is a research designed for exploratory purposes. It involves several techniques such as group interviews, projective techniques and case studies. It also analyzes human behavior and focuses on people's experiences to provide results on phenomena that are complex and cannot be quantified (Kumar et al, 2001).

3.5.3 The Selected Methodology

In order to choose the most appropriate methodology for a certain research, its purpose, its scope and setting, the research type and the unit of analysis should be considered (Sekaran, 2000). The two main instruments that were used to collect and analyze data, and as a result, form the conclusions and recommendations were the questionnaire survey

and the interviews. The exploratory and the descriptive methods were chosen for the study as it seeks to measure the degree of awareness to ERP systems, their benefits and drawbacks. Furthermore, this study explores the number of the organizations that have implemented the system.

Kumar et al (2001) describes the descriptive research as: “A research that is usually designed to provide a summary of some aspects of the environment when the hypotheses are tentative and speculative in nature” (Kumar et al, 2001, p.735).

Based on what is discussed in the previous pages the study adopts the quantitative methodology. The survey used produced quantitative data.

3.6 Sampling

According to Sekaran (2000) sampling is “the process of selecting a sufficient number of elements from the population so that by studying the sample, and understanding the properties or the characteristics of the sample subjects, it would be possible to generalize the properties or characteristics to the population elements” (Sekaran, 2000, p. 267-268).

The basic reason for using sampling rather than collecting data from the entire population is that in research there are thousands of elements and it would be impossible to examine each element on the entire population. Sekaran (2000) adds that the sample chosen should be representative of the population from which it is drawn to permit generalizability of findings.

There are two types of sampling designs, probability sampling and non-probability sampling. Probability sampling allows each element in the population to have a well known probability whereas in non-probability sampling the element do not have a probability of being selected as subjects (Sekaran, 2000).

(Sekaran, 2000; Kumar et. al, 2001; Kotler, 2003) stated different techniques in probability and non-probability sampling:

1. Simple random sampling: every member in the population can have an equal chance to be selected.
2. Stratified random sampling: first, the population is divided into mutually exclusive groups, and then random samples are drawn from every group.
3. Cluster sampling: the population is also divided into mutually exclusive groups and then a sample is drawn randomly from the groups.
4. Convenience sampling: non-probability sampling where the most accessible population members are chosen.
5. Judgment sampling: non-probability sampling where the researcher selects the population members who only are good enough to give the desired information.
6. Quota sampling: non-probability technique where the researcher interviews a prescribed number of people from the targeted groups.
7. Snowball sampling: is a method that was developed by Goodman in 1961. It is described as the nomination process. Every member in the population can nominate other individuals in that population, which have an equal probability of being selected. The individuals who are chosen are again asked to nominate other

people. These techniques are usually used when the population members cannot be identified (Faugier et al, 1997; Grossensen et al, 1997)

The most important step in the sampling process is to make a careful selection of a true representative sample of the population to which the findings will be generalized. This can be problematic since sometimes there are no official list of the population members (Sekaran, 2000).

3.6.1 The Population Frame

The population frame “is the aggregate of all elements defined prior to the selection of the sample” (Davies et al, 1998,p.24). It is very important to provide a list of the population from which the sample will be drawn. But it is not always easy to get an authoritative document of it.

The main purpose of this study was to measure the degree of awareness to the ERP system, its benefits and drawbacks. In addition, it tries to find out the number of Palestinian Organizations that have implemented or are willing to implement the ERP system. It also identifies the factors that lead to success or failure of the ERP implementation.

Thus, the population frame that will be used in this study is the Palestinian large-scale private organizations. Nasr (1990) states that large-scale organizations can be identified according to their assets, sales, added value and the total number of employees.

According to Sabri (1998) Palestinian large-scale organizations are the organizations employing above 30 employees and thus these are the organizations that will be the targeted population frame. The major problem is that the Palestinian central bureau of statistics (PCBS) doesn't provide an official list of the organizations and their addresses because of confidentiality.

Small businesses will not be useful for this study, which tries to find out how many Palestinian Organizations have applied the ERP system. ERP system is a software that integrates the departments' needs. Such system is new and costly that is small Palestinian businesses will not think of implementing such system soon. Thus, the population frame will be targeted to the organizations employing more than 30 employees and so can be considered large-scale organizations.

The small businesses are excluded because:

1. These small businesses and workshops are usually satisfied with the current legacy systems if used and would not look forward to integration because they don't feel that integration will bring them benefits that will be more than the cost they will handle.
2. They don't usually have a database to share.
3. They usually don't have functional departments and so they don't need to integrate them into a single system.

Gaza strip and Jerusalem will also be excluded from the targeted population because of the restrictions imposed by the Israeli authorities, which makes it almost impossible for anyone from the West Bank to go there.

3.6.2 The Sample

The most important thing here was to identify the population of the Palestinian large-scale organizations and draw a representative sample from them.

To get an official list of names and addresses of these organizations the researcher contacted the following official Palestinian institutions:

1. Palestinian Central Bureau of Statistics: the researcher could not get any official survey that states the Palestinian large-scale organizations because they are obliged to keep the data they collect confidential.
2. Ramallah and Al-Bireh Chamber of Commerce and Industry: the researcher got a list of the names and addresses of the organizations that are located in Ramallah or Al-Bireh and they are registered as members of the chamber.
3. Jericho Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Jericho and they are registered as members of the chamber.
4. Tobas Chamber of Commerce, Industry and Agriculture: the researcher did not get any list because all the registered large-scale members are farms and they are not in the population frame.

5. Salfet Chamber of Commerce, Industry and Agriculture: the researcher did not get any list because there are no large-scale organizations registered there.
6. Jenin Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Jenin and they are registered as members of the chamber.
7. Nablus Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Nablus and they are registered as members of the chamber.
8. Tolkarem Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Tolkarem and they are registered as members of the chamber.
9. Bethlehem Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Bethlehem and they are registered as members of the chamber.
10. Hebron Chamber of Commerce, Industry and Agriculture: the researcher got a list of the names and addresses of the organizations that are located in Hebron and they are registered as members of the chamber.

11. South Hebron Chamber of Commerce, Industry: the researcher got a list of the names and addresses of the organizations that are located in South Hebron and they are registered as members of the chamber.
12. Qalqelia Chamber of Commerce, Industry and Agriculture: the researcher did not get any list because there are no large-scale organizations registered there.
13. Ministry of National Economy: no official list of large-scale organizations was found.
14. Ministry of labor: no official list of Palestinian large-scale organizations was found.
15. Palestinian Trade Center (Pal Trade): no official list of Palestinian large-scale organizations was found.
16. Palestine Economic Policy Research Institute (MAS): no official list of Palestinian organizations was found.

Thus, the researcher has to follow two procedures to get a list of the Palestinian large-scale organizations and draw a representative sample of it.

1. The list of the registered members as large-scale organizations from each chamber of each district in the West Bank.

2. Snowball Sampling Procedure: the personal knowledge of some large-scale organizations. Furthermore, ask the organizations that were selected to nominate other organizations in the population.

The sampling process took into account the Palestinian organizations that are allocated in West Bank. The companies were chosen randomly but they had to have more than 30 employees.

3.6.3 Data Resources

1. Basic Data Resources: the main resource was the literature review presented in chapter two.
2. Primary Data Resources: The data was collected through the use of a questionnaire that was structured by the researcher and the structured interviews with the management of the chosen organizations.
3. Secondary Data Resources: the secondary data that formed the list of names and addresses of the target population from the following institutions:
 - Ramallah and Al-Bireh Chamber of Commerce and Industry.
 - Jericho Chamber of Commerce, Industry and Agriculture.
 - Jenin Chamber of Commerce, Industry and Agriculture.

- Nablus Chamber of Commerce, Industry and Agriculture.
- Tolkarem Chamber of Commerce, Industry and Agriculture.
- Bethlehem Chamber of Commerce, Industry and Agriculture.
- Hebron Chamber of Commerce, Industry and Agriculture.
- South Hebron Chamber of Commerce, Industry.

3.7 Data Collection Instruments

The data used in this study was mainly collected from the questionnaire that was distributed to the target population.

3.7.1 The Questionnaire

The questionnaire was prepared by the researcher. It is divided into three parts. The first part includes the demographic questions. Furthermore, the second part tries to measure the degree of awareness to ERP systems, its benefits and drawbacks. It tries to find out how many Palestinian organizations have implemented or have the intention to implement an ERP system. It also tries to find out the factors that hinder ERP implementation at the companies that have not tried to implement ERP. The last part of the questionnaire tries to identify the cost and time taken to implement an ERP system. It also tries to identify the factors that contribute to the success or failure of an ERP system at those companies, which implemented an ERP system.

3.7.2 The Interview

The purpose of the personal interview was to help the managers to answer the questionnaire. The ERP system is considered new in our country and few who heard about such systems and have answered the questionnaire alone.

3.7.3 Validity and Reliability

To ensure validity and reliability five people who have expertise in implementing ERP systems were asked to make recommendations to modify the questionnaire. The questionnaire was also translated into Arabic since it will be distributed to Arab respondents. The researcher also had to explain to the responding companies what is an ERP system, its benefits and the factors that contribute to the successful implementation of the ERP system by telephone or interviews.

3.8 Procedures of Data Collection

3.8.1 Introduction

The data was collected through the usage of the questionnaire survey. The questionnaire was personally distributed to the managers of the chosen companies that were located in Ramallah. Because of the closure, the other companies received questionnaires by e-mail or by fax.

A follow up reminder by phone was made wherever possible, to all those who didn't respond to the initial mailing of the questionnaire.

The researcher used two methods of interviews to complete this process:

1. Face to face interviews: this method only took place with the companies that could be reached easily.
2. Telephone interviews: This was the only method that the researcher could use with the companies that couldn't be reached easily because of the Israeli policies, closures and curfews.

3.8.2 Respondents

The data collection methods mentioned earlier were intended to maximize the response rate in the survey. High response rate reduces error and provides the ability to make generalization to the population (Sekaran, 2000).

In terms of figures, the number of organizations that received the questionnaire was 55 organizations, but only 40 responded, which makes the response rate 73%.

3.8.3 Reasons of non-response

The non-respondents used many excuses to justify their unwillingness to participate and answer the questionnaire. Among these excuses were:

1. They have many obligations and so they don't have any spare-time to answer the questionnaire.
2. Policies in their organization not to answer any questionnaire of any study regardless of its subject.
3. The study covered a new subject, which wasn't of interest to some organizations. As it will not add tangible value to them.

4. Low level of cooperativeness played some role in the non-response process.

3.9 Procedures of Data Analysis

3.9.1 Topics for analysis

The main purpose of the study was to answer the questions outlined in chapter one, section (1.4). In short it aims to find out whether the Palestinian organizations are aware of the information technology developments that have taken place recently, especially the ERP system, its advantages and how the ERP system can improve their business performance. It also tries to find out whether local companies prefer to build such a system internally or to buy it from an outside vendor. Furthermore, the study identifies the barriers that prevented local private companies from moving forward towards ERP implementation. In addition, it discusses the reasons of failure of the ERP system within the companies that attempted to implement the ERP system.

3.9.2 Data Management

First: All the questionnaires were checked to make sure that they were answered properly.

Second: The data was entered into the SPSS program for analysis. During the data entry process it was ensured that there were:

- No Duplication of the questionnaire.
- The data was consistently checked.
- Some internal editing to the answers of the open-end questions in the questionnaire was done.

3.9.3 Data Analysis

In order to permit a careful analysis of the data, the descriptive-analytical method was used. This method provides accurate values that can be easily manipulated and interpreted (Sekaran, 2000). The data was organized using the software program (SPSS version 12.0), which served both as a spreadsheet for data entry as well as statistical analysis tool. Each question was entered as a numeric variable.

3.9.4 Data Analysis and Testing of Research Questions

The data was collected and analyzed to answer the research questions in chapter one of this study:

- 1) What is the degree of awareness to the ERP system among Palestinian organizations?
- 2) What is the percentage of the Palestinian organizations, which have information technology departments that can build their own ERP system?
- 3) Is there a chance that an ERP system can be built internally and how would the implementation process take place?

- 4) Are there enough resources to implement an ERP system in the Palestinian organizations?
- 5) How can ERP improve the performance of the Palestinian organizations?
- 6) How long will it take to implement an ERP system?
- 7) How will the ERP system assist the Palestinian organizations?
- 8) How much does the ERP system cost and what are the hidden costs of applying it?
- 9) Why do some ERP projects fail?
- 10) What are the barriers that prevent the local private companies from implementing the ERP system?

Therefore, the data analysis and testing went through the following steps:

- a. *Step one:* The investigation of data started with the companies' profile analysis, where frequencies were made in respect of the sector, location, total number of employees, total number of the enterprise' branches, the year they were established and whether the targeted companies have an IT department or not. In addition, it manifested how the data was organized in the companies' different departments.
- b. *Step Two:* The questionnaire was divided into a number of parts that cover different areas. Frequency distributions were generated and Pie and bar charts were drawn in order to be used in analysis.
- c. *Step three:* Cross tabulation was carried in order to examine the existing correlations and relationships that are revealed in this study.

3.10 Limitations of the Study

One possible limitation in any study is reliability of the instrument used, but in this case the questionnaire used by the researcher was given to five people who have expertise in ERP systems and they were asked to make recommendations to modify the questionnaire. The questionnaire was also translated into the Arabic since it will be distributed to Arabic respondents. Another limitation was not achieving 100% response rate, different attempts were used to gather a high rate in this study. 40 enterprises out of 55 returned the questionnaire which means that 73% was the response rate in this study.

Other limitations were the following:

- The exclusion of the medium and small sized enterprises and the concentration on large-scale enterprises that employ 30 or more employees.
- The exclusion of Gaza Strip and Jerusalem from the survey due to the restrictions that are imposed by the Israeli authorities which forced the researcher to send the questionnaire by fax or by e-mail and to follow up with each company over the phone. The researcher had to spend many hours to remind the companies to answer the questionnaire and sometimes explained the questions through a telephone conversation.
- The unavailability of a clear definition of Palestinian large-scale organizations and a complete and official list of them, which forced the researcher to use snowball sampling procedure.

3.11 Conclusion

The purpose of this research is to investigate the application of the ERP system in the Palestinian large-scale private organizations. It seeks to measure the degree of awareness to ERP systems, their benefits and drawbacks. Furthermore, this study explores the number of the organizations that have implemented the system. Thus, the exploratory and the descriptive methods were chosen for this study.

The two main instruments that were used to collect and analyze data were the questionnaire survey and the interviews. A careful selection of a true representative sample of the population to which the findings will be generalized was determined by following two procedures:

Getting a list of the registered members as large-scale organizations from each chamber of each district in the West Bank, and snowball sampling procedure was used.

Organizations that were selected were asked to nominate other organizations in the population. The sampling process took into account the Palestinian organizations that are allocated in West Bank and employed 30 employees. The data used in this study was mainly collected from the questionnaire that was distributed to the target population.

Then it was organized using the software program (SPSS version 12.0), which served both as a spreadsheet for data entry as well statistical analysis tool. Each question was entered as a numeric variable. Finally the data was analyzed by generating frequency distributions and drawing pie and bar charts in order to answer the research questions in chapter one. Cross tabulation was also carried in order to examine the existing correlations and relationships that are revealed in this study.

Chapter Four

Findings and Results of the Study

4.1 Introduction

The analysis of the data gathered through the questionnaire and the structured interview was carried out in terms of the research questions posed in chapter one of this study.

Thus, the findings of the analysis will be around the following issues:

- The Profile of the companies
- The degree of awareness to ERP system
- The reasons for applying an ERP system
- The implementation of the ERP system
- The success or failure of the ERP system
- The effects of the ERP system

4.2 The Profile of the Companies

The Analysis of the data gathered through the first part of the questionnaire revealed the following results in terms of the responding companies' location and sector. The companies' total number of employees and their total number of branches. The year the enterprises were established. And whether the responding companies have an IT department or not and how the data of the enterprise different departments is organized.

Table 4.1 shows that:

15% of the responding companies were from north of West Bank, 17.5% were from south of West Bank and 67.5% were from the middle of West Bank. This is due to:

- 1) The responding companies from the middle of West Bank received the questionnaire personally from the researcher. In addition, the researcher easily reminded them to answer the questionnaire by simply passing by the targeted companies to ask them whether they answered the questionnaire or not.
- 2) According to the lists that were received from the chambers most of the large-scale organizations are located in middle of the West Bank.

Table4.1

Location of the targeted companies

Location	Frequency	Percent	Valid Percent	Cumulative Percent
North of West Bank	6	15%	15%	15%
South of West Bank	7	17.5%	17.5%	32.5%
Middle of West Bank	27	67.5%	67.5%	100%
Total	40	100%	100%	

Table 4.2 shows that 60% of the responding companies were from the manufacturing sector, 32.5% were from the service sector while 7.5% were wholesale distributors.

Table 4.2

Sector of the targeted companies

Sector	Frequency	Percent	Valid Percent	Cumulative Percent
Manufacturing	24	60%	60%	60%
Service	13	32.5%	32.5%	92.5%
Other	3	7.5%	7.5%	100%
Total	40	100%	100%	

Table 4.3 shows that the total number of employees in 35% of the targeted companies is between 30-50, 10% between 50-100, 12.5% between 100-150, and 10% between 150-200 and 32.55 more than 200 employees.

Table 4.3
Total number of employees

Total number of employees	Frequency	Percent	Valid Percent	Cumulative Percent
30-50	14	35%	35%	35%
50-100	4	10%	10%	45%
100-150	5	12.5%	12.5%	52.5%
150-200	4	10%	10%	67.5%
More than 200	13	32.5%	32.5%	100%
Total	40	100%	100%	

Table 4.4 shows that 35% of the targeted companies have one branch, 17.5% have two branches, 12.5% have three branches, and 10% have four branches whereas 25% have more than four branches.

Table 4.4
Total number of branches

Total number of branches	Frequency	Percent	Valid Percent	Cumulative Percent
1 branch	14	35%	35%	35%
2 branches	7	17.5%	17.5%	52.5%
3 branches	5	12.5%	12.5%	65%
4 branches	4	10%	10%	75%
More than 4 branches	10	25%	25%	100%
Total	40	100%	100%	

Table 4.5 shows that 2.5% of the responding companies were established in 1914, 2.5% between 1950-1960, 7.5% between 1961-1970, 17.5% between 1971-1980, 12.5% between 1981-1990 whereas 57.5% between 1991-2000.

Table 4.5
Year of establishment

Year of establishment	Frequency	Percent	Valid Percent	Cumulative Percent
1914	1	2.5%	2.5%	2.5%
Between 1950-1960	1	2.5%	2.5%	5%
1961-1970	3	7.5%	7.5%	12.5%
1971-1980	7	17.5%	17.5%	30%
1981-1990	5	12.5%	12.5%	42.5%
1991-2000	23	57.5%	57.5%	100%
Total	40	100%	100%	

Table 4.6 shows that 47.5% of the responding companies used a different system for each department to organize their data, whereas 47.5% used a single computer system to organize their data. 5% of the targeted companies answered that their data is organized by a different system for each department but they are integrated together. Integration involves carrying out a range of services by a single process. As a result it will minimize redundancy and inefficiency in information processing while improving effectiveness and customer satisfaction.

Table 4.6
The way data of the enterprise is organized

	Frequency	Percent	Valid Percent	Cumulative Percent
By a different system for each department	19	47.5%	47.5%	47.5%
By a single computer system	19	47.5%	47.5%	95%
Other	2	5%	5%	100%
Total	40	100%	100%	

Table 4.7 shows that 55% of the responding companies said that they have an IT department while 45% of them said that they do not need an IT department. If anything goes wrong with the system they have a consulting company that will help them when needed.

Table 4.7
Enterprises that have an IT department

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	22	55%	55%	55%
No	18	45%	45%	100%
Total	40	100%	100%	

4.3 The degree of awareness to ERP system

Table 4.8 and table 4.9 show that most of the responding companies strongly agreed that they are facing a highly competitive environment and one of the key factors of success today is to provide the customers with what they need through interacting with them. In today's dynamic business environment the organizations agreed that in order to become globally competitive; they need to be closer to their customers in order to be able to

deliver added products and services in the shortest time possible. This would require greater interaction with the customers.

Table 4.8
Degree of competition in the business environment

	N	Mean	Standard Deviation	Standard error mean
Our Organization is now facing a highly competitive environment	40	1.525	0.67889	0.10734

Table 4.9
Importance of the enterprise's interaction with its customers

	N	Mean	Standard deviation	Standard error mean
One of the key factors to success today is to provide customers with what they need.	40	1.6	0.74421	0.11767

Table 4.10 and table 4.11 show that the majority of the responding companies agreed that they need a software that will integrate and automate the organizations' different departments' processes. As a result most of them agreed that it is important to apply an ERP system. The organizations agreed that in order to be able to produce products that are tailored to customer requirements and to provide faster deliveries, the enterprises must be linked to both customers and suppliers, this in turn demands integration of business processes of these enterprises. Applying an ERP system will play a very important role in the integration of both the information system and the business

processes. This application will ensure efficient, effective and integrated information that will lead to improving effectiveness, and customer satisfaction and minimizing redundancy and waste.

Table4.10
Importance of business integration

	N	Mean	Standard deviation	Standard error mean
Our organization has a need for a software that integrates and automates the organization's different department needs.	4 0	2.15	1.4466	0.18099

Table4.11
Importance of applying an ERP system

	N	Mean	Standard deviation	Standard error mean
It is important to apply an ERP system in our organization.	4 0	1.7	0.75786	0.11983

Table 4.12 shows that most of the responding companies strongly agreed that after implementing the ERP system it is important to continuously upgrade it. Upgrading the ERP system will deliver business value but will require testing and training efforts.

Table 4.12
Importance of upgrading the ERP system

	N	Mean	Standard deviation	Standard error mean
It is important to upgrade the ERP system after it has been implemented.	40	1.475	0.50574	0.7996

4.4 The application of the ERP system

Table 4.13 shows that, 40% of the responding companies have an ERP system, whereas 60% did not have an ERP system. Enterprise resource planning offers an integrated system that will provide a means to coordinate the information flows across the organization (Olson, 2004).

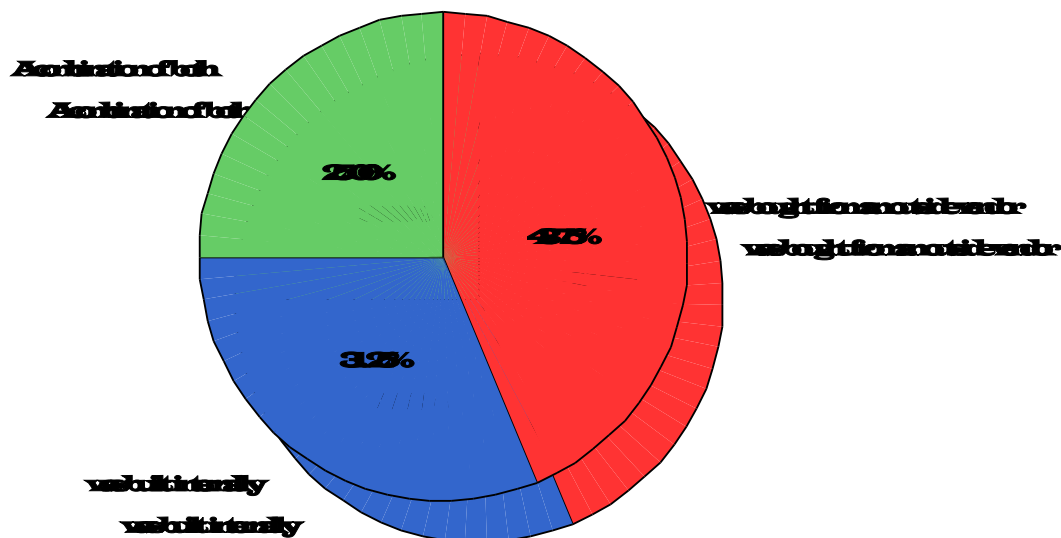
Table 4.13
Enterprises that have an ERP system

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	16	40%	40%	40%
No	24	60%	60%	100%
Total	40	100%	100%	

4.4.1 Sources of ERP system

The ERP system can be either built internally, bought from an outside vendor or a combination of both. As shown in figure 4.1, the responding companies that applied the ERP system, 43.75% of them bought the software from an outside vendor, 31.25% built the system internally whereas 25% of the targeted companies have part of their system bought from an outside vendor and the other part was built internally.

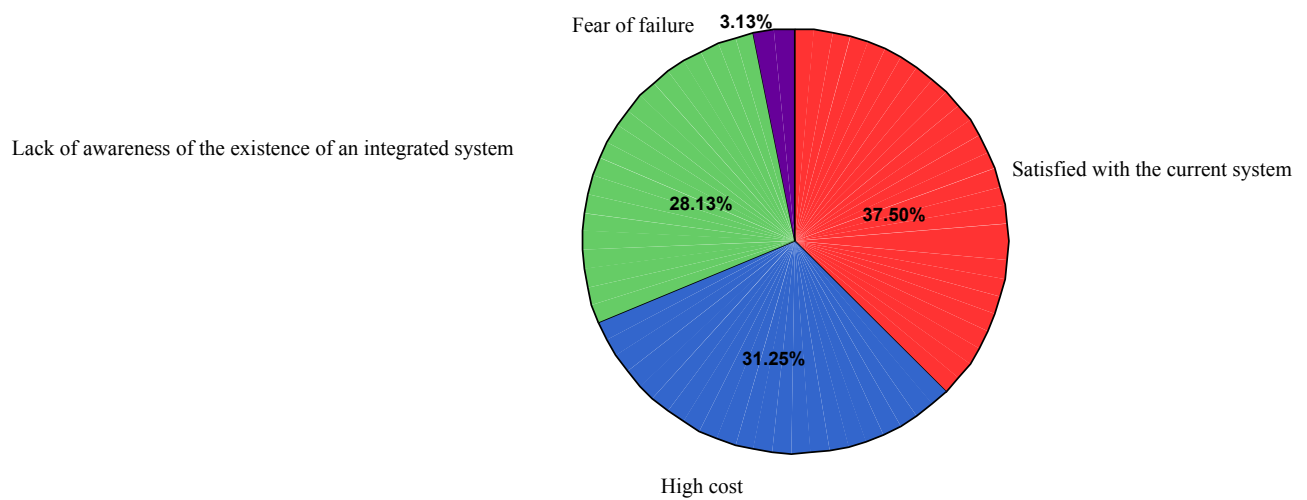
Figure 4.1



4.4.2 Reasons for not applying ERP

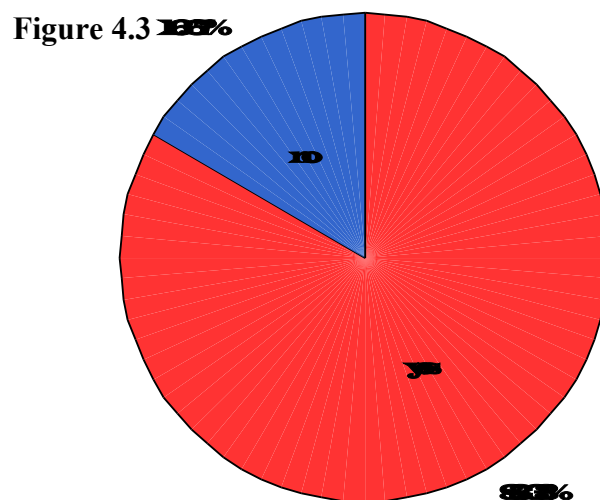
As shown in figure 4.2 the reasons for not applying an ERP system, 37.50% of the responding companies were satisfied with their current system, 31.35% did not apply an integrated system because of its high cost, 28.13% were not aware of the existence of an integrated system, while 3.13% feared to fail if they apply a new system in their enterprise.

Figure 4.2



4.4.3 The intention of applying an ERP system

1. As shown in figure 4.3, 83.33% of the targeted companies intend to apply an ERP system in the future whereas, 16.67% opposed.



2. 14.29% of the responding companies will apply the ERP system in one year, 33.33% in two years, 23.81% in three years whereas 28.57% in more than three years.
3. When applying the ERP system 40% think it is better to build it internally in order to ensure that the system will suit the enterprise's needs, 22.5% prefer to buy the software from an outside vendor whereas 37.5% think that the best way to have a system that part of it is bought from an outsider and part of it is built internally.
4. Only 37.5% of the responding companies have put a framework to implement an ERP system. The stages of this framework include:
 - a) Assessment of needs.
 - b) Customization of the software.
 - c) Implementation and support.
 - d) Training the employees on the new system.

4.4.4 The reasons for applying an ERP system

Table 4.14 shows that the responding companies have prioritized the reasons of applying an ERP system according to their degree of importance. The majority agreed that the most important reason is to help the enterprises to integrate financial data and thus prepare accurate financial statements; ERP minimizes information coordination problems and creates an integrated core of administrative and financial applications. The second reason was to integrate customer order information. In today's highly competitive environment the organizations need to have reliable information about their customers in

order to be able to interact with them and to identify their needs and wants. ERP improves the way an enterprise takes a customer's order and processes it into an invoice. Hence, the order process will move quickly and the customers will get their orders faster and with fewer errors, which lead to better satisfaction. The third reason was to speed up the manufacturing process, nevertheless the fourth reason was to reduce inventory, and the manufacturers will be able to only make what is needed. The deliveries of finished products will be coordinated to specific dates. Thus, with fewer shortages, manufacturing orders can be processed faster and implementing just in time philosophy can be applicable. The least important reason was to cut down paper use

Table 4.14

Reasons for applying an ERP system

Reasons	Most Important	Important	Medium	Little important	Least Important	Not Applicable
Applying an ERP system is important to integrate financial data	31	3	6	0	0	0
Applying an ERP system is important to integrate customer order information	2	19	11	8	0	0
Applying an ERP system is important to reduce inventory	0	3	8	13	5	11
Applying an ERP system is important to cut down paper use	2	4	12	3	19	0
Applying an ERP system is important to speed up the	5	11	4	4	1	15

manufacturing
process

4.5 The implementation of the ERP system

The responding enterprises were asked to prioritize the factors that may contribute positively to the implementation of the ERP system according to their degree of importance. The majority agreed that top management support is the most important factor that will ensure the successful implementation of the ERP system, whereas learning from others according to the responding companies will not necessarily help in the implementation process of the ERP system. This is shown in tables 4.15 below:

Table4.15

Factors that may contribute positively to the implementation of the ERP system

Factors	Most Important	Very Important	Important	Medium	Little Important	Least Important	Not Important at all
Learning from others	2	0	0	2	2	11	23
Establishing project teams	3	2	4	5	9	10	7
Training and providing technical support for the users	3	7	7	9	11	2	1
Implementing the changes needed in the organization structure	3	7	11	7	5	5	2
Top management support	12	7	7	6	3	4	1
Effective communication and more user involvement	9	10	7	6	4	4	0
Project management	8	8	3	6	7	3	5

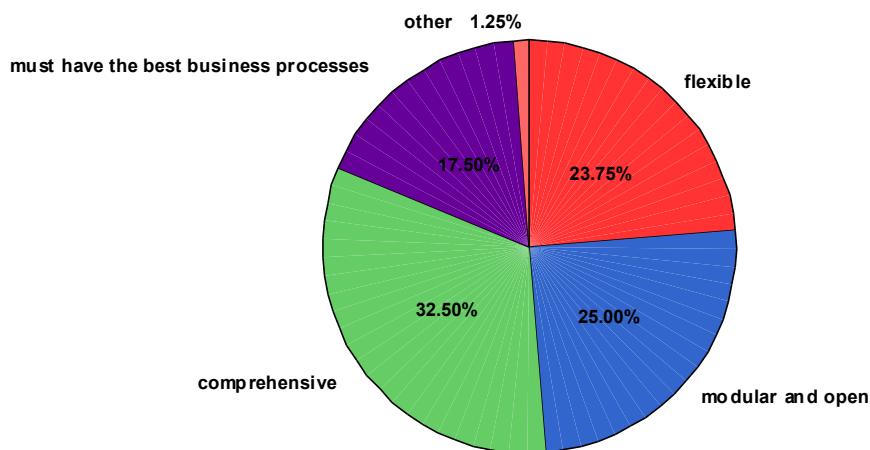
The responding companies, which attempted to implement an ERP system, were asked about the length of the ERP implementation process. 41.67% answered that the implementation process took them less than one year, 25% of the responding companies took them between 1-3 years whereas 33.33% have not finished the implementation process yet.

4.5.1 The Main Characteristics of an ERP system

As shown in figure 4.4 below, 23.75% agreed that the ERP system must be flexible in order to respond to the changing needs of the enterprise. 32.50% agreed that the ERP

system must be comprehensive in order to support the organization's different functions. 23.75% agreed that the ERP system must be modular so that any module can be interfaced whenever required without affecting the other modules. 17.50% agreed that the ERP system must have the best business practices while 1.25% agreed that the ERP system must be scalable.

Figure 4.4



4.5.2 The obstacles faced in implementing an ERP system

Figure 4.5 shows that 65% of the companies agreed that there are obstacles in implementing the ERP system. These obstacles include, 23.61% length of the ERP implementation process, 25.45% length of the ERP implementation process, 7.27% different departments, 38.18% resistance to change when implementing the ERP system, and 7.27% team organization.

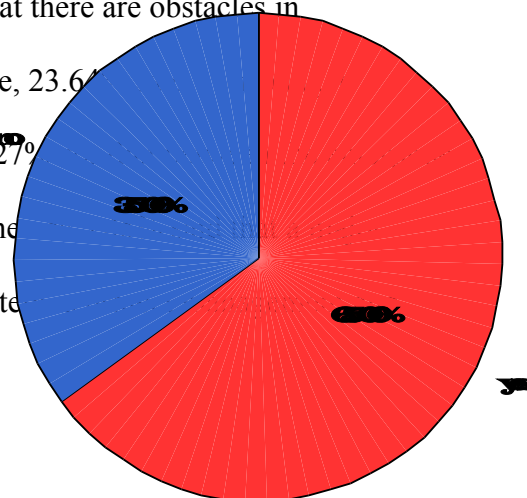


Figure 4.5

As mentioned by respondent the major challenges that an enterprise will face during or after the implementation process include:

- 1) Cooperation between management and the employees.
- 2) The Palestinian unstable situation.
- 3) Flexibility of the software for customization and upgrading.
- 4) Data conversion from the legacy systems to the ERP system.

4.5.3The benefits of the ERP system

55% of the responding companies were aware of the benefits of the ERP system whereas 45% were not. 17.39% of the targeted companies said that the benefits of the ERP system include saving labor and reducing labor cost. Improved manufacturing processes will lead to fewer shortages, rework and overtime. ERP system reduces 10% of direct and indirect costs. Production managers will have better visibility of the required work and can adjust the capacity to meet the production schedule, and they will have more time to develop better methods and improve the quality. 26.09% and 17.39% agreed that the ERP system would improve the decision-making process and the communication between the

different business units respectively; 13.04% believed that the ERP would improve the service provided through the interaction with the customers and the suppliers.

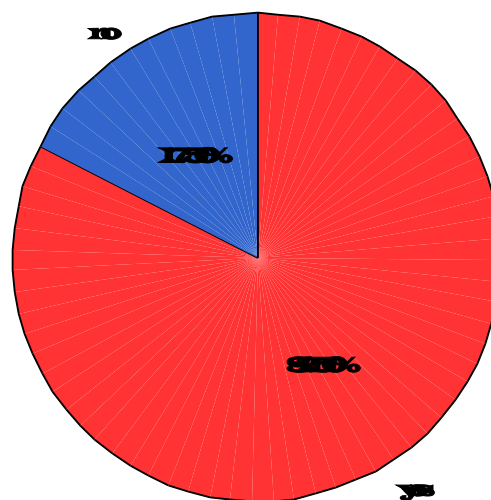
Improvements in the customer service will lead to meet delivery promises in shorter lead times which will result in better customer satisfaction; hence, improvements in the customer service can lead to fewer lost sales and actual increases in the company sales.

26.09% added that the ERP system will improve the enterprise productivity and will reduce waste.

4.5.4 Hidden and real costs of applying an ERP system

When the targeted companies were asked whether there are hidden costs for applying an ERP system. As shown in figure 4.6 below 82.5% agreed whereas 17.5% disagreed.

Figure 4.6



The hidden costs might be in the following areas:

- The training area: 35.14% of the responding enterprises believed that hidden cost might be in the training area. Training expenses are usually high because workers will have to learn a new set of processes not just a software interface.
- Customizing the software: 27.03% said that hidden cost can be in customizing the software, this should usually be avoided, as customization can affect all modules of the ERP system because they are tightly linked together.
- Converting the data from the old legacy systems to the new system: It costs money to move the data from the legacy systems to the new system. As most companies data in most legacy systems are of little use and so they need to do some modifications before converting it. 9.46% said the company might bear some cost because of the need to replace some of its employees after implementing the ERP system because of the complexity of the software.

As for the real cost 50% of the companies that implemented the ERP system mentioned that the ERP cost them less than \$50,000. 12.5% between \$50,000-\$200,000 and another 12.5% between 200,000-350,000. Whereas the ERP cost of 25% of the responding enterprises was more than \$500,000.

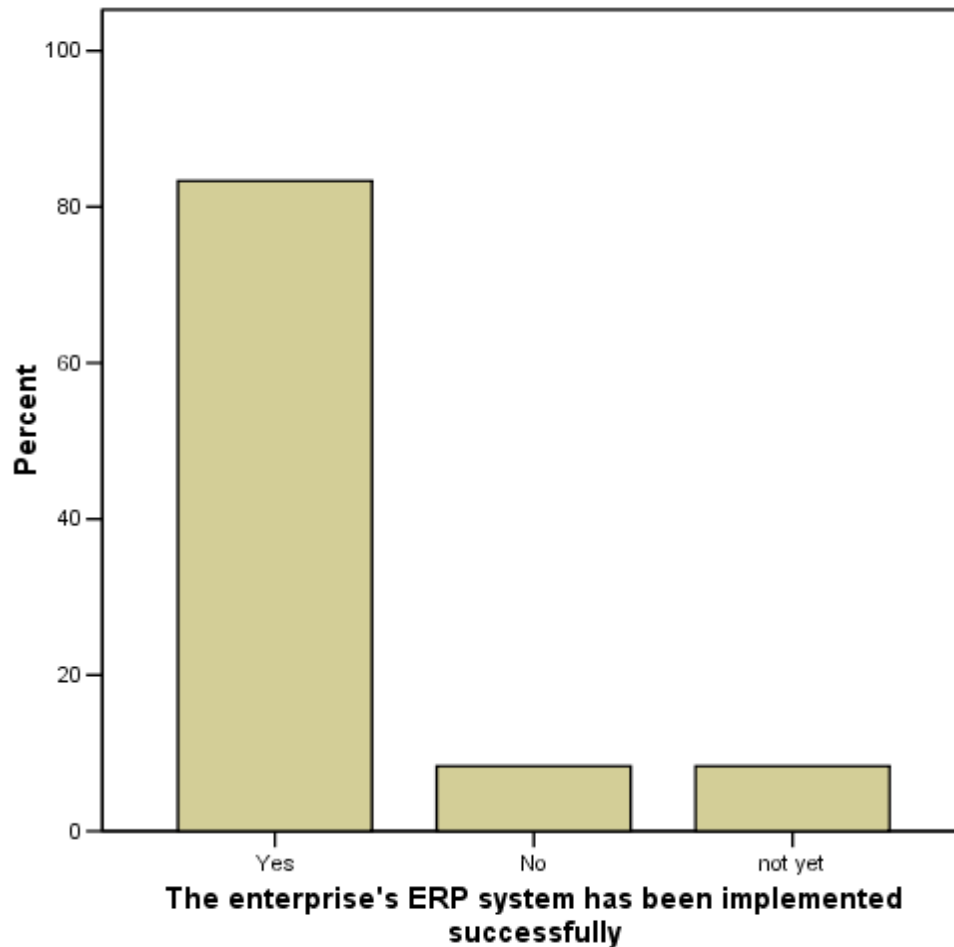
In regards to when the implementation process took place, 53.85% of the responding companies have implemented the ERP system before 1month-1year, 30.77% before2-5years while 15.38% before5-10 years. This shows that the implementation of the ERP system is new in the Palestinian organizations.

4.6 The success or failure of the ERP system

4.6.1 Reasons for success and failure

Figure 4.7 shows that 84.62% of the responding companies that have implemented the ERP system were successful, 7.69% believed that they failed whereas 7.69% stated that it was early to judge if their system was successful or not. The success of the ERP system includes improvements in: software, analytics, performance, service, financials, ordering and personnel costs. The ERP benefits can be organized into general groups, such as: operational, managerial, strategic, technological and organizational.

Figure 4.7



According to the respondents the reasons of success are:

- 1) 18.42% believe that success is due to top management commitment.
- 2) 15.79% believe that success is due to step-by-step implementation of the system.
- 3) 23.68% believe that success is due to user training.
- 4) 21.05% believe that success is due to good selection of the software.
- 5) 18.42% believe that success is due to project management.
- 6) 2.63% believe that success is due to cooperation between the organization and the consulting company that implements the system.

Whereas, the reasons of failure are:

- 29.85% believe that failure is due to resistance to change by the company's employees. People usually do not like to change, and ERP asks them to change the way they do their jobs. Resistance to change may sometimes lead to break down in the ERP projects.
- 17.9% believe that failure is due to customizing the software. Customization can make the software unstable and harder to maintain when it comes to be live.
- 20.90% believe that failure is due to following up no sequence in the implementation procedure of the system.
- 31.34% believe that failure is due to making the wrong choice of the vendor. However, the main reasons for failure in some Palestinian companies were lack of liquidity and the political situation.

4.6.2 Evaluation of success

The responding companies who were successful in implementing the ERP system, evaluated their system according to:

- 1) 34.62% outcome and achieved results.
- 2) 38.46% improvement in the decision-making process.
- 3) 15.38% more accurate financial operations.
- 4) 11.54% better business performance

4.7 The effects of the ERP system

4.7.1 The effect on the accounting procedures

100% of the responding companies that have implemented the ERP system believe that the ERP has affected their accounting procedures.

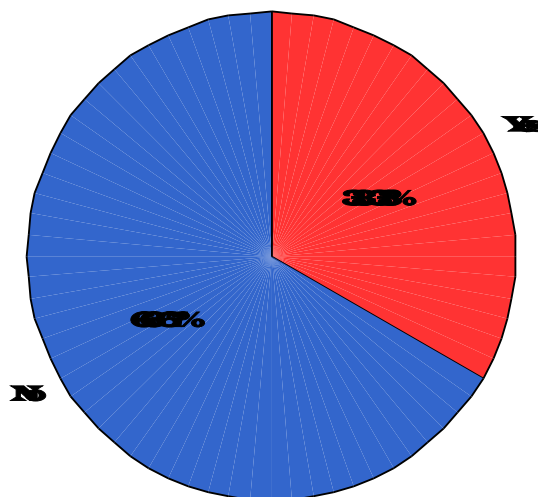
These effects were:

- 1) 29.03% said that they received more accurate and up-to-date information.
- 2) 19.35% said that the ERP has speeded up the customer invoice processing system.
- 3) 19.35% said that the ERP has reduced the clerical accounting work, the manufacturing transactions automatically update the general ledger, time consuming and manual journal entries are eliminated.
- 4) 32.26% said that the ERP has improved the timeliness of their financial reports.

4.7.2 The effect on the product design

As shown in figure 4.8 the responding companies were also asked whether the ERP system has affected the product design. 33.33% agreed that they were able to deliver better product or better service, whereas 66.67% disagreed as they said their product design was not affected by the ERP system.

Figure 4.8



4.7.3 The effect on production and material management

In respect to production and material management, 63.64% agreed that the ERP system has improved their production procedure; 36.35 disagreed because the production and material management was not applicable to them as they simply import products and distribute them to the retailers or they were in the service sector.

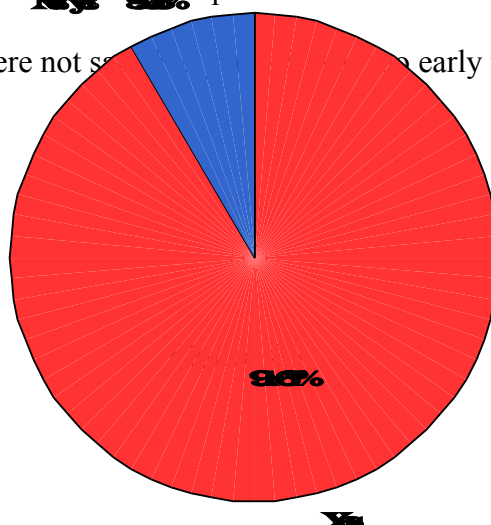
The ERP system helps to establish realistic schedules for production; everyone knows the most important job to work on all the time. Visibility of future requirements helps production to prepare for the capacity problems and also helps the suppliers anticipate and meet the company's needs.

4.7.4 The effect on sales

As for the sales, 58.33% believed that their sales increased while 33.33% stated that their sales have not changed. The ERP system improves the customer service; periods of product deliveries are shortened and customer inquiries on order status are answered quickly. As a result, the time requirement for sales and customer service is reduced.

4.8 The Enterprises' Satisfaction with the ERP system

As shown in figure 4.9, 91.67% of the companies were satisfied with their ERP system whereas 8.33% of them were not satisfied. It is too early to judge the performance of their ERP system.



In terms of the connection with suppliers, customers, or other partners to the responding enterprises ERP system, 83.33% believed that it was important whereas 16.67% disagreed.

4.9 Cross tabulation Analysis

4.9.1 The relationship between having an IT department and the ERP source

Table 4.16 shows that when the two questions were correlated, they resulted in:

- 1) 77.8% of the responding companies that have an IT department and 22.2% of the responding companies who do not have an IT department prefer to buy the software from an outside vendor.
- 2) 31.3% of the targeted companies that have an IT department and 68.8% of the responding companies who do not have an IT department prefer to build the software internally.

- 3) 66.7% of the targeted companies that have an IT department and 33.3% of the responding companies who do not have an IT department prefer to have a software, part of it is bought from an outside vendor and the other part is built internally.

This shows that there is little chance in the current situation for the Palestinian companies to build their own ERP software internally.

Table 4.16
Does your enterprise have an IT department? * When applying an ERP system it is better, cross tabulation

		When applying an ERP system it is better			Total
		To buy it from an outside vendor	To build it internally	A combination of both	
Does your enterprise have an IT department?	Yes	77.8%	31.3%	66.7%	55.0%
	No	22.2%	68.8%	33.3%	45.0%
Total		100.0%	100.0%	100.0%	100.0%

4.9.2 Companies location and having an ERP system

Table 4.17 shows that when the two questions were correlated they resulted in:

- 1) 25% of the targeted companies that have an ERP system are located in north of West Bank.
- 2) 12.5% of the targeted companies that have an ERP system are located in south of West Bank.
- 3) 62.5% of the targeted companies that have an ERP system are located in middle of West Bank.

This means that it is very important to increase the awareness to the technological developments in both north and south of West Bank.

Table 4.17

Location * Does your enterprise have an ERP system? Cross tabulation

		Does your enterprise have an ERP system?		Total
		Yes	No	
Location	North of West Bank	25.0%	8.3%	15.0%
	South of West Bank	12.5%	20.8%	17.5%
	Middle of West Bank	62.5%	70.8%	67.5%
Total		100.0%	100.0%	100.0%

4.9.3 Companies sector and having an ERP system

Table 4.19 shows that when the two questions were correlated they resulted in:

1. 30% of the targeted companies that have an ERP system are from the manufacturing sector.
2. 17.5% of the targeted companies that have an ERP system are from the service sector.
3. 7.5% of the targeted companies that have an ERP system are from the wholesale distributors.

This means that it is very important to increase the awareness to the importance of the ERP system in both the service and the wholesale distribution sectors

Table 4.18**Does your enterprise have an IT department? * Sector Cross tabulation**

		Sector			Total
		Manufacturing	Service	Other	
Does your enterprise have an IT department?	yes	30.0%	17.5%	7.5%	55.0%
	No	30.0%	15.0%		45.0%
Total		60.0%	32.5%	7.5%	100.0%

4.10 Summary of the Findings

- 1) 15% of the responding companies were from north of West Bank, 17.5% were from south of West Bank and 67.5% were from the middle of West Bank.
- 2) 60% of the responding companies were from the manufacturing sector, 32.5% were from the service sector while 7.5% were wholesale distributors.
- 3) 47.5% of the responding companies used a different system for each department to organize their data, whereas 47.5% used a single computer system to organize their data. 5% of the targeted companies answered that their data is organized by a different system for each department but they are integrated together. Integration results in minimizing redundancy and

inefficiency in information processing while improving effectiveness and customer satisfaction.

4) Most of the responding companies strongly agreed that they are facing a highly competitive environment and one of the key factors of success today is to provide the customers with what they need through interacting with them.

5) The majority of the responding companies agreed that they need a software that will integrate and automate the organizations' different departments' processes. As a result most of them agreed that it is important to apply an ERP system.

6) Most of the responding companies strongly agreed that after implementing the ERP system it is important to continuously upgrade it.

7) 40% of the responding companies have an ERP system, whereas 60% did not have an ERP system.

8) The responding companies that applied the ERP system, 43.75% of them bought the software from an outside vendor, 31.25% built the system internally whereas 25% of the targeted companies have part of their system bought from an outside vendor and the other part was built internally.

9) The reasons for not applying an ERP system, 38.24% of the responding companies said that they were satisfied with their current system, 32.35% did not apply an integrated system because of its high cost, 26.47% were not aware of the existence of an integrated system, while 2.94% feared to fail if they apply a new system in their enterprise.

10) 83.33% of the targeted companies intend to apply an ERP system in the future whereas, 16.67% opposed.

11) 14.29% of the responding companies will apply the ERP system in one year, 33.33% in two years, 23.81% in three years whereas 28.57% in more than three years. When applying the ERP system 40% think it is better to build it internally in order to ensure that the system will suit the enterprise's needs, 22.5% prefer to buy the software from an outside vendor whereas 37.5% think that the best way to have a system that part of it is bought from an outsider and part of it is built internally.

12) Only 37.5% of the responding companies have put a framework to implement an ERP system. The stages of this framework include:

- Assessment of needs.
- Customization of the software.
- Implementation and support.
- Training the employees on the new system.

13) The responding companies have prioritized the reasons of applying an ERP system according to their degree of importance. The majority agreed that the most important reason is to help the enterprises to integrate financial data and thus prepare accurate financial statements and the least important reason is to cut down paper use.

14) The responding enterprises were asked to prioritize the factors that may contribute positively to the implementation of the ERP system according to their degree of importance. The majority agreed that top management support is the most important factor that will ensure the successful implementation of the ERP system, whereas learning from others according to the responding companies will not necessarily help in the implementation process of the ERP system.

15) 23.6% agreed that the ERP system must be flexible, 31.46% agreed that the ERP system must be comprehensive, 23.6% agreed that the ERP system must be modular, 17.98% agreed that the ERP system must have the best business practices while 1.12% agreed that the ERP system must be scalable.

16) 65% of the companies agreed that there are obstacles in implementing the ERP system. These obstacles include, 23.64% said over budget, 25.45% length of the ERP implementation process, 7.27% conflict between the enterprise different departments, 38.18% resistance to change whereas 5.45% said that a major obstacle in the implementation process of the ERP system is project management and team organization.

17) 55% of the responding companies were aware of the benefits of the ERP system whereas 45% were not. 17.39% of the targeted companies said that the benefits of the ERP system include saving labor and reducing labor cost, 26.09% and 17.39% agreed that the ERP system would improve the decision-making process and the communication between the different business units respectively; 13.04% believed that the ERP would improve the service provided through the interaction with the customers and the suppliers. 26.09% added that the ERP system will improve the enterprise productivity and will reduce waste.

18) As for the real cost 50% of the companies that implemented the ERP system mentioned that the ERP cost them less than \$50,000. 12.5% between \$50,000-\$200,000 and another 12.5% between 200,000-350,000. Whereas the ERP cost of 25% of the responding enterprises was more than \$500,000.

19) 84.62% of the responding companies that have implemented the ERP system were successful, 7.69% believed that they failed whereas 7.69% stated that it was early to judge if their system was successful or not.

20) According to the respondents the reasons of success are:

- 18.42% believe that success is due to top management commitment.
- 15.79% believe that success is due to step-by-step implementation of the system.
- 23.68% believe that success is due to user training.
- 21.05% believe that success is due to good selection of the software.
- 18.42% believe that success is due to project management.
- 2.63% believe that success is due to cooperation between the organization and the consulting company that implements the system.

21) Whereas, the reasons of failure are:

- 29.85% believe that failure is due to resistance to change by the company's employees
- 17.9% believe that failure is due to customizing the software.
- 20.90% believe that failure is due to following up no sequence in the implementation procedure of the system.
- 31.34% believe that failure is due to making the wrong choice of the vendor.

However, the main reasons for failure in some Palestinian companies were lack of liquidity and the political situation.

22) 100% of the responding companies that have implemented the ERP system believe that the ERP has affected their accounting procedures. These effects were:

- 29.03% said that they received more accurate and up-to-date information.

- 19.35% said that the ERP has speeded up the customer invoices processing system.
- 19.35% said that the ERP has reduced the clerical accounting work.
- 32.26% said that the ERP has improved the timeliness of their financial reports.

23) 33.33% agreed that they were able to deliver better product or better service, whereas 66.67% disagreed as they said their product design was not affected by the ERP system.

24) 63.64% agreed that the ERP system has improved their production procedure; 36.35% disagreed because the production and material management was not applicable to them as they simply import products and distribute them to the retailers or they were in the service sector.

25) As for the sales, 58.33% believed that their sales increased while 33.33% stated that their sales have not changed.

26) 91.67% of the companies were satisfied with their ERP system whereas 8.33% of them were not satisfied yet as it was too early to judge the performance of their ERP system.

27) In terms of the connection with suppliers, customers, or other partners to the responding enterprises ERP system, 83.33% believed that it was important whereas 16.67% disagreed.

28) The cross-tabulation analysis provoked that there is little chance in the current situation for the Palestinian companies to build their own ERP software internally, it is very important to increase the awareness to the technological developments in both north and south of West Bank and, in both the service and the wholesale distribution sectors.

Chapter Five

Conclusions and Recommendations

5.1 Study Summary

As technology expands, so must business. Organizations realize the need for computer systems that will help them achieve their strategic and competitive goals.

They are implementing the information technology to gain financial performance and to support their business strategies, (Andreas, 2004). Every day, more and more worldwide

companies are connected to the web. Implementing an ERP system will be the technological backbone of an e-business strategy (Kalakota and Robinson, 2001).

The basic needs that derive the enterprises to implement an ERP system are:

- The need to create a framework to improve the customer order process.
- The need to unify the business functions.
- The need to integrate a range of technologies along with the business processes they support into a common technology platform.
- The need to create a technological foundation to support any new future e-commerce applications (Kalakota and Robinson, 2001).

Enterprise resource planning is viewed as an information technology solution that integrates core business processes. ERP is preferred to be flexible, comprehensive and modular in structure. Flexibility allows the system to respond to the changing needs of an enterprise. The ERP system can also support a variety of organizational functions and so can be suitable for different business organizations, while modularity provides the system with an open architecture. This means that any module can be interfaced whenever required without affecting the other modules (Tuteja, 1999).

Applying ERP system can ensure the company's financial data to be relevant and reliable (Hostetter, 2004). Furthermore, ERP system provides built-in analytics; increased role based functionalities and enhance Internet integration capabilities (Choy, 2004). Gregory (2003) added that applying an ERP system would fill the gap between suppliers,

customers and trading partners.

When selecting an ERP system the organizations have two alternatives:

- A highly complex, custom-designed application that meets the organizations' specific requirements bought from an outside vendor.
- An off-the-shelf application that is designed especially for the enterprise and meets all its needs (Kalakota and Robinson, 2001).

The company has to choose the software that supports its business processes or it will have to either, change its business processes which means deep changes in long-established ways of doing business or it can modify the software to fit its processes. However, this will slow down the project and will make it difficult to upgrade the software because the customization then will need to be rewritten to fit the new version (Koch, 2001).

To do ERP right, the ways the company does business need to change and the ways people do their jobs need to change too. This kind of change does not come without pain. ERP efforts usually run between one and three years, on average, but the most important thing is to understand why the company needs it and how it improves its business.

Some of the benefits of the ERP system are:

1. The ERP system integrates customer order information.

The information on the customers is in one software rather than scattered in many different systems that cannot communicate with each other. This helps the companies to easily track the orders of the customers and coordinates manufacturing, inventory and shipping among different locations at the same time.

2. The ERP system standardizes and speeds up manufacturing processes.

ERP system automates some of the steps of the manufacturing process. Standardizing such processes using a single system saves time, increases productivity and will reduce waste.

3. The ERP system reduces inventory.

ERP systems help the companies to better plan their deliveries to customers and thus reduce the finished inventory at the warehouses.

4. ERP system standardizes the human resource information.

This helps the companies to better communicate with their employees about their benefits and services, and also helps the enterprises to track the employees' time.

5. The ERP system integrates the companies functions (Koch, 2001)

The purpose of the study is to measure the degree of awareness to enterprise and resource planning systems, its benefits and its drawbacks. Furthermore, this study tries to find out how many large-scale private Palestinian Organizations have implemented or tried to implement an ERP system; it identifies the factors that contribute to success or failure of an ERP implementation and the factors that hinder ERP implementation at those companies that have not tried to implement it. Data was obtained through the

questionnaire that was returned by 40 out of 55 targeted Palestinian companies.

The principal findings of the study include the following:

- Enterprise resource planning offers an integrated system that provides a mean to coordinate the information flows across the organization. (Olson, 2004) 40% of the responding Palestinian companies have an ERP system, whereas 60% did not have an ERP system. From those, which did not have an ERP system, the majority agreed that they intend to apply an ERP system in the future. Most of them agreed that they are thinking of applying an ERP system in the future.
- Some of the responding companies that applied the ERP system bought the software from an outside vendor, others built the system internally. The rest of the targeted companies bought part of their system from an outside vendor and built the other part internally.
- The main reasons why 60% of the targeted companies did not apply an ERP system, was that they were satisfied with their current system or they were not aware of the existence of an integrated system. They did not apply an integrated system because of its high cost while others feared to fail if they applied a new system in their enterprise.
- The reasons that derived the Palestinian companies to apply an ERP system were to help them to integrate financial data and thus prepare accurate financial statement, ERP attempts to minimize the information coordination problems by creating an integrated core of administrative and financial applications.. The third reason was to speed up the manufacturing process,

nevertheless the fourth reason was to reduce inventory, the manufacturers can make and buy only what is needed.

- The majority of the Palestinian companies agreed that there are obstacles in implementing the ERP system. These obstacles include, exceeding the budget, exceeding the time allocated for ERP implementation, conflict between the enterprise different departments, resistance to change.
- The Palestinian companies claim that the benefits of the ERP system include saving labor and reducing labor cost, improving the decision-making process and the communication between the different business units respectively, improving the service provided through the interaction with the customers and the suppliers, improving the enterprise's productivity and reducing waste.
- Most of the responding companies that have implemented the ERP system were successful. The main reasons of success were top management commitment, step-by-step implementation of the system, user training, good selection of the software and project management. Their success in implementing the ERP system was in relation to: outcome and achieved results, improvement in the decision-making process, more accurate financial operations and better business performance.
- Most of the enterprises agreed that the ERP system has positively affected their accounting procedures, product design and sales.

5.2 Implications of the Study

The study reflects the degree of awareness to enterprise and resource planning system, its benefits and its drawbacks. Furthermore, this study has identified how many large-scale private Palestinian Organizations have implemented or will implement an ERP system in the future; it has also identified the factors that contribute to success or failure of an ERP implementation and the barriers that have prevented the local private companies from implementing the ERP system.

Based on the findings of this study, the researcher suggests the following recommendations:

1. To increase the awareness of the ERP system and the importance of business integration by performing a number of workshops for the top management of the Palestinian enterprises so that they will be acquainted with such systems and their benefits. These workshops should be conducted by universities in cooperation with solution providers.
2. Palestinian enterprises should be more alert to the importance of having an IT department, to be able to keep up with new technologies that usually help their businesses improve their performance.
3. Palestinian enterprises should do a cost-benefit analysis, encourage teamwork and ensure top-management commitment before implementing an ERP system.
4. Before implementing an ERP system, Palestinian organizations must follow a step-by-step process and should evaluate each phase in order to ensure success.
5. To ensure the success of the ERP project Palestinian organizations should communicate and should more involve the end users in implementing the ERP system. They should also have a good project management

6. After implementing an ERP system, Palestinian enterprises should provide training and technical support for the users (employees) on the new system.
7. Enterprise resource planning centers should be established to provide the local organizations with the latest innovations in this system.
8. Local universities are advised to add a course on enterprise resource planning to their business programs at both the undergraduate and graduate levels.
9. Local solution providers should be involved in customer education to enhance the awareness to the importance of ERP implementation among Palestinian companies to be able to raise the demand for ERP software.

5.3 Recommendations for Future Research

The data gathered and the findings could be expanded through additional research. One of the limitations of the present study is that it is the first study that examined the application of the enterprise resource planning systems in the Palestinian large-scale private organizations. The current study was designed to measure the degree of awareness to ERP system, its benefits and drawbacks and it tried to identify the factors that hinder the success of this system. Further information can be obtained to strengthen the findings by expanding the survey group in a number of ways:

1. The survey group could include both the large-scale and medium size companies.
2. The survey group could include a sample drawn from an official list that is given by the Palestinian Central Bureau of Statistics.

3. The study can be enlarged to include the enterprises that are located in Jerusalem and Gaza Strip, thus surveying the entire population, which would provide more applicable information to the entire population.

Furthermore, research is recommended to examine the efficiency of implementing an ERP system and how it affects the business performance of the enterprises.

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Appendices

Questionnaire

Dear respondent

Regards,

I am an academic assistant and at the same time an MBA student at Birzeit University conducting a research about applying enterprise resource planning (ERP) system at the Palestinian large-scale private organizations, under the supervision of Dr. Grace Khoury.

The purpose of this study is to measure the degree of awareness to ERP systems, its benefits and its drawbacks. Furthermore this study tries to find out how many Palestinian organizations have implemented or have tried to implement an ERP system; it identifies the factors that contribute to the success or failure of an ERP implementation and the factors that hinder ERP implementation at those companies that did not try to implement ERP.

In order to be able to answer this questionnaire the researcher has defined Enterprise resource planning ERP as: “software that is used to integrate the departments of the organization on to a single system that can serve the different departments’ needs. As, the ERP system allows the company to share common data and practices across the enterprise and produce and access information in a real-time environment. This system is designed to solve the fragmentation of information in large business organizations, and

integrate all information flows within the company.”

I appreciate your time and effort to fill out this questionnaire hoping that we can increase the degree of awareness to ERP systems among the Palestinian organizations and to encourage them to implement such systems to help them improve their performance. Remember, I guarantee that all your responses will be entirely confidential for academic purposes.

Thanks for your cooperation

Muniece Zurub
Academic assistant
Birzeit University

Demographic Questions

1) Name of the organization:

2) Location:

- a) North of west bank
- b) South of west bank
- c) Middle of west bank

3) Sector:

- a) Manufacturing
- b) Service
- c) Other-----

4) Do you have an IT department? a) Yes b) No

5) How many branches does your organization have? -----

6) Total number of employees: -----

7) When was your organization established? -----

8) Turnover of inventory of the last audited financial statement was (optional) -----

9) How is the data of your enterprise's different departments organized?

- a) By a different system for each department.
- b) By a single computer system for all departments.
- c) Other -----

Please show your degree of agreement on the following points:

#	statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Our organization is now facing a highly competitive environment					
2	One of the key factors to success today is to provide customers with what they need through interacting with them.					
3	Our					

	Organization has a need for software that integrates and automates the organization's different departments' processes.					
4	It is important to apply an ERP system in our organization.					
5	It is important to upgrade the ERP system after it has been					

1) According to the definition of ERP at the beginning of the questionnaire, can you say that your enterprise has an ERP system?

a) Yes b) No

2) If yes, the used system:

- a) Was bought from an outside vendor.
- b) Was built internally.
- c) A combination of both A&B

3) If no, the reasons for not applying an integrated system (Check what applies)

- a) Satisfied with the current systems -----
- b) High cost -----
- c) Lack of awareness of the existence of an integrated system -----
- d) Fear of failure -----

4) Do you plan to implement an ERP system any time in the future?

a) Yes b) No

5) If yes, when do you plan to apply it?

- a) In one year
- b) In two years
- c) In three years
- d) In more than three years

6) When applying an ERP system do you think it is better?

- a) To buy the software
- b) To build it internally
- c) A combination of both A&B

7) Have you put a framework to implement the ERP system?

a) Yes b) No

8) If yes, mention the stages in this framework?

- a) -----
- b) -----
- c) -----
- d) -----

9) Prioritize the reasons of applying an ERP system according to their degree of importance beginning with #1 as the most important and giving #5 to the least important

- a) To integrate financial data -----
- b) To integrate customer order information -----
- c) To speed up manufacturing processes -----
- d) To reduce inventory -----
- e) To standardize human resource information -----
- f) To cut down paper use -----

10) Prioritize the factors that may contribute positively to the implementation of the ERP system according to their degree of importance beginning with #1 as the most important and giving #5 to the least important.

- a) Learning from others -----
- b) Establishing project teams -----
- c) Training and providing technical support for the users -----
- d) Implementing the changes needed to the organization's structure -----
- e) Top management support -----
- f) Effective communication and more user involvement -----
- g) Project management-----

11) In your opinion, the major characteristics of a good ERP solution are: (check what applies)

- a) Flexible -----
- b) Modular and open -----
- c) Comprehensive -----
- d) Must have a collection of the best business process that are applicable worldwide -----
- e) Other -----

12) Do you think that there are some obstacles in implementing an ERP system?

- a) Yes b) No

13) If yes, these obstacles are (check what applies)

- a) Over budget
- b) Over time -----
- c) Conflict between the enterprise's different departments -----
- d) Resistance to change-----
- e) Other-----

14) What do you think are the major challenges that an enterprise will face during or after implementing an ERP system?

- a -----
- b -----
- c -----
- d -----

15) Are you aware of the benefits of ERP?

- a) Yes b) No

16) If yes, what benefits would an ERP system provide to your organization (check what applies)

- a) Saving labor and labor cost reduction -----
- b) Improving the decision-making process -----
- c) Improving communication between the business units of the organization-----
- d) Interacting with the customers and suppliers to improve the provided service-----
- e) Increasing productivity and reducing waste-----

17) Do you think that there are hidden costs for applying the ERP system?

- a) Yes b) No

18) If yes, these hidden costs might be in those areas: (check what applies)

- a) Training the employees on the new processes -----
- b) Trying to customize the ERP system according to the enterprise's needs -----
- c) Converting the data from the old legacy systems to the new system -----
- d) The need to replace the company's employees after the implementation of the ERP because of the complexity of this software -----

19) What do you think are the reasons that might cause the failure of implementing the ERP system? (Check what applies)

- a) Resistance to change -----
- b) Customizing the software -----

- c) Following up no sequence in the implementation procedure -----
- d) Making the wrong choice of the suitable system vendor -----

For those who implemented an ERP systems please continue and for those who didn't implement ERP please stop right here and thank you very much.

20) Since when did you implement your integrated system?

- a) 1month-1year
- b) 2-5years
- c) 6-10years
- d) More than 10 years.

21) Have you ever upgraded your ERP system?

- a) Yes b) No

22) If yes, when? -----

23) How much has it cost your enterprise to implement the ERP system?

- a) Less than \$50,000
- b) \$50,000-\$200,000
- c) \$200,000- \$350,000
- d) \$350,000- \$500,000
- e) more than \$500,000

24) Do you think that your ERP system has been implemented successfully?

- a) Yes b) No

25) This success was because of: (check what applies)

- a) Top management commitment -----
- b) Step-by-step implementation -----
- c) User training -----

d) Good selection of the software -----

e) Project management -----

f) Other-----

26) On what measure have you evaluated your ERP system as a successful system?

27) How long did it take to implement the ERP system?

a) Less than one year

b) 1-3 years

c) 4-6 years

d) More than 6 years.

28) Do you think that the ERP system affected your accounting?

a) Yes b) No

29) If yes, these effects are (Check what applies)

a) Accurate and up-to-date financial information -----

b) Speeding up the customers' invoices processing system -----

c) Reducing the clerical accounting work -----

d) Improving the timeliness of financial reports -----

30) Has the ERP system affected your product design?

a) Yes b) No

31) If yes, in what way?

32) Has your ERP improved your production and material management?

a) Yes b) No

33) What are the effects of the ERP systems on your sales?

- a) The sales increased
- b) The sales decreased
- c) The sales remained unchanged

34) Are you satisfied with the overall performance of your ERP system?

a) Yes b) No

35) Would you prefer that your suppliers, customers or partners to be connected to your ERP system?

a) Yes b) No

استبيان

عزيزي المستجيب،

تحية طيبة و بعد،

أنا أعمل مساعدة أكاديمية في جامعة بيرزيت وفي نفس الوقت أتابع تحصيلي العلمي لشهادة الماجستير في برنامج إدارة الأعمال في نفس الجامعة. أقوم حالياً بإعداد رسالة التخرج بعنوان "أنظمة تخطيط مصادر منشآت الأعمال الكبيرة في القطاع الفلسطيني" تحت إشراف الدكتورة غريس خوري.

تهدف هذه الدراسة إلى قياس درجة الوعي بأنظمة التخطيط ERP systems وفوائدها وعيوبها كما تحاول

الدراسة معرفة عدد المؤسسات الفلسطينية التي طبقت أو حاولت تطبيق نظام التخطيط هذا وتتطرق إلى العوامل التي تساهم في نجاح أو فشل تطبيق هذا النظام. ولغرض الاستبيان قامت الباحثة بتعريف نظام التخطيط على أنه البرنامج الذي يستخدم لتوحيد أقسام المؤسسة المختلفة في نظام واحد يستطيع تلبية حاجات هذه الأقسام. يساعد نظام التخطيط

جميع أقسام المؤسسة على تقاسم المعلومات. صمم هذا النظام لحل مشكلة تجزئة المعلومات في المؤسسات الكبيرة وتوحيد عملية تدقيق المعلومات في المؤسسة.

إنني أشكركم جزيل الشكر على الوقت والجهد المبذولين في تعبئة هذا الاستبيان على أمل أن يرفع درجة الوعي بوجود أنظمة التخطيط ERP في المؤسسات الفلسطينية ونشجع على تطبيق هذه الأنظمة لمساعدة هذه المؤسسات على تحسين وتطوير أدائها. أود أن أؤكد لكم على سرية جميع الإجابات والمعلومات وأن لا تستخدم سوى في الأغراض الأكاديمية فقط.

شكراً لحسن تعاونكم

منيس زعربج

مساعدة أكاديمية

جامعة بيرزيت

(1) اسم المؤسسة:

(2) الموقع:

(1) شمال الضفة

(2) جنوب الضفة

(5) وسط الضفة

(3) القطاع:

(ا) الصناعي

(ب) الخدمات

(ج) غير ذلك, حدد _____

(4) هل لديكم قسم خاص لتكنولوجيا المعلومات؟

(ا) نعم (ب) لا

(5) كم عدد فروع المؤسسة؟ -----

(6) ما مجموع عدد الموظفين؟ -----

(7) متى تأسست المؤسسة؟ -----

(8) ما معدل دوران البضاعة حسب آخر قوائم مالية مدققة؟ (اختياري) -----

(9) كيف يتم تنظيم المعلومات في مختلف أقسام المؤسسة؟

(ا) باستخدام نظام خاص لكل قسم

(ب) باستخدام نظام واحد لكل الأقسام

(ج) غير ذلك, حدد -----

من فضلك حدد درجة موافقتك على النقاط التالية:

#	الجملة	أوافق بشدة	أوافق	لا رأي لدي	لا أوافق بشدة
1	تواجه مؤسستنا اليوم محيطاً تنافسياً قوياً.				
2	أحد أهم عوامل النجاح اليوم هو إعطاء الزبائن ما يحتاجون وذلك عن طريق التحوار معهم				
3	تحتاج مؤسستنا لبرنامج يوحد أنظمة أقسام المؤسسة المختلفة.				
4	عملية تطبيق نظام التخطيط (ERP) في مؤسستنا هي عملية هامة.				
5	عملية تحديث نظام التخطيط بعد تطبيقه هي عملية هامة.				

1) بناء على تعريف نظام التخطيط في بداية الاستبيان, هل تستطيع القول أن المؤسسة لديها نظام تخطيط ERP؟

(ا) نعم (ب) لا

2) إذا كانت الإجابة نعم, حصلت على نظام التخطيط المستخدم:

(ا) من بائع خارجي

(ب) صمم داخل المؤسسة

(ج) ا+ب

3) إذا كانت الإجابة لا, كانت الأسباب التي أدت إلى عدم استخدام نظام موحد هي (اختر ما يناسبك):

(ا) الرضى على النظام الموجود حالياً-----

(ب) التكلفة العالية-----

(ج) الخوف من الفشل-----

(د) عدم المعرفة بوجود نظام موحد-----

4) هل تخطط المؤسسة لتطبيق نظام التخطيط (ERP) في المستقبل؟

(ا) نعم (ب) لا

5) إذا كانت الإجابة نعم, متى ستعمل على ذلك؟

(1) خلال سنة

(2) خلال سنتين

(ج) خلال 3 سنوات

(د) خلال اكثر من 3 سنوات

6) عند تطبيق نظام التخطيط ERP, هل تعتقد المؤسسة انه من الأفضل:

(1) شراء البرنامج

(2) تصميم البرنامج

(ج) ا+ب

7) هل وضعت المؤسسة إطار لتطبيق نظام التخطيط ERP؟

(ا) نعم (ب) لا

8) إذا كانت الإجابة نعم, اذكر مراحل هذا الإطار:

- (ا) -----
 (ب) -----
 (ج) -----
 (د) -----

9) رتب دوافع تطبيق نظام التخطيط ERP حسب درجة الأهمية و ذلك بإعطاء رقم 1 للدافع الأكثر أهمية و رقم 5 للدافع الأقل أهمية.

1) توحيد المعلومات المالية -----

2) توحيد معلومات طلبات الزبائن -----

ج) تسريع عملية الإنتاج -----

د) تقليل مخزون البضاعة -----

هـ) تقليل استخدام الأوراق -----

10) رتب العوامل التي تساهم إيجابيا في عملية تطبيق نظام التخطيط ERP حسب درجة الأهمية بإعطاء رقم 1 للعامل الأكثر أهمية و رقم 7 للعامل الأقل أهمية.

1) التعلم من الآخرين -----

2) تأسيس فرق للمشاريع -----

ج) تدريب المستخدمين على النظام الجديد -----

د) تطبيق التغييرات الضرورية للهيكل التنظيمي للمؤسسة -----

هـ) دعم الإدارة -----

و) الاتصال الفعال بين أقسام المؤسسة -----

ز) إدارة المشروع -----

11) برأيك, إن خصائص نظام التخطيط ERP الجديد هي (اختار ما يناسبك):

- (1) المرونة-----
 (2) مفتوح (قابل للتطوير بكافة اجزائه) -----
 (ج) الشمولية -----
 (د) وجود افضل العمليات المطبقة عالميا-----
 (هـ) غير ذلك, حدد-----

12) هل تعتقد أن هناك عوائق أمام تطبيق نظام التخطيط ERP؟

- (ا) نعم (ب) لا

13) إذا كانت الإجابة نعم, هذه العوائق تشمل (اختار ما يناسبك):

- (1) تخطي الميزانية المحددة -----
 (2) تخطي الوقت اللازم لتطبيق نظام التخطيط ERP-----
 (ج) وجود تعارض بين أقسام المؤسسة المختلفة-----
 (د) مقاومة التغيير-----
 (هـ) غير ذلك, حدد-----

14) ما هي بنظرك أهم التحديات التي تواجه المؤسسة عند تطبيق نظام التخطيط ERP؟

- (ا)-----

 (ج)-----

15) هل اطلعت المؤسسة على فوائد نظام التخطيط ERP؟

- (ا) نعم (ب) لا

16) إذا كانت الإجابة نعم، ما هي فوائد نظام التخطيط ERP للمؤسسة (اختر ما يناسبك):

- 1) توفير وتقليل تكلفة العمال-----
- 2) تحسين عملية اتخاذ القرار-----
- ج) تحسين الاتصال بين مختلف أقسام المؤسسة-----
- د) التفاعل مع الزبائن و الموردین لتحسين الخدمة المقدمة-----
- هـ) زيادة الإنتاجية و تقليل تبديد الموارد-----

17) هل تعتقد أن هناك تكلفة غير مرئية لتطبيق نظام التخطيط ERP؟

- ا) نعم ب) لا

18) إذا كانت الإجابة نعم، تكون هذه التكلفة في إحدى المجالات التالية (اختر ما يناسبك):

- 1) تعديل نظام التخطيط ليلائم حاجات المؤسسة-----
- 2) تدريب الموظفين على النظام الجديد-----
- ج) نقل المعلومات من الأنظمة القديمة إلى النظام الجديد-----
- د) الحاجة لتبديل موظفي المؤسسة بعد تطبيق نظام التخطيط ERP-----

19) (اختر ما يناسبك ERP ما هي باعتقادك الأسباب التي قد تؤدي إلى فشل نظام التخطيط):

- 1) مقاومة التغيير-----
- 2) تعديل البرنامج حسب حاجات المؤسسة-----
- ج) عدم اتباع أي تسلسل في عملية تطبيق نظام التخطيط ERP-----
- د) اختيار نظام غير مناسب للمؤسسة-----

أرجو من المؤسسات التي قامت بتطبيق نظام التخطيط ERP، متابعة الإجابة على الأسئلة، أما المؤسسات التي لم تعمل على تطبيق نظام التخطيط فأرجو منها التوقف هنا و شكرا جزيلا لها.

20) متى قامت المؤسسة بتطبيق النظام الموحد؟

- 1) منذ شهر - سنة
- 2) منذ 2-5 سنوات
- ج) منذ 5-10 سنوات

(د) منذ أكثر من 10 سنوات

21) هل قامت المؤسسة بتحديث النظام ERP بعد تطبيقه؟

(أ) نعم (ب) لا

22) إذا كانت الإجابة نعم، متى تم ذلك؟

23) كم كانت تكلفة تطبيق نظام ERP

(1) أقل من 50000 دولار

(2) 50000-200000 دولار

(ج) 200000-350000 دولار

(د) 350000-500000 دولار

(هـ) أكثر من 500000 دولار

24) هل تعتقد المؤسسة انه تم تطبيق نظام ERP بنجاح؟

(أ) نعم (ب) لا

25) كان هذا النجاح بسبب (اختر ما يناسبك)

(1) التزام الإدارة -----

(2) التطبيق حسب تسلسل معين خطوة خطوة -----

(ج) تدريب مستخدمي النظام -----

(د) اختيار جيد للبرنامج -----

(هـ) إدارة البرنامج -----

(و) غير ذلك، حدد -----

26) ما هو مقياس المؤسسة لتقييم نظام ERP الخاص بها على انه ناجح؟

(27) ما هو الوقت الذي استغرقته المؤسسة لتطبيق نظام ERP؟

1) لم تنتهي من عملية التطبيق

2) اقل من سنة

3) 1-3 سنوات

4) 3-6 سنوات

5) اكثر من 6 سنوات

(28) هل تعتقد المؤسسة أن نظام ERP قد اثر على الإجراءات المحاسبية؟

ا) نعم

ب) لا

(29) إذا كانت الإجابة نعم, كانت هذه التأثيرات هي (اختر ما يناسبك)

1) معلومات مالية مدققة و محدثة-----

2) تسريع عملية تجهيز الفواتير للزبائن-----

3) تقليل عمل المحاسبة المكتبي-----

4) إعداد التقارير المالية في مواعيدها-----

(30) هل اثر نظام ERP على تصميم منتجات المؤسسة؟

ا) نعم

ب) لا

(31) إذا كانت الإجابة نعم, كيف تم ذلك؟

(32) هل عمل نظام ERP على تطوير إدارة الإنتاج للمؤسسة؟

ا) نعم

ب) لا

(33) كيف اثر نظام ERP على مبيعات المؤسسة؟

1) ازدادت المبيعات

2) قلت المبيعات

ج) بقيت المبيعات كما هي

34) هل المؤسسة راضية عن أداء نظام ERP الخاص بها؟

ا) نعم ب) لا

35) هل تفضل المؤسسة أن يكون مورديها و زبائنها و شركائها مرتبطين بنظام ERP الخاص بها؟

ا) نعم ب) لا